

CAABA/MECCA

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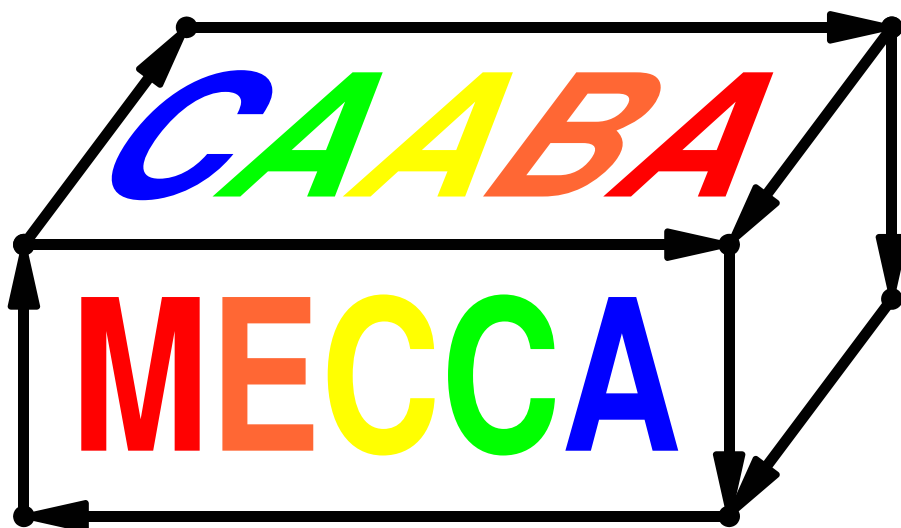
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Chapter 1

Introduction



CAABA is a box model that uses MECCA chemistry, plus simplified calculations for emission, deposition, and photolysis. For more information, see [\[1\]](#)

Chapter 2

Todo List

Type [caaba_module](#)
see TODO file.

Chapter 3

Data Type Index

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4.1 File List

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Chapter 5

Data Type Documentation

5.1 messy_main_rnd_mtw_ja::add Interface Reference

Private Member Functions

- subroutine [gf2x_add](#) (c, a, b)

5.1.1 Member Function/Subroutine Documentation

5.1.1.1 subroutine messy_main_rnd_mtw_ja::add::gf2x_add (type(gf2x_obj),
intent(inout) c, type(gf2x_obj), intent(in) a, type(gf2x_obj), intent(in) b)
[private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.2 messy_main_rnd_mtw_ja::add_assign Interface Reference

Private Member Functions

- subroutine [gf2x_add_assign](#) (c, a)

5.2.1 Member Function/Subroutine Documentation

5.2.1.1 subroutine messy_main_rnd_mtw_ja::add_assign::gf2x_add_assign (
type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ - ja.f90](#)

5.3 messy_main_rnd_mtw_ja::assign Interface Reference

Private Member Functions

- subroutine [gf2x_assign](#) (c, a)

5.3.1 Member Function/Subroutine Documentation

- 5.3.1.1 subroutine `messy_main_rnd_mtw_ja::assign::gf2x_assign (type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a) [private]`

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ - ja.f90](#)

5.4 caaba_io Module Reference

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/caaba_io.f90](#)

5.5 caaba_mem Module Reference

Public Attributes

- CHARACTER(LEN=STRLEN_MEDIUM) [caaba_version](#) = "
- LOGICAL [USE_JVAL](#) = .FALSE.
- LOGICAL [USE_MECCA](#) = .FALSE.
- LOGICAL [USE_RADJIMT](#) = .FALSE.
- LOGICAL [USE_READJ](#) = .FALSE.
- LOGICAL [USE_SAPPHO](#) = .FALSE.
- LOGICAL [USE_SEMIDEP](#) = .FALSE.
- LOGICAL [USE_TRAJECT](#) = .FALSE.
- LOGICAL [USE_E4CHEM](#) = .FALSE.
- LOGICAL [I_ff](#) = .FALSE.
- LOGICAL [I_skipkpp](#) = .FALSE.
- LOGICAL [I_steady_state_stop](#) = .FALSE.
- LOGICAL [I_injectNOx](#) = .FALSE.

- LOGICAL `l_spechum` = .FALSE.
- LOGICAL `l_RRconc` = .FALSE.
- REAL(DP) `degree_lat` = 45._DP
- REAL(DP) `degree_lon` = 0._DP
- REAL(DP) `model_start_day` = 80._DP
- REAL(DP) `Ca_precip` = 0._DP
- REAL(DP) `t_NOxon` = -1._DP
- REAL(DP) `t_NOxoff` = -1._DP
- REAL(DP) `runlast` = -1._DP
- CHARACTER(LEN=12) `init_scenario` = "
- CHARACTER(LEN=12) `photo_scenario` = "
- CHARACTER(LEN=12) `emission_scenario` = "
- CHARACTER(LEN=12) `drydep_scenario` = "
- CHARACTER(LEN=STRLEN_VLONG) `runtime_str` = "
- CHARACTER(LEN=STRLEN_VLONG) `timesteplen_str` = "
- CHARACTER(LEN=STRLEN_ULONG) `init_spec` = "
- CHARACTER(LEN=STRLEN_ULONG) `init_j` = "
- INTEGER `init_j_index` = 1
- CHARACTER(LEN=STRLEN_MEDIUM) `photrat_channel` = "
- CHARACTER(LEN=STRLEN_ULONG) `input_physc` = "
- CHARACTER(LEN=STRLEN_ULONG) `input_jval` = "
- CHARACTER(LEN=STRLEN_VLONG) `vlat` = 'LAT'
- CHARACTER(LEN=STRLEN_VLONG) `vlon` = 'LON'
- CHARACTER(LEN=STRLEN_VLONG) `vpress` = 'PRESS'
- CHARACTER(LEN=STRLEN_VLONG) `vtemp` = 'TEMP'
- CHARACTER(LEN=STRLEN_VLONG) `vrelhum` = "
- CHARACTER(LEN=STRLEN_VLONG) `vspechum` = "
- CHARACTER(LEN=STRLEN_VLONG) `vtime` = 'TIME'
- LOGICAL `l_ignore_relhum` = .FALSE.
- LOGICAL `l_relhum_wmo` = .FALSE.
- LOGICAL `l_psat_emac` = .FALSE.
- LOGICAL `l_runtime_str` = .FALSE.
- INTEGER `t0year`
- INTEGER `t0month`
- INTEGER `t0day`
- INTEGER `t0hour`
- INTEGER `t0min`
- INTEGER `t0sec`
- REAL(DP) `model_time`
- REAL(DP) `model_start`
- REAL(DP) `model_end`
- REAL(DP) `percent_done` = 0._DP
- REAL(DP) `time0_jul` = 0._DP
- REAL(DP) `firstjan_jul` = 0._DP
- REAL(DP) `timesteplen`
- REAL(DP) `tuf` = 1._DP

- REAL(DP) `runtime` = -1._DP
- CHARACTER(LEN=33) `time_string` = 'seconds since 2000-01-01 00:00:00'
- LOGICAL `l_input_jval` = .FALSE.
- INTEGER `lyear`
- INTEGER `lmonth`
- INTEGER `lday`
- INTEGER `lhour`
- INTEGER `lmin`
- INTEGER `lsec`
- REAL(DP) `localtime` = 0._DP
- REAL(DP) `cosssa` = 1._DP
- REAL(DP) `degree_sza`
- REAL(DP) `x_j_no2`
- INTEGER `jval_clev`
- REAL(DP), dimension(:), allocatable `c`
- REAL(DP) `cair`
- REAL(DP) `temp` = 293._DP
- REAL(DP) `press` = 101325._DP
- REAL(DP) `relhum` = 0.81._DP
- REAL(DP) `specum`
- REAL(DP) `zmbi` = 1000._DP
- REAL(DP) `zmix` = 25._DP

5.5.1 Member Data Documentation

5.5.1.1 REAL(DP), dimension(:), allocatable `caaba_mem::c`

5.5.1.2 REAL(DP) `caaba_mem::Ca_precip` = 0._DP

5.5.1.3 CHARACTER(LEN=STRLEN_MEDIUM) `caaba_mem::caaba_version` = "

5.5.1.4 REAL(DP) `caaba_mem::cair`

5.5.1.5 REAL(DP) `caaba_mem::cosssa` = 1._DP

5.5.1.6 REAL(DP) `caaba_mem::degree_lat` = 45._DP

5.5.1.7 REAL(DP) `caaba_mem::degree_lon` = 0._DP

5.5.1.8 REAL(DP) `caaba_mem::degree_sza`

5.5.1.9 CHARACTER(LEN=12) `caaba_mem::drydep_scenario` = "

5.5.1.10 CHARACTER(LEN=12) `caaba_mem::emission_scenario` = "

5.5.1.11 REAL(DP) `caaba_mem::firstjan_jul` = 0._DP

- 5.5.1.12 CHARACTER(LEN=STRLEN_ULONG) caaba_mem::init_j = "
- 5.5.1.13 INTEGER caaba_mem::init_j_index = 1
- 5.5.1.14 CHARACTER(LEN=12) caaba_mem::init_scenario = "
- 5.5.1.15 CHARACTER(LEN=STRLEN_ULONG) caaba_mem::init_spec = "
- 5.5.1.16 CHARACTER(LEN=STRLEN_ULONG) caaba_mem::input_jval = "
- 5.5.1.17 CHARACTER(LEN=STRLEN_ULONG) caaba_mem::input_physc = "
- 5.5.1.18 INTEGER caaba_mem::jval_clev
- 5.5.1.19 LOGICAL caaba_mem::l_ff = .FALSE.
- 5.5.1.20 LOGICAL caaba_mem::l_ignore_relhum = .FALSE.
- 5.5.1.21 LOGICAL caaba_mem::l_injectNOx = .FALSE.
- 5.5.1.22 LOGICAL caaba_mem::l_input_jval = .FALSE.
- 5.5.1.23 LOGICAL caaba_mem::l_psat_emac = .FALSE.
- 5.5.1.24 LOGICAL caaba_mem::l_relhum_wmo = .FALSE.
- 5.5.1.25 LOGICAL caaba_mem::l_RRconc = .FALSE.
- 5.5.1.26 LOGICAL caaba_mem::l_runtime_str = .FALSE.
- 5.5.1.27 LOGICAL caaba_mem::l_skipkpp = .FALSE.
- 5.5.1.28 LOGICAL caaba_mem::l_spechum = .FALSE.
- 5.5.1.29 LOGICAL caaba_mem::l_steady_state_stop = .FALSE.
- 5.5.1.30 INTEGER caaba_mem::lday
- 5.5.1.31 INTEGER caaba_mem::lhour
- 5.5.1.32 INTEGER caaba_mem::lmin
- 5.5.1.33 INTEGER caaba_mem::lmonth
- 5.5.1.34 REAL(DP) caaba_mem::localtime = 0._DP
- 5.5.1.35 INTEGER caaba_mem::lsec

- 5.5.1.36 INTEGER caaba_mem::lyear
- 5.5.1.37 REAL(DP) caaba_mem::model_end
- 5.5.1.38 REAL(DP) caaba_mem::model_start
- 5.5.1.39 REAL(DP) caaba_mem::model_start_day = 80._DP
- 5.5.1.40 REAL(DP) caaba_mem::model_time
- 5.5.1.41 REAL(DP) caaba_mem::percent_done = 0._DP
- 5.5.1.42 CHARACTER(LEN=12) caaba_mem::photo_scenario = "
- 5.5.1.43 CHARACTER(LEN=STRLEN_MEDIUM) caaba_mem::photrat_channel = "
- 5.5.1.44 REAL(DP) caaba_mem::press = 101325._DP
- 5.5.1.45 REAL(DP) caaba_mem::relhum = 0.81._DP
- 5.5.1.46 REAL(DP) caaba_mem::runlast = -1._DP
- 5.5.1.47 REAL(DP) caaba_mem::runtime = -1._DP
- 5.5.1.48 CHARACTER(LEN=STRLEN_VLONG) caaba_mem::runtime_str = "
- 5.5.1.49 REAL(DP) caaba_mem::spechum
- 5.5.1.50 INTEGER caaba_mem::t0day
- 5.5.1.51 INTEGER caaba_mem::t0hour
- 5.5.1.52 INTEGER caaba_mem::t0min
- 5.5.1.53 INTEGER caaba_mem::t0month
- 5.5.1.54 INTEGER caaba_mem::t0sec
- 5.5.1.55 INTEGER caaba_mem::t0year
- 5.5.1.56 REAL(DP) caaba_mem::t_NOxoff = -1._DP
- 5.5.1.57 REAL(DP) caaba_mem::t_NOxon = -1._DP
- 5.5.1.58 REAL(DP) caaba_mem::temp = 293._DP
- 5.5.1.59 REAL(DP) caaba_mem::time0_jul = 0._DP

- 5.5.1.60 CHARACTER(LEN=33) caaba_mem::time_string = 'seconds since 2000-01-01 00:00:00'
- 5.5.1.61 REAL(DP) caaba_mem::timesteplen
- 5.5.1.62 CHARACTER(LEN=STRLEN_VLONG) caaba_mem::timesteplen_str = "
- 5.5.1.63 REAL(DP) caaba_mem::tuf = 1._DP
- 5.5.1.64 LOGICAL caaba_mem::USE_E4CHEM = .FALSE.
- 5.5.1.65 LOGICAL caaba_mem::USE_JVAL = .FALSE.
- 5.5.1.66 LOGICAL caaba_mem::USE_MECCA = .FALSE.
- 5.5.1.67 LOGICAL caaba_mem::USE_RADJIMT = .FALSE.
- 5.5.1.68 LOGICAL caaba_mem::USE_READJ = .FALSE.
- 5.5.1.69 LOGICAL caaba_mem::USE_SAPPHO = .FALSE.
- 5.5.1.70 LOGICAL caaba_mem::USE_SEMIDEP = .FALSE.
- 5.5.1.71 LOGICAL caaba_mem::USE_TRAJECT = .FALSE.
- 5.5.1.72 CHARACTER(LEN=STRLEN_VLONG) caaba_mem::vlat = 'LAT'
- 5.5.1.73 CHARACTER(LEN=STRLEN_VLONG) caaba_mem::vlon = 'LON'
- 5.5.1.74 CHARACTER(LEN=STRLEN_VLONG) caaba_mem::vpress = 'PRESS'
- 5.5.1.75 CHARACTER(LEN=STRLEN_VLONG) caaba_mem::vrelhum = "
- 5.5.1.76 CHARACTER(LEN=STRLEN_VLONG) caaba_mem::vspechum = "
- 5.5.1.77 CHARACTER(LEN=STRLEN_VLONG) caaba_mem::vtemp = 'TEMP'
- 5.5.1.78 CHARACTER(LEN=STRLEN_VLONG) caaba_mem::vtime = 'TIME'
- 5.5.1.79 REAL(DP) caaba_mem::x_j_no2
- 5.5.1.80 REAL(DP) caaba_mem::zmbi = 1000._DP
- 5.5.1.81 REAL(DP) caaba_mem::zmix = 25._DP

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[caaba_mem.f90](#)

5.6 caaba_module Module Reference

CAABA = Chemistry As A Boxmodel Application.

Public Member Functions

- subroutine [caaba_read_nml](#) (status, iou)
Read CTRL namelist.
- subroutine [calc_sza](#)
- subroutine [caaba_result](#)
- subroutine [caaba_init](#)
- subroutine [caaba_physc](#)
- subroutine [caaba_finish](#)

Public Attributes

- CHARACTER(LEN=*), parameter [modstr](#) = 'caaba'
- INTEGER [ncid_messy](#)

5.6.1 Detailed Description

Authors

Rolf Sander, MPICH, Mainz, 2003-2015
Hella Riede, MPICH, Mainz, 2007

Todo see TODO file.

5.6.2 Member Function/Subroutine Documentation

5.6.2.1 subroutine [caaba_module::caaba_finish](#) ()

5.6.2.2 subroutine [caaba_module::caaba_init](#) ()

5.6.2.3 subroutine [caaba_module::caaba_physc](#) ()

5.6.2.4 subroutine [caaba_module::caaba_read_nml](#) (INTEGER, intent(out) *status*,
INTEGER, intent(in) *iou*)

Read coupling namelist (based on [dradon_read_nml_cpl](#) by P. Joeckel)

Parameters

<i>out</i>	<i>status</i>	error status
<i>in</i>	<i>iou</i>	I/O unit

5.6.2.5 subroutine `caaba_module::caaba_result` ()

5.6.2.6 subroutine `caaba_module::calc_sza` ()

5.6.3 Member Data Documentation

5.6.3.1 CHARACTER(LEN=*), parameter `caaba_module::modstr = 'caaba'`

5.6.3.2 INTEGER `caaba_module::ncid_messy`

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/caaba.f90](#)

5.7 messy_main_rnd_mtw_ja::delete Interface Reference

Private Member Functions

- subroutine [gf2x_delete](#) (this)
- subroutine [gf2x_delete_prime](#) (mp)

5.7.1 Member Function/Subroutine Documentation

5.7.1.1 subroutine `messy_main_rnd_mtw_ja::delete::gf2x_delete` (type(gf2x_obj),
intent(inout) *this*) [private]

5.7.1.2 subroutine `messy_main_rnd_mtw_ja::delete::gf2x_delete_prime` (
type(gf2x_prime_obj), intent(inout) *mp*) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.8 messy_main_rnd_mtw_ja::div Interface Reference

Private Member Functions

- subroutine [gf2x_div](#) (q, a, b)

5.8.1 Member Function/Subroutine Documentation

5.8.1.1 subroutine `messy_main_rnd_mtw_ja::div::gf2x_div` (`type(gf2x_obj)`,
`intent(inout) q`, `type(gf2x_obj)`, `intent(in) a`, `type(gf2x_obj)`, `intent(in) b`)
`[private]`

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.9 messy_main_rnd_mtw_ja::div_by_x Interface Reference

Private Member Functions

- subroutine `gf2x_div_by_x` (`c`, `a`, `i`)

5.9.1 Member Function/Subroutine Documentation

5.9.1.1 subroutine `messy_main_rnd_mtw_ja::div_by_x::gf2x_div_by_x` (
`type(gf2x_obj)`, `intent(inout) c`, `type(gf2x_obj)`, `intent(in) a`, `integer(INT32)`, `intent(in) i`) `[private]`

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.10 messy_main_rnd_mtw_ja::divrem Interface Reference

Private Member Functions

- subroutine `gf2x_divrem` (`q`, `r`, `a`, `b`)

5.10.1 Member Function/Subroutine Documentation

5.10.1.1 subroutine `messy_main_rnd_mtw_ja::divrem::gf2x_divrem` (
`type(gf2x_obj)`, `intent(inout) q`, `type(gf2x_obj)`, `intent(inout) r`, `type(gf2x_obj)`,
`intent(in) a`, `type(gf2x_obj)`, `intent(in) b`) `[private]`

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.11 messy_cmn_gasaq::GASQAQ_TYPE Type Reference

Private Attributes

- CHARACTER(STRLN_KPPSPECIES) [name](#)
- REAL(DP) [Henry_T0](#)
- REAL(DP) [Henry_Tdep](#)
- REAL(DP) [alpha_T0](#)
- REAL(DP) [alpha_Tdep](#)
- REAL(DP) [dryreac](#)
- REAL(DP) [pss](#)
- REAL(DP) [M](#)

5.11.1 Member Data Documentation

5.11.1.1 REAL(DP) messy_cmn_gasaq::GASQAQ_TYPE::alpha_T0 [private]

5.11.1.2 REAL(DP) messy_cmn_gasaq::GASQAQ_TYPE::alpha_Tdep [private]

5.11.1.3 REAL(DP) messy_cmn_gasaq::GASQAQ_TYPE::dryreac [private]

5.11.1.4 REAL(DP) messy_cmn_gasaq::GASQAQ_TYPE::Henry_T0 [private]

5.11.1.5 REAL(DP) messy_cmn_gasaq::GASQAQ_TYPE::Henry_Tdep [private]

5.11.1.6 REAL(DP) messy_cmn_gasaq::GASQAQ_TYPE::M [private]

5.11.1.7 CHARACTER(STRLN_KPPSPECIES) messy_cmn_gasaq::GASQAQ_TYPE-
::name [private]

5.11.1.8 REAL(DP) messy_cmn_gasaq::GASQAQ_TYPE::pss [private]

The documentation for this type was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_cmn_gasaq.f90](#)

5.12 messy_main_rnd_mtw_ja::gf2x_obj Type Reference

Private Attributes

- integer(INT32), dimension(:), pointer [c](#) = > NULL()
- integer(INT32) [deg](#) = -1
- integer(INT32) [size](#) = -1

5.12.1 Member Data Documentation

5.12.1.1 `integer(INT32), dimension(:), pointer messy_main_rnd_mtw_ja::gf2x_obj::c = > NULL()` `[private]`

5.12.1.2 `integer(INT32) messy_main_rnd_mtw_ja::gf2x_obj::deg = -1` `[private]`

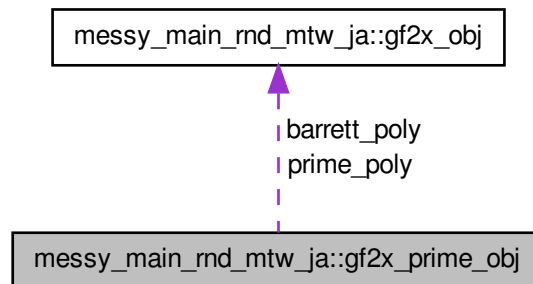
5.12.1.3 `integer(INT32) messy_main_rnd_mtw_ja::gf2x_obj::size = -1` `[private]`

The documentation for this type was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.13 messy_main_rnd_mtw_ja::gf2x_prime_obj Type Reference

Collaboration diagram for messy_main_rnd_mtw_ja::gf2x_prime_obj:



Private Attributes

- `type(gf2x_obj) prime_poly`
- `type(gf2x_obj) barrett_poly`
- `integer(INT32) deg`

5.13.1 Member Data Documentation

5.13.1.1 `type(gf2x_obj) messy_main_rnd_mtw_ja::gf2x_prime_obj::barrett_poly` `[private]`

5.13.1.2 integer(INT32) messy_main_rnd_mtw_ja::gf2x_prime_obj::deg
[private]

5.13.1.3 type(gf2x_obj) messy_main_rnd_mtw_ja::gf2x_prime_obj::prime_poly
[private]

The documentation for this type was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.14 messy_main_tools::ind2val Interface Reference

Private Member Functions

- subroutine [ind2val_1d](#) (val, field, k, f)
- subroutine [ind2val_2d](#) (kproma, val, field, k, f)

5.14.1 Member Function/Subroutine Documentation

5.14.1.1 subroutine messy_main_tools::ind2val::ind2val_1d (REAL(DP), intent(out) *val*, REAL(DP), dimension(:), intent(in) *field*, INTEGER, intent(in) *k*, REAL(DP), intent(in), optional *f*) [private]

5.14.1.2 subroutine messy_main_tools::ind2val::ind2val_2d (INTEGER, intent(in) *kproma*, REAL(DP), dimension(:), intent(out) *val*, REAL(DP), dimension(:,:), intent(in) *field*, INTEGER, dimension(:), intent(in) *k*, REAL(DP), dimension(:), intent(in), optional *f*) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90](#)

5.15 messy_main_tools::iso2ind Interface Reference

Private Member Functions

- subroutine [iso2ind_1d](#) (field, iso, k, f, lrev)
- subroutine [iso2ind_2d](#) (kproma, field, iso, k, f, lrev)

5.15.1 Member Function/Subroutine Documentation

- 5.15.1.1 subroutine `messy_main_tools::iso2ind::iso2ind_1d` (`REAL(DP)`, `dimension(:)`,
`intent(in) field`, `REAL(DP)`, `intent(in) iso`, `INTEGER`, `intent(out) k`, `REAL(DP)`, `intent(out)`,
`optional f`, `LOGICAL`, `intent(in)`, `optional lrev`) [`private`]
- 5.15.1.2 subroutine `messy_main_tools::iso2ind::iso2ind_2d` (`INTEGER`, `intent(in)`
`kproma`, `REAL(DP)`, `dimension(:, :)`, `intent(in) field`, `REAL(DP)`, `dimension(:)`, `intent(in)`
`iso`, `INTEGER`, `dimension(:)`, `intent(out) k`, `REAL(DP)`, `dimension(:)`, `intent(out)`, `optional`
`f`, `LOGICAL`, `intent(in)`, `optional lrev`) [`private`]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90

5.16 messy_main_tools_kp4_compress::kco_compress Interface - Reference

Private Member Functions

- subroutine [kco_compress](#) (`n_points`, `T`, `H`, `Hnew`, `IERR`, `f`, `RCONST`, `FIX`, `RejectLastH`, `RejectMoreH`, `Kacc`, `Krej`)

5.16.1 Constructor & Destructor Documentation

- 5.16.1.1 subroutine `messy_main_tools_kp4_compress::kco_compress::kco_compress` (`integer`, `intent(inout) n_points`, `real(kind=dp)`, `dimension(:)`, `intent(inout)`
`T`, `real(kind=dp)`, `dimension(:)`, `intent(inout) H`, `real(kind=dp)`, `dimension(:)`,
`intent(inout) Hnew`, `INTEGER`, `dimension(:)`, `intent(inout) IERR`, `real(kind=dp)`,
`dimension(:, :)`, `intent(inout) f`, `real(kind=dp)`, `dimension(:, :)`, `intent(inout) RCONST`,
`real(kind=dp)`, `dimension(:, :)`, `intent(inout) FIX`, `LOGICAL`, `dimension(:)`, `intent(inout)`
`RejectLastH`, `LOGICAL`, `dimension(:)`, `intent(inout) RejectMoreH`, `integer`, `dimension(:)`,
`intent(inout) Kacc`, `integer`, `dimension(:)`, `intent(inout) Krej`) [`private`]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools_kp4_compress.f90

5.17 messy_main_tools_kp4_compress::kco_finalize Interface - Reference

Private Member Functions

- subroutine [kco_finalize](#) (`f`, `IERR`, `Kacc`, `Krej`)

5.17.1 Constructor & Destructor Documentation

5.17.1.1 subroutine messy_main_tools_kp4_compress::kco_finalize::kco_finalize (real(kind=dp), dimension(:,:), intent(inout) *f*, integer, dimension(:), intent(inout) *IERR*, integer, dimension(:), intent(inout) *Kacc*, integer, dimension(:), intent(inout) *Krej*)
[private]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools_kp4-_compress.f90

5.18 messy_main_tools_kp4_compress::kco_initialize Interface - Reference

Private Member Functions

- subroutine [kco_initialize](#) (npoints_initial, f, IERR, Kacc, Krej)

5.18.1 Constructor & Destructor Documentation

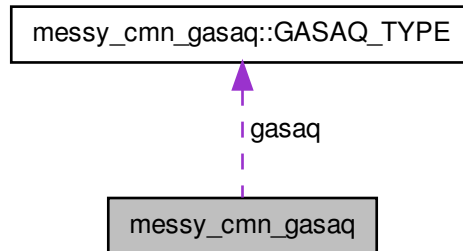
5.18.1.1 subroutine messy_main_tools_kp4_compress::kco_initialize::kco_initialize (integer, intent(in) *npoints_initial*, real(kind=dp), dimension(:,:), intent(in) *f*, integer, dimension(:), intent(in) *IERR*, integer, dimension(:), intent(in) *Kacc*, integer, dimension(:), intent(in) *Krej*) [private]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools_kp4-_compress.f90

5.19 messy_cmn_gasAQ Module Reference

Collaboration diagram for messy_cmn_gasAQ:



Data Types

- type [GASAQ_TYPE](#)

Public Member Functions

- subroutine, public [cmn_gasAQ_initialize](#) (status)
- INTEGER function, public [get_gasAQ](#) (name, Henry_T0, Henry_Tdep, alpha_T0, alpha_Tdep, M, pss, dryreac)

Private Member Functions

- subroutine [def_all_species](#) (status)
- subroutine [add_all_henry](#) (status)
- subroutine [add_all_alpha](#) (status)
- subroutine [final_check](#) (status)
- subroutine [add_all_dryreac](#) (status)

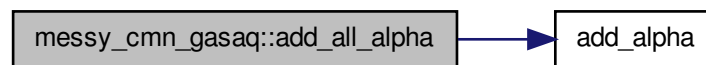
Private Attributes

- REAL(DP), parameter [DUMMY](#) = -999.999_dp
- INTEGER, parameter [MAXSIZE](#) = 150
- INTEGER [n_gasAQ](#)
- TYPE([GASAQ_TYPE](#)), dimension(maxsize) [gasAQ](#)

5.19.1 Member Function/Subroutine Documentation

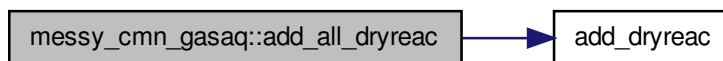
5.19.1.1 subroutine messy_cmn_gasaq::add_all_alpha (INTEGER, intent(inout) *status*)
[private]

Here is the call graph for this function:



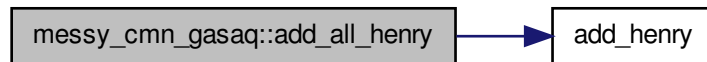
5.19.1.2 subroutine messy_cmn_gasaq::add_all_dryreac (INTEGER, intent(inout) *status*)
[private]

Here is the call graph for this function:



5.19.1.3 subroutine `messy_cm_n_gasaq::add_all_henry` (`INTEGER`, `intent(inout) status`)
`[private]`

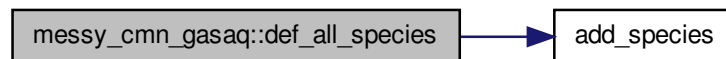
Here is the call graph for this function:



5.19.1.4 subroutine, public `messy_cm_n_gasaq::cm_n_gasaq_initialize` (`INTEGER`,
`intent(out) status`)

5.19.1.5 subroutine `messy_cm_n_gasaq::def_all_species` (`INTEGER`, `intent(inout) status`)
`[private]`

Here is the call graph for this function:



5.19.1.6 subroutine `messy_cm_n_gasaq::final_check` (`INTEGER`, `intent(inout) status`)
`[private]`

5.19.1.7 `INTEGER` function, public `messy_cm_n_gasaq::get_gasaq` (
`CHARACTER(LEN=*)`, `intent(in) name`, `REAL(DP)`, `intent(out)`, optional `Henry.T0`,
`REAL(DP)`, `intent(out)`, optional `Henry.Tdep`, `REAL(DP)`, `intent(out)`, optional `alpha.T0`,
`REAL(DP)`, `intent(out)`, optional `alpha.Tdep`, `REAL(DP)`, `intent(out)`, optional `M`,
`REAL(DP)`, `intent(out)`, optional `pss`, `REAL(DP)`, `intent(out)`, optional `dryreac`)

5.19.2 Member Data Documentation

5.19.2.1 REAL(DP), parameter messy_cmn_gasaq::DUMMY = -999.999_dp
[private]

5.19.2.2 TYPE(GASQAQ_TYPE), dimension(maxsize) messy_cmn_gasaq::gasaq
[private]

5.19.2.3 INTEGER, parameter messy_cmn_gasaq::MAXSIZE = 150 [private]

5.19.2.4 INTEGER messy_cmn_gasaq::n_gasaq [private]

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_cmn_gasaq.f90

5.20 messy_cmn_photol_mem Module Reference

Public Attributes

- INTEGER, parameter, public ip_O2 = 1
- INTEGER, parameter, public ip_O3P = 2
- INTEGER, parameter, public ip_O1D = 3
- INTEGER, parameter, public ip_H2O2 = 4
- INTEGER, parameter, public ip_NO2 = 5
- INTEGER, parameter, public ip_NO2O = 6
- INTEGER, parameter, public ip_NOO2 = 7
- INTEGER, parameter, public ip_N2O5 = 8
- INTEGER, parameter, public ip_HNO3 = 9
- INTEGER, parameter, public ip_HNO4 = 10
- INTEGER, parameter, public ip_PAN = 11
- INTEGER, parameter, public ip_HONO = 12
- INTEGER, parameter, public ip_CH3OOH = 13
- INTEGER, parameter, public ip_COH2 = 14
- INTEGER, parameter, public ip_CHOH = 15
- INTEGER, parameter, public ip_CH3CO3H = 16
- INTEGER, parameter, public ip_CH3CHO = 17
- INTEGER, parameter, public ip_CH3COCH3 = 18
- INTEGER, parameter, public ip_MGLYOX = 19
- INTEGER, parameter, public ip_HOCl = 20
- INTEGER, parameter, public ip_OCIO = 21
- INTEGER, parameter, public ip_Cl2O2 = 22
- INTEGER, parameter, public ip_CINO3 = 23
- INTEGER, parameter, public ip_CINO2 = 24
- INTEGER, parameter, public ip_Cl2 = 25
- INTEGER, parameter, public ip_BrO = 26
- INTEGER, parameter, public ip_HOBr = 27
- INTEGER, parameter, public ip_BrCl = 28

- INTEGER, parameter, public [ip_BrNO3](#) = 29
- INTEGER, parameter, public [ip_BrNO2](#) = 30
- INTEGER, parameter, public [ip_Br2](#) = 31
- INTEGER, parameter, public [ip_CCl4](#) = 32
- INTEGER, parameter, public [ip_CH3Cl](#) = 33
- INTEGER, parameter, public [ip_CH3CCl3](#) = 34
- INTEGER, parameter, public [ip_CFCI3](#) = 35
- INTEGER, parameter, public [ip_CF2Cl2](#) = 36
- INTEGER, parameter, public [ip_CH3Br](#) = 37
- INTEGER, parameter, public [ip_CF2ClBr](#) = 38
- INTEGER, parameter, public [ip_CF3Br](#) = 39
- INTEGER, parameter, public [ip_CH3I](#) = 40
- INTEGER, parameter, public [ip_C3H7I](#) = 41
- INTEGER, parameter, public [ip_CH2ClI](#) = 42
- INTEGER, parameter, public [ip_CH2I2](#) = 43
- INTEGER, parameter, public [ip_IO](#) = 44
- INTEGER, parameter, public [ip_HOI](#) = 45
- INTEGER, parameter, public [ip_I2](#) = 46
- INTEGER, parameter, public [ip_ICI](#) = 47
- INTEGER, parameter, public [ip_IBr](#) = 48
- INTEGER, parameter, public [ip_INO2](#) = 49
- INTEGER, parameter, public [ip_INO3](#) = 50
- INTEGER, parameter, public [ip_SO2](#) = 51
- INTEGER, parameter, public [ip_SO3](#) = 52
- INTEGER, parameter, public [ip_OCS](#) = 53
- INTEGER, parameter, public [ip_CS2](#) = 54
- INTEGER, parameter, public [ip_H2O](#) = 55
- INTEGER, parameter, public [ip_N2O](#) = 56
- INTEGER, parameter, public [ip_NO](#) = 57
- INTEGER, parameter, public [ip_CO2](#) = 58
- INTEGER, parameter, public [ip_HCl](#) = 59
- INTEGER, parameter, public [ip_CHCl2Br](#) = 60
- INTEGER, parameter, public [ip_CHClBr2](#) = 61
- INTEGER, parameter, public [ip_CH2ClBr](#) = 62
- INTEGER, parameter, public [ip_CH2Br2](#) = 63
- INTEGER, parameter, public [ip_CHBr3](#) = 64
- INTEGER, parameter, public [ip_SF6](#) = 65
- INTEGER, parameter, public [ip_NO3NOO](#) = 66
- INTEGER, parameter, public [ip_ClONO2](#) = 67
- INTEGER, parameter, public [ip_MACR](#) = 68
- INTEGER, parameter, public [ip_MVK](#) = 69
- INTEGER, parameter, public [ip_GLYOX](#) = 70
- INTEGER, parameter, public [ip_HOCH2CHO](#) = 71
- INTEGER, parameter, public [ip_CH4](#) = 72
- INTEGER, parameter, public [ip_O2_b1b2](#) = 73
- INTEGER, parameter, public [ip_O2_b1](#) = 74

- INTEGER, parameter, public `ip_O2_b2` = 75
- INTEGER, parameter, public `ip_O3PO1D` = 76
- INTEGER, parameter, public `ip_O3Pp` = 77
- INTEGER, parameter, public `ip_H2O1D` = 78
- INTEGER, parameter, public `ip_N2` = 79
- INTEGER, parameter, public `ip_N2_b1` = 80
- INTEGER, parameter, public `ip_N2_b2` = 81
- INTEGER, parameter, public `ip_N2_b3` = 82
- INTEGER, parameter, public `ip_NN2D` = 83
- INTEGER, parameter, public `ip_NOp` = 84
- INTEGER, parameter, public `ip_Op_em` = 85
- INTEGER, parameter, public `ip_O2p_em` = 86
- INTEGER, parameter, public `ip_Op_O_em` = 87
- INTEGER, parameter, public `ip_N2p_em` = 88
- INTEGER, parameter, public `ip_Np_N_em` = 89
- INTEGER, parameter, public `ip_Np_N2D_em` = 90
- INTEGER, parameter, public `ip_N_N2D_em` = 91
- INTEGER, parameter, public `ip_Op_em_b` = 92
- INTEGER, parameter, public `ip_se_O2_b1` = 93
- INTEGER, parameter, public `ip_se_O2_b2` = 94
- INTEGER, parameter, public `ip_se_N2_b1` = 95
- INTEGER, parameter, public `ip_se_N2_b2` = 96
- INTEGER, parameter, public `ip_se_N2_b3` = 97
- INTEGER, parameter, public `ip_se_N2_b4` = 98
- INTEGER, parameter, public `ip_se_Op_em` = 99
- INTEGER, parameter, public `ip_O2_aurq` = 100
- INTEGER, parameter, public `ip_N2_aurq` = 101
- INTEGER, parameter, public `ip_H2SO4` = 102
- INTEGER, parameter, public `ip_C3O2` = 103
- INTEGER, parameter, public `ip_CH3NO3` = 104
- INTEGER, parameter, public `ip_CH3O2NO2` = 105
- INTEGER, parameter, public `ip_CH3ONO` = 106
- INTEGER, parameter, public `ip_CH3O2` = 107
- INTEGER, parameter, public `ip_HCOOH` = 108
- INTEGER, parameter, public `IP_MAX` = 108
- CHARACTER(LEN=9), dimension(ip_max), parameter, public `jname` = (/ 'O2 ', 'O3P ', 'O1D ', 'H2O2 ', 'NO2 ', 'NO2O ', 'NOO2 ', 'N2O5 ', 'HNO3 ', 'HNO4 ', 'PAN ', 'HONO ', 'CH3OOH ', 'COH2 ', 'CHOH ', 'CH3CO3H ', 'CH3CHO ', 'CH3COCH3 ', 'MGLYOX ', 'HOCl ', 'OCIO ', 'Cl2O2 ', 'ClNO3 ', 'ClNO2 ', 'Cl2 ', 'BrO ', 'HOBr ', 'BrCl ', 'BrNO3 ', 'BrNO2 ', 'Br2 ', 'CCl4 ', 'CH3Cl ', 'CH3CCl3 ', 'CFCl3 ', 'CF2Cl2 ', 'CH3Br ', 'CF2ClBr ', 'CF3Br ', 'CH3I ', 'C3H7I ', 'CH2ClI ', 'CH2I2 ', 'IO ', 'HOI ', 'I2 ', 'ICI ', 'IBr ', 'INO2 ', 'INO3 ', 'SO2 ', 'SO3 ', 'OCS ', 'CS2 ', 'H2O ', 'N2O ', 'NO ', 'CO2 ', 'HCl ', 'CHCl2Br ', 'CHClBr2 ', 'CH2ClBr ', 'CH2Br2 ', 'CHBr3 ', 'SF6 ', 'NO3NOO ', 'ClONO2 ', 'MACR ', 'MVK ', 'GLYOX ', 'HOCH2CHO ', 'CH4 ', 'O2_b1b2 ', 'O2_b1 ', 'O2_b2 ', 'O3PO1D ', 'O3Pp ', 'H2O1D ', 'N2 ', 'N2_b1 ', 'N2_b2 ', 'N2_b3 ', 'NN2D ', 'NOp ', 'Op_em ', 'O2p_em ', 'Op_O_em ', 'N2p_em ', 'Np_N_em ', 'Np_N2D_em ', 'N_N2D_em ', 'Op_em_b ', 'se_O2_b1 ', 'se_O2_b2 '

','se_N2_b1 ','se_N2_b2 ','se_N2_b3 ','se_N2_b4 ','se_Op_em ','O2_aurq ','N2_aurq ','H2SO4 ','C3O2 ','CH3NO3 ','CH3O2NO2 ','CH3ONO ','CH3O2 ','HCOOH ')/

5.20.1 Member Data Documentation

5.20.1.1 INTEGER, parameter, public messy_cm_n_photol_mem::ip_Br2 = 31

5.20.1.2 INTEGER, parameter, public messy_cm_n_photol_mem::ip_BrCl = 28

5.20.1.3 INTEGER, parameter, public messy_cm_n_photol_mem::ip_BrNO2 = 30

5.20.1.4 INTEGER, parameter, public messy_cm_n_photol_mem::ip_BrNO3 = 29

5.20.1.5 INTEGER, parameter, public messy_cm_n_photol_mem::ip_BrO = 26

5.20.1.6 INTEGER, parameter, public messy_cm_n_photol_mem::ip_C3H7I = 41

5.20.1.7 INTEGER, parameter, public messy_cm_n_photol_mem::ip_C3O2 = 103

5.20.1.8 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CCl4 = 32

5.20.1.9 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CF2Cl2 = 36

5.20.1.10 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CF2ClBr = 38

5.20.1.11 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CF3Br = 39

5.20.1.12 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CFCI3 = 35

5.20.1.13 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CH2Br2 = 63

5.20.1.14 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CH2ClBr = 62

5.20.1.15 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CH2ClI = 42

5.20.1.16 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CH2I2 = 43

5.20.1.17 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CH3Br = 37

5.20.1.18 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CH3CCl3 = 34

5.20.1.19 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CH3CHO = 17

5.20.1.20 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CH3Cl = 33

5.20.1.21 INTEGER, parameter, public messy_cm_n_photol_mem::ip_CH3CO3H = 16

- 5.20.1.22 INTEGER, parameter, public messy_cmn_photol_mem::ip_CH3COCH3 = 18
- 5.20.1.23 INTEGER, parameter, public messy_cmn_photol_mem::ip_CH3I = 40
- 5.20.1.24 INTEGER, parameter, public messy_cmn_photol_mem::ip_CH3NO3 = 104
- 5.20.1.25 INTEGER, parameter, public messy_cmn_photol_mem::ip_CH3O2 = 107
- 5.20.1.26 INTEGER, parameter, public messy_cmn_photol_mem::ip_CH3O2NO2 = 105
- 5.20.1.27 INTEGER, parameter, public messy_cmn_photol_mem::ip_CH3ONO = 106
- 5.20.1.28 INTEGER, parameter, public messy_cmn_photol_mem::ip_CH3OOH = 13
- 5.20.1.29 INTEGER, parameter, public messy_cmn_photol_mem::ip_CH4 = 72
- 5.20.1.30 INTEGER, parameter, public messy_cmn_photol_mem::ip_CHBr3 = 64
- 5.20.1.31 INTEGER, parameter, public messy_cmn_photol_mem::ip_CHCl2Br = 60
- 5.20.1.32 INTEGER, parameter, public messy_cmn_photol_mem::ip_CHClBr2 = 61
- 5.20.1.33 INTEGER, parameter, public messy_cmn_photol_mem::ip_CHO2 = 15
- 5.20.1.34 INTEGER, parameter, public messy_cmn_photol_mem::ip_Cl2 = 25
- 5.20.1.35 INTEGER, parameter, public messy_cmn_photol_mem::ip_Cl2O2 = 22
- 5.20.1.36 INTEGER, parameter, public messy_cmn_photol_mem::ip_CINO2 = 24
- 5.20.1.37 INTEGER, parameter, public messy_cmn_photol_mem::ip_CINO3 = 23
- 5.20.1.38 INTEGER, parameter, public messy_cmn_photol_mem::ip_CIONO2 = 67
- 5.20.1.39 INTEGER, parameter, public messy_cmn_photol_mem::ip_CO2 = 58
- 5.20.1.40 INTEGER, parameter, public messy_cmn_photol_mem::ip_COH2 = 14
- 5.20.1.41 INTEGER, parameter, public messy_cmn_photol_mem::ip_CS2 = 54
- 5.20.1.42 INTEGER, parameter, public messy_cmn_photol_mem::ip_GLYOX = 70
- 5.20.1.43 INTEGER, parameter, public messy_cmn_photol_mem::ip_H2O = 55
- 5.20.1.44 INTEGER, parameter, public messy_cmn_photol_mem::ip_H2O1D = 78
- 5.20.1.45 INTEGER, parameter, public messy_cmn_photol_mem::ip_H2O2 = 4

- 5.20.1.46 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_H2SO4 = 102
- 5.20.1.47 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_HCl = 59
- 5.20.1.48 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_HCOOH = 108
- 5.20.1.49 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_HNO3 = 9
- 5.20.1.50 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_HNO4 = 10
- 5.20.1.51 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_HOBr = 27
- 5.20.1.52 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_HOCH2CHO = 71
- 5.20.1.53 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_HOCl = 20
- 5.20.1.54 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_HOI = 45
- 5.20.1.55 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_HONO = 12
- 5.20.1.56 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_I2 = 46
- 5.20.1.57 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_IBr = 48
- 5.20.1.58 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_ICl = 47
- 5.20.1.59 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_INO2 = 49
- 5.20.1.60 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_INO3 = 50
- 5.20.1.61 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_IO = 44
- 5.20.1.62 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_MACR = 68
- 5.20.1.63 INTEGER, parameter, public messy_cm_n_photo_l_mem::IP_MAX = 108
- 5.20.1.64 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_MGLYOX = 19
- 5.20.1.65 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_MVK = 69
- 5.20.1.66 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_N2 = 79
- 5.20.1.67 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_N2_aurq = 101
- 5.20.1.68 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_N2_b1 = 80
- 5.20.1.69 INTEGER, parameter, public messy_cm_n_photo_l_mem::ip_N2_b2 = 81

- 5.20.1.70 INTEGER, parameter, public messy_cmn_photol_mem::ip_N2_b3 = 82
- 5.20.1.71 INTEGER, parameter, public messy_cmn_photol_mem::ip_N2O = 56
- 5.20.1.72 INTEGER, parameter, public messy_cmn_photol_mem::ip_N2O5 = 8
- 5.20.1.73 INTEGER, parameter, public messy_cmn_photol_mem::ip_N2p_em = 88
- 5.20.1.74 INTEGER, parameter, public messy_cmn_photol_mem::ip_N_N2D_em = 91
- 5.20.1.75 INTEGER, parameter, public messy_cmn_photol_mem::ip_NN2D = 83
- 5.20.1.76 INTEGER, parameter, public messy_cmn_photol_mem::ip_NO = 57
- 5.20.1.77 INTEGER, parameter, public messy_cmn_photol_mem::ip_NO2 = 5
- 5.20.1.78 INTEGER, parameter, public messy_cmn_photol_mem::ip_NO2O = 6
- 5.20.1.79 INTEGER, parameter, public messy_cmn_photol_mem::ip_NO3NOO = 66
- 5.20.1.80 INTEGER, parameter, public messy_cmn_photol_mem::ip_NOO2 = 7
- 5.20.1.81 INTEGER, parameter, public messy_cmn_photol_mem::ip_NOp = 84
- 5.20.1.82 INTEGER, parameter, public messy_cmn_photol_mem::ip_Np_N2D_em = 90
- 5.20.1.83 INTEGER, parameter, public messy_cmn_photol_mem::ip_Np_N_em = 89
- 5.20.1.84 INTEGER, parameter, public messy_cmn_photol_mem::ip_O1D = 3
- 5.20.1.85 INTEGER, parameter, public messy_cmn_photol_mem::ip_O2 = 1
- 5.20.1.86 INTEGER, parameter, public messy_cmn_photol_mem::ip_O2_aurq = 100
- 5.20.1.87 INTEGER, parameter, public messy_cmn_photol_mem::ip_O2_b1 = 74
- 5.20.1.88 INTEGER, parameter, public messy_cmn_photol_mem::ip_O2_b1b2 = 73
- 5.20.1.89 INTEGER, parameter, public messy_cmn_photol_mem::ip_O2_b2 = 75
- 5.20.1.90 INTEGER, parameter, public messy_cmn_photol_mem::ip_O2p_em = 86
- 5.20.1.91 INTEGER, parameter, public messy_cmn_photol_mem::ip_O3P = 2
- 5.20.1.92 INTEGER, parameter, public messy_cmn_photol_mem::ip_O3PO1D = 76
- 5.20.1.93 INTEGER, parameter, public messy_cmn_photol_mem::ip_O3Pp = 77

- 5.20.1.94 INTEGER, parameter, public messy_cm_n_photol_mem::ip_OCIO = 21
- 5.20.1.95 INTEGER, parameter, public messy_cm_n_photol_mem::ip_OCS = 53
- 5.20.1.96 INTEGER, parameter, public messy_cm_n_photol_mem::ip_Op_em = 85
- 5.20.1.97 INTEGER, parameter, public messy_cm_n_photol_mem::ip_Op_em_b = 92
- 5.20.1.98 INTEGER, parameter, public messy_cm_n_photol_mem::ip_Op_O_em = 87
- 5.20.1.99 INTEGER, parameter, public messy_cm_n_photol_mem::ip_PAN = 11
- 5.20.1.100 INTEGER, parameter, public messy_cm_n_photol_mem::ip_se_N2_b1 = 95
- 5.20.1.101 INTEGER, parameter, public messy_cm_n_photol_mem::ip_se_N2_b2 = 96
- 5.20.1.102 INTEGER, parameter, public messy_cm_n_photol_mem::ip_se_N2_b3 = 97
- 5.20.1.103 INTEGER, parameter, public messy_cm_n_photol_mem::ip_se_N2_b4 = 98
- 5.20.1.104 INTEGER, parameter, public messy_cm_n_photol_mem::ip_se_O2_b1 = 93
- 5.20.1.105 INTEGER, parameter, public messy_cm_n_photol_mem::ip_se_O2_b2 = 94
- 5.20.1.106 INTEGER, parameter, public messy_cm_n_photol_mem::ip_se_Op_em = 99
- 5.20.1.107 INTEGER, parameter, public messy_cm_n_photol_mem::ip_SF6 = 65
- 5.20.1.108 INTEGER, parameter, public messy_cm_n_photol_mem::ip_SO2 = 51
- 5.20.1.109 INTEGER, parameter, public messy_cm_n_photol_mem::ip_SO3 = 52
- 5.20.1.110 CHARACTER(LEN=9), dimension(ip_max), parameter, public
 messy_cm_n_photol_mem::jname = (/ 'O2', 'O3P', 'O1D', 'H2O2', 'NO2',
 'NO2O', 'NOO2', 'N2O5', 'HNO3', 'HNO4', 'PAN', 'HONO', 'CH3OOH', 'COH2',
 'CHOH', 'CH3CO3H', 'CH3CHO', 'CH3COCH3', 'MGLYOX', 'HOCl', 'OCIO', 'Cl2O2',
 'ClNO3', 'ClNO2', 'Cl2', 'BrO', 'HOBr', 'BrCl', 'BrNO3', 'BrNO2', 'Br2', 'CCl4',
 'CH3Cl', 'CH3CCl3', 'CFCl3', 'CF2Cl2', 'CH3Br', 'CF2ClBr', 'CF3Br', 'CH3I', 'C3H7I',
 'CH2ClI', 'CH2I2', 'IO', 'HOI', 'I2', 'ICI', 'IBr', 'INO2', 'INO3', 'SO2', 'SO3',
 'OCS', 'CS2', 'H2O', 'N2O', 'NO', 'CO2', 'HCl', 'CHCl2Br', 'CHClBr2', 'CH2ClBr',
 'CH2Br2', 'CHBr3', 'SF6', 'NO3NOO', 'ClONO2', 'MACR', 'MVK', 'GLYOX',
 'HOCH2CHO', 'CH4', 'O2_b1b2', 'O2_b1', 'O2_b2', 'O3PO1D', 'O3Pp', 'H2O1D',
 'N2', 'N2_b1', 'N2_b2', 'N2_b3', 'NN2D', 'NOp', 'Op_em', 'O2p_em', 'Op_O_em',
 'N2p_em', 'Np_N_em', 'Np_N2D_em', 'N_N2D_em', 'Op_em_b', 'se_O2_b1', 'se_O2_b2',
 'se_N2_b1', 'se_N2_b2', 'se_N2_b3', 'se_N2_b4', 'se_Op_em', 'O2_aurq', 'N2_aurq',
 'H2SO4', 'C3O2', 'CH3NO3', 'CH3O2NO2', 'CH3ONO', 'CH3O2', 'HCOOH' /)

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_cmn_photol_mem.f90](#)

5.21 messy_e4chem Module Reference

Public Member Functions

- subroutine, public [CHEMICS](#) (KLON, KLEV, JROW, PTEMP, PQ, Conc, PAPP1, PAPHP1, DANI, DANIM, RJ_O3P, RJ_O1D, RJ_NO2, RJ_HNO3, RJ_COH2, RJ_CHOH, RJ_N2O5, RJ_HNO4, RJ_NO2O, RJ_NOO2, RJ_H2O2, RJ_CH3OOH, RJ_O2, RJ_CFC11, RJ_CFC12, RJ_N2O, RJ_CLONO2, RJ_CL2O2, RJ_HOCL, RJ_CCL4, RJ_CH3CL, RJ_CH3CCL3, RJ_HCL, RJ_H2O, RJ_NO, RJ_CO2, zlat, IMONTH, DTIME, tp_i, ZDELTAO3_BRV, ZPRODO2, ZPRODCO, ZPRODCH4, ZDESTH12, ZDESTH14, ZDESTN13, ZDESTC1, ZDESTCL2O2, ZDESTCLOH, ZDESTH8, ZDESTH4, ZDESTH11, ZDESTO1)
- subroutine, public [INRCGAS](#)
- subroutine, public [inisulnew](#) (latitude, nproma, ngpblks, npromz, vnpromz)
- subroutine, public [CLSCAV](#) (Conc, PTMST, PRHOA, PDP, zmrateg, zfpreg, zfevap, zclcover, zmlwc, cvdprec, kconbot, PT, NLON, NLEV)
- subroutine, public [e4chem_read_nml_ctrl](#) (status, iou)

Public Attributes

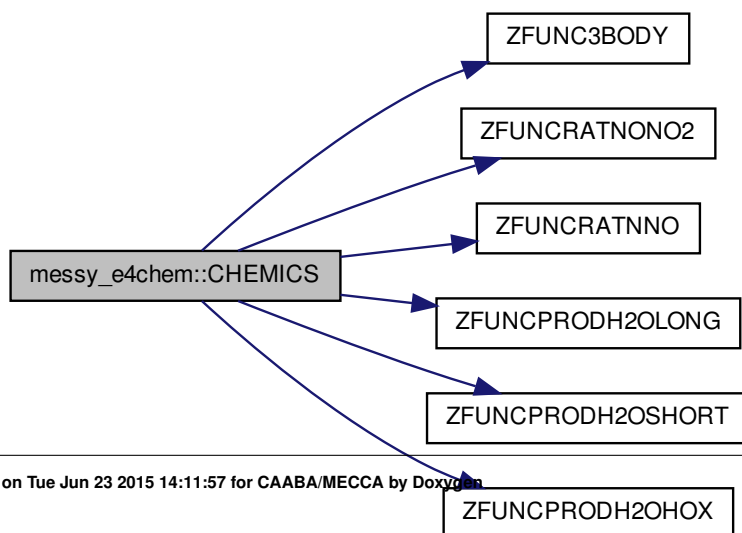
- CHARACTER(LEN=*), parameter, public [modstr](#) = 'e4chem'
- CHARACTER(LEN=*), parameter, public [modver](#) = '1.0'
- LOGICAL, public [l_fastscav](#) = .FALSE.
- LOGICAL, public [l_Brparam](#) = .FALSE.
- INTEGER, public [NSTCHPH](#) = 1
- INTEGER, parameter, public [NSPEC](#) = 39
- INTEGER, parameter, public [ind_H](#) = 1
- INTEGER, parameter, public [ind_OH](#) = 2
- INTEGER, parameter, public [ind_HO2](#) = 3
- INTEGER, parameter, public [ind_N](#) = 4
- INTEGER, parameter, public [ind_NO](#) = 5
- INTEGER, parameter, public [ind_NO2](#) = 6
- INTEGER, parameter, public [ind_NO3](#) = 7
- INTEGER, parameter, public [ind_N2O5](#) = 8
- INTEGER, parameter, public [ind_HNO4](#) = 9
- INTEGER, parameter, public [ind_CL](#) = 10
- INTEGER, parameter, public [ind_CLO](#) = 11
- INTEGER, parameter, public [ind_HOCl](#) = 12
- INTEGER, parameter, public [ind_CL2O2](#) = 13
- INTEGER, parameter, public [ind_CL2](#) = 14
- INTEGER, parameter, public [ind_HCHO](#) = 15
- INTEGER, parameter, public [ind_CH3O2](#) = 16

- INTEGER, parameter, public `ind_CH4` = 17
- INTEGER, parameter, public `ind_N2O` = 18
- INTEGER, parameter, public `ind_H2O2` = 19
- INTEGER, parameter, public `ind_HCl` = 20
- INTEGER, parameter, public `ind_CO` = 21
- INTEGER, parameter, public `ind_CH3OOH` = 22
- INTEGER, parameter, public `ind_CINO3` = 23
- INTEGER, parameter, public `ind_CFCI3` = 24
- INTEGER, parameter, public `ind_CF2CI2` = 25
- INTEGER, parameter, public `ind_CH3CL` = 26
- INTEGER, parameter, public `ind_CCL4` = 27
- INTEGER, parameter, public `ind_CH3CCL3` = 28
- INTEGER, parameter, public `ind_H2` = 29
- INTEGER, parameter, public `ind_HNO3` = 30
- INTEGER, parameter, public `ind_NAT` = 31
- INTEGER, parameter, public `ind_OHAB` = 32
- INTEGER, parameter, public `ind_HO2AB` = 33
- INTEGER, parameter, public `ind_ICE` = 34
- INTEGER, parameter, public `ind_H2O` = 35
- INTEGER, parameter, public `ind_O3P` = 36
- INTEGER, parameter, public `ind_O3` = 37
- INTEGER, parameter, public `ind_O1D` = 38
- INTEGER, parameter, public `ind_CO2` = 39
- INTEGER, parameter, public `JVALS` = 4
- INTEGER, parameter, public `NUMRAT` = 67
- INTEGER, parameter, public `IRCTMIN` = 150
- INTEGER, parameter, public `IRCTMAX` = 320
- INTEGER, parameter, public `JDIFTE` = `IRCTMAX - IRCTMIN`
- INTEGER, parameter, public `NUMTEM` = `JDIFTE * JVALS + 1`
- REAL(dp), dimension(:,:), allocatable, save, public `RCGAS`
- REAL(dp), dimension(:,:), allocatable, save, public `sulook`
- INTEGER, parameter, public `ksul` = 177
- CHARACTER(LEN=32), dimension(39), parameter, public `SPC_NAMES` = (/ 'H', 'OH', 'HO2', 'N', 'NO', 'NO2', 'NO3', 'N2O5', 'HNO4', 'CL', 'CLO', 'HOCl', 'CL2O2', 'CL2', 'HCHO', 'CH3O2', 'CH4', 'N2O', 'H2O2', 'HCl', 'CO', 'CH3OOH', 'CINO3', 'CFCI3', 'CF2CI2', 'CH3CL', 'CCL4', 'CH3CCL3', 'H2', 'HNO3', 'NAT', 'OHAB', 'HO2AB', 'ICE', 'H2O', 'O3P', 'O3', 'O1D', 'CO2' /)

5.21.1 Member Function/Subroutine Documentation

5.21.1.1 subroutine, public messy_e4chem::CHEMICS (INTEGER, intent(in) *KLON*,
 INTEGER, intent(in) *KLEV*, INTEGER, intent(in) *JROW*, REAL(DP), dimension(:,:),
 intent(in) *PTEMP*, REAL(DP), dimension(:,:), intent(in) *PQ*, REAL(DP), dimension(:,:),
 intent(inout) *Conc*, REAL(dp), dimension(:,:), intent(in) *PAPP1*, REAL(dp),
 dimension(:,:), intent(in) *PAPHP1*, REAL(dp), dimension(:,:), intent(in) *DANI*, REAL(dp),
 dimension(:,:), intent(in) *DANIM*, REAL(DP), dimension(:,:), intent(in) *RJ_O3P*, REAL(DP),
 dimension(:,:), intent(in) *RJ_O1D*, REAL(DP), dimension(:,:), intent(in) *RJ_NO2*,
 REAL(DP), dimension(:,:), intent(in) *RJ_HNO3*, REAL(DP), dimension(:,:), intent(in)
RJ_COH2, REAL(DP), dimension(:,:), intent(in) *RJ_CHOH*, REAL(DP), dimension(:,:),
 intent(in) *RJ_N2O5*, REAL(DP), dimension(:,:), intent(in) *RJ_HNO4*, REAL(DP),
 dimension(:,:), intent(in) *RJ_NO2O*, REAL(DP), dimension(:,:), intent(in) *RJ_NOO2*,
 REAL(DP), dimension(:,:), intent(in) *RJ_H2O2*, REAL(DP), dimension(:,:), intent(in)
RJ_CH3OOH, REAL(DP), dimension(:,:), intent(in) *RJ_O2*, REAL(DP), dimension(:,:),
 intent(in) *RJ_CFC11*, REAL(DP), dimension(:,:), intent(in) *RJ_CFC12*, REAL(DP),
 dimension(:,:), intent(in) *RJ_N2O*, REAL(DP), dimension(:,:), intent(in) *RJ_CLONO2*,
 REAL(DP), dimension(:,:), intent(in) *RJ_CL2O2*, REAL(DP), dimension(:,:), intent(in)
RJ_HOCL, REAL(DP), dimension(:,:), intent(in) *RJ_CCL4*, REAL(DP), dimension(:,:),
 intent(in) *RJ_CH3CL*, REAL(DP), dimension(:,:), intent(in) *RJ_CH3CCL3*, REAL(DP),
 dimension(:,:), intent(in) *RJ_HCL*, REAL(DP), dimension(:,:), intent(in) *RJ_H2O*,
 REAL(DP), dimension(:,:), intent(in) *RJ_NO*, REAL(DP), dimension(:,:), intent(in)
RJ_CO2, REAL(dp), dimension(:,:), intent(in) *zlat*, INTEGER, intent(in) *IMONTH*,
 REAL(dp), intent(in) *DTIME*, REAL(dp), dimension(:,:), intent(in) *tp_i*, REAL(dp),
 dimension(:,:), intent(inout) *ZDELTAO3_BRV*, REAL(dp), dimension(:,:), intent(inout)
ZPRODO2, REAL(dp), dimension(:,:), intent(inout) *ZPRODCO*, REAL(dp), dimension(:,:),
 intent(inout) *ZPRODCH4*, REAL(dp), dimension(:,:), intent(inout) *ZDESTH12*, REAL(dp),
 dimension(:,:), intent(inout) *ZDESTH14*, REAL(dp), dimension(:,:), intent(inout)
ZDESTN13, REAL(dp), dimension(:,:), intent(inout) *ZDESTC1*, REAL(dp), dimension(:,:),
 intent(inout) *ZDESTCL2O2*, REAL(dp), dimension(:,:), intent(inout) *ZDESTCLOH*,
 REAL(dp), dimension(:,:), intent(inout) *ZDESTH8*, REAL(dp), dimension(:,:), intent(inout)
ZDESTH4, REAL(dp), dimension(:,:), intent(inout) *ZDESTH11*, REAL(dp), dimension(:,:),
 intent(inout) *ZDESTO1*)

Here is the call graph for this function:



5.21.1.2 subroutine, public messy_e4chem::CLSCAV (REAL(dp),
dimension(nlon,nlev,nspec), intent(inout) *Conc*, REAL(dp), intent(in) *PTMST*, REAL(dp),
dimension(nlon,nlev), intent(in) *PRHOA*, REAL(dp), dimension(nlon,nlev), intent(in) *PDP*,
REAL(dp), dimension(nlon,nlev), intent(in) *zmrates*, REAL(dp), dimension(nlon,nlev),
intent(in) *zfpres*, REAL(dp), dimension(nlon,nlev), intent(in) *zfevap*, REAL(dp),
dimension(nlon,nlev), intent(in) *zclcover*, REAL(dp), dimension(nlon,nlev), intent(in)
zmlwc, REAL(dp), dimension(nlon,nlev), intent(in) *cvdprec*, REAL(dp), dimension(nlon),
intent(in) *kconbot*, REAL(dp), dimension(nlon,nlev), intent(in) *PT*, INTEGER, intent(in)
NLON, INTEGER, intent(in) *NLEV*)

5.21.1.3 subroutine, public messy_e4chem::e4chem_read_nml_ctrl (INTEGER,
intent(out) *status*, INTEGER, intent(in) *iou*)

5.21.1.4 subroutine, public messy_e4chem::inisulnew (REAL(dp), dimension(:,:),
intent(in) *latitude*, INTEGER, intent(in) *nproma*, INTEGER, intent(in) *ngpblks*, INTEGER,
intent(in), optional *npromz*, INTEGER, dimension(:), intent(in), optional *vnpromz*)

5.21.1.5 subroutine, public messy_e4chem::INRCGAS ()

5.21.2 Member Data Documentation

5.21.2.1 INTEGER, parameter, public messy_e4chem::ind_CCL4 = 27

5.21.2.2 INTEGER, parameter, public messy_e4chem::ind_CF2Cl2 = 25

5.21.2.3 INTEGER, parameter, public messy_e4chem::ind_CFCI3 = 24

5.21.2.4 INTEGER, parameter, public messy_e4chem::ind_CH3CCL3 = 28

5.21.2.5 INTEGER, parameter, public messy_e4chem::ind_CH3CL = 26

5.21.2.6 INTEGER, parameter, public messy_e4chem::ind_CH3O2 = 16

5.21.2.7 INTEGER, parameter, public messy_e4chem::ind_CH3OOH = 22

5.21.2.8 INTEGER, parameter, public messy_e4chem::ind_CH4 = 17

5.21.2.9 INTEGER, parameter, public messy_e4chem::ind_CL = 10

5.21.2.10 INTEGER, parameter, public messy_e4chem::ind_CL2 = 14

5.21.2.11 INTEGER, parameter, public messy_e4chem::ind_CL2O2 = 13

5.21.2.12 INTEGER, parameter, public messy_e4chem::ind_CINO3 = 23

5.21.2.13 INTEGER, parameter, public messy_e4chem::ind_CLO = 11

- 5.21.2.14 INTEGER, parameter, public messy_e4chem::ind_CO = 21
- 5.21.2.15 INTEGER, parameter, public messy_e4chem::ind_CO2 = 39
- 5.21.2.16 INTEGER, parameter, public messy_e4chem::ind_H = 1
- 5.21.2.17 INTEGER, parameter, public messy_e4chem::ind_H2 = 29
- 5.21.2.18 INTEGER, parameter, public messy_e4chem::ind_H2O = 35
- 5.21.2.19 INTEGER, parameter, public messy_e4chem::ind_H2O2 = 19
- 5.21.2.20 INTEGER, parameter, public messy_e4chem::ind_HCHO = 15
- 5.21.2.21 INTEGER, parameter, public messy_e4chem::ind_HCl = 20
- 5.21.2.22 INTEGER, parameter, public messy_e4chem::ind_HNO3 = 30
- 5.21.2.23 INTEGER, parameter, public messy_e4chem::ind_HNO4 = 9
- 5.21.2.24 INTEGER, parameter, public messy_e4chem::ind_HO2 = 3
- 5.21.2.25 INTEGER, parameter, public messy_e4chem::ind_HO2AB = 33
- 5.21.2.26 INTEGER, parameter, public messy_e4chem::ind_HOCl = 12
- 5.21.2.27 INTEGER, parameter, public messy_e4chem::ind_ICE = 34
- 5.21.2.28 INTEGER, parameter, public messy_e4chem::ind_N = 4
- 5.21.2.29 INTEGER, parameter, public messy_e4chem::ind_N2O = 18
- 5.21.2.30 INTEGER, parameter, public messy_e4chem::ind_N2O5 = 8
- 5.21.2.31 INTEGER, parameter, public messy_e4chem::ind_NAT = 31
- 5.21.2.32 INTEGER, parameter, public messy_e4chem::ind_NO = 5
- 5.21.2.33 INTEGER, parameter, public messy_e4chem::ind_NO2 = 6
- 5.21.2.34 INTEGER, parameter, public messy_e4chem::ind_NO3 = 7
- 5.21.2.35 INTEGER, parameter, public messy_e4chem::ind_O1D = 38
- 5.21.2.36 INTEGER, parameter, public messy_e4chem::ind_O3 = 37
- 5.21.2.37 INTEGER, parameter, public messy_e4chem::ind_O3P = 36

- 5.21.2.38 INTEGER, parameter, public messy_e4chem::ind_OH = 2
- 5.21.2.39 INTEGER, parameter, public messy_e4chem::ind_OHAB = 32
- 5.21.2.40 INTEGER, parameter, public messy_e4chem::IRCTMAX = 320
- 5.21.2.41 INTEGER, parameter, public messy_e4chem::IRCTMIN = 150
- 5.21.2.42 INTEGER, parameter, public messy_e4chem::JDIFTE = IRCTMAX - IRCTMIN
- 5.21.2.43 INTEGER, parameter, public messy_e4chem::JVALS = 4
- 5.21.2.44 INTEGER, parameter, public messy_e4chem::ksul = 177
- 5.21.2.45 LOGICAL, public messy_e4chem::l_Brparam = .FALSE.
- 5.21.2.46 LOGICAL, public messy_e4chem::l_fastscav = .FALSE.
- 5.21.2.47 CHARACTER(LEN=*), parameter, public messy_e4chem::modstr = 'e4chem'
- 5.21.2.48 CHARACTER(LEN=*), parameter, public messy_e4chem::modver = '1.0'
- 5.21.2.49 INTEGER, parameter, public messy_e4chem::NSPEC = 39
- 5.21.2.50 INTEGER, public messy_e4chem::NSTCHPH = 1
- 5.21.2.51 INTEGER, parameter, public messy_e4chem::NUMRAT = 67
- 5.21.2.52 INTEGER, parameter, public messy_e4chem::NUMTEM = JDIFTE * JVALS + 1
- 5.21.2.53 REAL(dp), dimension(:,:), allocatable, save, public messy_e4chem::RCGAS
- 5.21.2.54 CHARACTER(LEN=32), dimension(39), parameter, public
 messy_e4chem::SPC_NAMES = (/ 'H','OH','HO2','N','NO','NO2','NO3','N2O5',
 'HNO4','CL','CLO','HOCl','CL2O2','CL2','HCHO','CH3O2','CH4','N2O','H2O2',
 'HCl','CO','CH3OOH','CINO3','CFCI3','CF2CI2','CH3CL','CCL4','CH3CCL3','H2',
 'HNO3','NAT','OHAB','HO2AB','ICE','H2O','O3P','O3','O1D','CO2'/)
- 5.21.2.55 REAL(dp), dimension(:,:), allocatable, save, public messy_e4chem::sulook

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_e4chem.f90](#)

5.22 messy_e4chem_box Module Reference

Public Member Functions

- subroutine, public [e4chem_init](#)
- subroutine [x0](#)
- subroutine, public [e4chem_physc](#)
- subroutine, public [e4chem_result](#)
- subroutine, public [e4chem_finish](#)

Public Attributes

- REAL(DP), dimension(ip_max) [jx](#) = 0.
- REAL(DP), dimension(:), allocatable [lwc](#)
- INTEGER [ncid_tracer](#)
- INTEGER [ncid_spec](#)
- INTEGER [ncid_diag](#)
- INTEGER, parameter [NDIAG](#) = 14
- CHARACTER(LEN=32), parameter [DIAG_NAMES](#) = (/ 'ZDELTAO3_BRV ', 'ZP-RODO2 ', 'ZPRODCH4 ', 'ZDESTH12 ', 'ZDESTH14 ', 'ZDEST-N13 ', 'ZDESTC1 ', 'ZDESTCL2O2 ', 'ZDESTCLOH ', 'ZDESTH8 ', 'ZDESTH4 ', 'ZDESTH11 ', 'ZDESTO1 ' /)
- CHARACTER(LEN=20), dimension(ndiag) [unit_diag](#)
- REAL(dp), dimension(ndiag) [zdiag](#)
- REAL(dp), dimension(:), allocatable [DANI](#)
- REAL(dp), dimension(:), allocatable [DANIM](#)

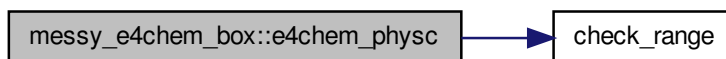
5.22.1 Member Function/Subroutine Documentation

5.22.1.1 subroutine, public messy_e4chem_box::e4chem_finish ()

5.22.1.2 subroutine, public messy_e4chem_box::e4chem_init ()

5.22.1.3 subroutine, public messy_e4chem_box::e4chem_physc ()

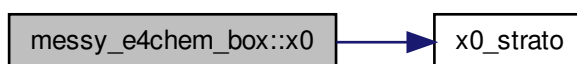
Here is the call graph for this function:



5.22.1.4 subroutine, public messy_e4chem_box::e4chem_result ()

5.22.1.5 subroutine messy_e4chem_box::x0 ()

Here is the call graph for this function:



5.22.2 Member Data Documentation

5.22.2.1 REAL(dp), dimension(:), allocatable messy_e4chem_box::DANI

5.22.2.2 REAL(dp), dimension(:), allocatable messy_e4chem_box::DANIM

5.22.2.3 CHARACTER(LEN=32), parameter messy_e4chem_box::DIAG_NAMES = (/ 'ZDELTAO3_BRV', 'ZPRODO2', 'ZPRODCO', 'ZPRODCH4', 'ZDESTH12', 'ZDESTH14', 'ZDESTN13', 'ZDESTC1', 'ZDESTCL2O2', 'ZDESTCLOH', 'ZDESTH8', 'ZDESTH4', 'ZDESTH11', 'ZDESTO1' /)

5.22.2.4 REAL(DP), dimension(ip_max) messy_e4chem_box::jx = 0.

5.22.2.5 REAL(DP), dimension(:), allocatable messy_e4chem_box::lwc

5.22.2.6 INTEGER messy_e4chem_box::ncid_diag

5.22.2.7 INTEGER messy_e4chem_box::ncid_spec

5.22.2.8 INTEGER messy_e4chem_box::ncid_tracer

5.22.2.9 INTEGER, parameter messy_e4chem_box::NDIAG = 14

5.22.2.10 CHARACTER(LEN=20), dimension(ndiag) messy_e4chem_box::unit_diag

5.22.2.11 REAL(dp), dimension(ndiag) messy_e4chem_box::zdiag

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_e4chem_box.f90

5.23 messy_jval Module Reference

Public Member Functions

- subroutine, public [aerosol_data](#)
- subroutine, public [combine_o3_fields](#) (input_O3, press_2d, press_h, o3_h, v3_h, o3_2d, v3_2d)
- subroutine, public [jvalues](#) (v3_2d, cossza_1d, press_2d, relo3_2d, rhum_2d, temp_2d, albedo_1d, aclc_2d, slf_1d, clp_2d, lmidatm, l_heating, pbllev)
- subroutine, public [jval_read_nml_ctrl](#) (status, iou)
- subroutine, public [jval_solar_time_control](#) (status, cdisse, val)

Public Attributes

- CHARACTER(LEN=*), parameter, public [modstr](#) = 'jval'
- CHARACTER(LEN=*), parameter, public [modver](#) = '14'
- INTEGER, save, public [qy_CH3COCH3](#) = 1
- REAL(DP), save, public [r_sol](#) = 0.5_dp
- LOGICAL, dimension(ip_max), save, public [lp](#) = .FALSE.
- TYPE(PTR_2D_ARRAY), dimension(:), pointer, save, public [jval_2d](#)
- REAL(dp), dimension(:,:), pointer, public [rh_o2_2d](#)
- REAL(dp), dimension(:,:), pointer, public [rh_o3_2d](#)
- REAL(dp), dimension(:,:), pointer, public [fhuv_2d](#)
- REAL(dp), dimension(:,:), pointer, public [fhuvdna_2d](#)

Private Member Functions

- subroutine [jval_cal_uv](#)
- REAL function [p1](#) (c0, c1, x)
- REAL function [p2](#) (c0, c1, c2, x)
- REAL function [p3](#) (c0, c1, c2, c3, x)

Private Attributes

- INTEGER, parameter [MAXWAV](#) = 7
- INTEGER, parameter [dim55](#) = 55
- INTEGER, parameter [dim58](#) = 58
- REAL, dimension(maxwav, 8, 4) [aext](#)
- REAL, dimension(maxwav, 8, 4) [asca](#)
- REAL, dimension(maxwav, 8, 4) [aabs](#)
- REAL, dimension(maxwav, 8, 4) [ag](#)
- REAL, dimension(maxwav), save [flux](#)
- REAL, dimension(maxwav), parameter [crray](#) = (/ 3.1995E-25, 6.7791E-26, 5.-4920E-26, 4.9733E-26, 4.2781E-26, 2.3131E-26, 3.6810E-27 /)
- REAL, dimension(maxwav), save [f0](#)

- REAL, save [SR_toa_flux](#)
- REAL, save [phi_la](#)
- INTEGER [klev](#)
- INTEGER [kproma_day](#)
- REAL, parameter [press_ref](#) = 1.E4
- REAL, parameter [dens_ref](#) = PRESS_REF/(k_B* 250.)*1.E-6
- REAL, dimension(3), parameter [b_la](#) = (/ 6.84310E-01, 2.29821E-01, 8.65412E-02 /)
- REAL, dimension(3), parameter [c_la](#) = (/ 8.22114E-21, 1.77556E-20, 8.22112E-21 /)
- REAL, dimension(3), parameter [d_la](#) = (/ 6.00730E-21, 4.28569E-21, 1.28059E-20 /)
- REAL, dimension(3), parameter [e_la](#) = (/ 8.21666E-21, 1.63296E-20, 4.85121E-17 /)
- INTEGER, dimension(:), allocatable [iu0](#)
- REAL, dimension(:,:), allocatable [temp](#)
- REAL, dimension(:,:), allocatable [press](#)
- REAL, dimension(:,:), allocatable [v2s_m](#)
- REAL, dimension(:,:), allocatable [v3_du1](#)
- REAL, dimension(:,:), allocatable [v3_du2](#)
- REAL, dimension(:,:), allocatable [dlv2](#)
- REAL, dimension(:,:), allocatable [dens](#)
- REAL, dimension(:,:), allocatable [fint](#)
- REAL, dimension(:,:), allocatable [finth](#)
- REAL, dimension(:,:), allocatable [fj_corr](#)
- REAL, dimension(:,:), allocatable [tnorm_sr](#)
- REAL, dimension(:,:), allocatable [tnorm](#)
- INTEGER, dimension(:,:), allocatable [i0](#)
- INTEGER, dimension(:,:), allocatable [i1](#)
- INTEGER, dimension(:,:), allocatable [i2](#)
- INTEGER, dimension(:,:), allocatable [i3](#)
- REAL, dimension(:,:), allocatable [sig_top_o2](#)
- REAL, dimension(:,:), allocatable [sig_top_o3](#)
- REAL, dimension(:,:), allocatable [r_m](#)
- REAL, dimension(:,:), allocatable [r_o2](#)
- REAL, dimension(maxwav), parameter [fmax](#) = (/ 2.5400E+12, 2.2200E+14, 7.-4700E+13, 8.9700E+13, 1.2600E+14, 1.1100E+15, 2.6700E+15/)
- REAL, dimension(maxwav), parameter [fmin](#) = (/ 2.3400E+12, 2.2100E+14, 7.-4300E+13, 8.9200E+13, 1.2600E+14, 1.1100E+15, 2.6700E+15/)
- REAL, dimension(maxwav), parameter [f0max](#) = (/6.97E+01, 5.1333, 1.7116E+01, 8.930, 2.6699E+01, 18.62, 48.184/)
- REAL, dimension(maxwav), parameter [f0min](#) = (/7.2679E+01, 5.0584E+00, 1.-7139E+01, 8.9395E+00, 2.6714E+01, 1.8595E+01, 4.8184E+01/)

5.23.1 Member Function/Subroutine Documentation

5.23.1.1 subroutine, public messy_jval::aerosol_data ()

5.23.1.2 subroutine, public messy_jval::combine_o3_fields (REAL(DP), dimension(:,:),
intent(in) *input_O3*, REAL(DP), dimension(:,:), intent(in) *press_2d*, REAL(DP),
dimension(:,:), intent(in) *press_h*, REAL(DP), dimension(:,:), intent(in) *o3_h*, REAL(DP),
dimension(:,:), intent(in) *v3_h*, REAL(DP), dimension(:,:), intent(out) *o3_2d*, REAL(DP),
dimension(:,:), intent(out) *v3_2d*)

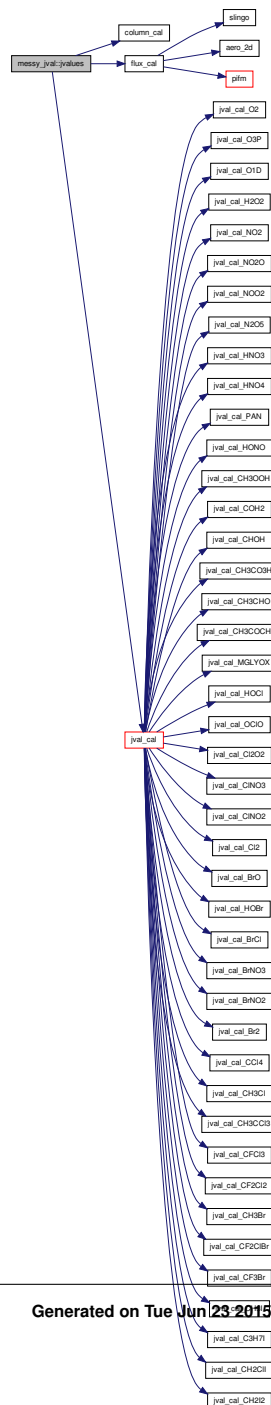
5.23.1.3 subroutine messy_jval::jval_cal_uv () [private]

5.23.1.4 subroutine, public messy_jval::jval_read_nml_ctrl (INTEGER, intent(out) *status*,
INTEGER, intent(in) *iou*)

5.23.1.5 subroutine, public messy_jval::jval_solar_time_control (INTEGER, intent(out)
status, REAL(DP), intent(in) *cdisse*, REAL(DP), dimension(:), intent(in), optional *val*)

5.23.1.6 subroutine, public messy_jval::jvalues (REAL, dimension(:,:), intent(in) *v3_2d*, REAL, dimension(:), intent(in) *cosza_1d*, REAL, dimension(:,:), intent(in) *press_2d*, REAL, dimension(:,:), intent(in) *relo3_2d*, REAL, dimension(:,:), intent(in) *rhum_2d*, REAL, dimension(:,:), intent(in) *temp_2d*, REAL, dimension(:), intent(in) *albedo_1d*, REAL, dimension(:,:), intent(in) *aclc_2d*, REAL, dimension(:), intent(in) *slf_1d*, REAL, dimension(:,:), intent(in) *clp_2d*, LOGICAL, intent(in) *lmidatm*, LOGICAL, intent(in) *l_heating*, INTEGER, intent(in) *pbllev*)

Here is the call graph for this function:



5.23.1.7 REAL function messy_jval::p1 (REAL *c0*, REAL *c1*, REAL *x*) [private]

5.23.1.8 REAL function messy_jval::p2 (REAL *c0*, REAL *c1*, REAL *c2*, REAL *x*)
[private]

5.23.1.9 REAL function messy_jval::p3 (REAL *c0*, REAL *c1*, REAL *c2*, REAL *c3*, REAL *x*)
[private]

5.23.2 Member Data Documentation

5.23.2.1 REAL, dimension(maxwav,8,4) messy_jval::aabs [private]

5.23.2.2 REAL, dimension(maxwav,8,4) messy_jval::aext [private]

5.23.2.3 REAL, dimension(maxwav,8,4) messy_jval::ag [private]

5.23.2.4 REAL, dimension(maxwav,8,4) messy_jval::asca [private]

5.23.2.5 REAL, dimension(3), parameter messy_jval::b_la = (/ 6.84310E-01, 2.29821E-01,
8.65412E-02 /) [private]

5.23.2.6 REAL, dimension(3), parameter messy_jval::c_la = (/ 8.22114E-21, 1.77556E-20,
8.22112E-21 /) [private]

5.23.2.7 REAL, dimension(maxwav), parameter messy_jval::crray = (/ 3.1995E-25, 6.7791E-26,
5.4920E-26, 4.9733E-26, 4.2781E-26, 2.3131E-26, 3.6810E-27 /) [private]

5.23.2.8 REAL, dimension(3), parameter messy_jval::d_la = (/ 6.00730E-21, 4.28569E-21,
1.28059E-20 /) [private]

5.23.2.9 REAL, dimension(:,:), allocatable messy_jval::dens [private]

5.23.2.10 REAL, parameter messy_jval::dens_ref = PRESS_REF/(k_B* 250.)*1.E-6
[private]

5.23.2.11 INTEGER, parameter messy_jval::dim55 = 55 [private]

5.23.2.12 INTEGER, parameter messy_jval::dim58 = 58 [private]

5.23.2.13 REAL, dimension(:,:), allocatable messy_jval::dlv2 [private]

5.23.2.14 REAL, dimension(3), parameter messy_jval::e_la = (/ 8.21666E-21, 1.63296E-20,
4.85121E-17 /) [private]

5.23.2.15 REAL, dimension(maxwav), save messy_jval::f0 [private]

- 5.23.2.16 REAL, dimension(maxwav), parameter messy_jval::f0max = (/6.97E+01, 5.1333, 1.7116E+01, 8.930, 2.6699E+01, 18.62, 48.184/) [private]
- 5.23.2.17 REAL, dimension(maxwav), parameter messy_jval::f0min = (/7.2679E+01, 5.0584E+00, 1.7139E+01, 8.9395E+00, 2.6714E+01, 1.8595E+01, 4.8184E+01/) [private]
- 5.23.2.18 REAL(dp), dimension(:, :), pointer, public messy_jval::fhuv_2d
- 5.23.2.19 REAL(dp), dimension(:, :), pointer, public messy_jval::fhuvdna_2d
- 5.23.2.20 REAL, dimension(:, :, :), allocatable messy_jval::fint [private]
- 5.23.2.21 REAL, dimension(:, :, :), allocatable messy_jval::fint_h [private]
- 5.23.2.22 REAL, dimension(:, :), allocatable messy_jval::fj_corr [private]
- 5.23.2.23 REAL, dimension(maxwav), save messy_jval::flux [private]
- 5.23.2.24 REAL, dimension(maxwav), parameter messy_jval::fmax = (/ 2.5400E+12, 2.2200E+14, 7.4700E+13, 8.9700E+13, 1.2600E+14, 1.1100E+15, 2.6700E+15/) [private]
- 5.23.2.25 REAL, dimension(maxwav), parameter messy_jval::fmin = (/ 2.3400E+12, 2.2100E+14, 7.4300E+13, 8.9200E+13, 1.2600E+14, 1.1100E+15, 2.6700E+15/) [private]
- 5.23.2.26 INTEGER, dimension(:, :), allocatable messy_jval::i0 [private]
- 5.23.2.27 INTEGER, dimension(:, :), allocatable messy_jval::i1 [private]
- 5.23.2.28 INTEGER, dimension(:, :), allocatable messy_jval::i2 [private]
- 5.23.2.29 INTEGER, dimension(:, :), allocatable messy_jval::i3 [private]
- 5.23.2.30 INTEGER, dimension(:), allocatable messy_jval::iu0 [private]
- 5.23.2.31 TYPE(PTR_2D_ARRAY), dimension(:), pointer, save, public messy_jval::jval_2d
- 5.23.2.32 INTEGER messy_jval::klev [private]
- 5.23.2.33 INTEGER messy_jval::kproma_day [private]
- 5.23.2.34 LOGICAL, dimension(ip_max), save, public messy_jval::lp = .FALSE.
- 5.23.2.35 INTEGER, parameter messy_jval::MAXWAV = 7 [private]
- 5.23.2.36 CHARACTER(LEN=*), parameter, public messy_jval::modstr = 'jval'

- 5.23.2.37 CHARACTER(LEN=*), parameter, public messy_jval::modver = '14'
- 5.23.2.38 REAL, save messy_jval::phi_la [private]
- 5.23.2.39 REAL, dimension(:,:), allocatable messy_jval::press [private]
- 5.23.2.40 REAL, parameter messy_jval::press_ref = 1.E4 [private]
- 5.23.2.41 INTEGER, save, public messy_jval::qy_CH3COCH3 = 1
- 5.23.2.42 REAL, dimension(:,:), allocatable messy_jval::r_m [private]
- 5.23.2.43 REAL, dimension(:,:), allocatable messy_jval::r_o2 [private]
- 5.23.2.44 REAL(DP), save, public messy_jval::r_sol = 0.5_dp
- 5.23.2.45 REAL(dp), dimension(:,:), pointer, public messy_jval::rh_o2_2d
- 5.23.2.46 REAL(dp), dimension(:,:), pointer, public messy_jval::rh_o3_2d
- 5.23.2.47 REAL, dimension(:,:), allocatable messy_jval::sig_top_o2 [private]
- 5.23.2.48 REAL, dimension(:,:), allocatable messy_jval::sig_top_o3 [private]
- 5.23.2.49 REAL, save messy_jval::SR_toa_flux [private]
- 5.23.2.50 REAL, dimension(:,:), allocatable messy_jval::temp [private]
- 5.23.2.51 REAL, dimension(:,:), allocatable messy_jval::tnorm [private]
- 5.23.2.52 REAL, dimension(:,:), allocatable messy_jval::tnorm_sr [private]
- 5.23.2.53 REAL, dimension(:,:), allocatable messy_jval::v2s_m [private]
- 5.23.2.54 REAL, dimension(:,:), allocatable messy_jval::v3_du1 [private]
- 5.23.2.55 REAL, dimension(:,:), allocatable messy_jval::v3_du2 [private]

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_jval.f90](#)

5.24 messy_jval_box Module Reference

Public Member Functions

- subroutine, public [jval_init](#)

- subroutine, public [jval_physc](#)
- subroutine, public [jval_finish](#)
- subroutine, public [jval_result](#)

Private Attributes

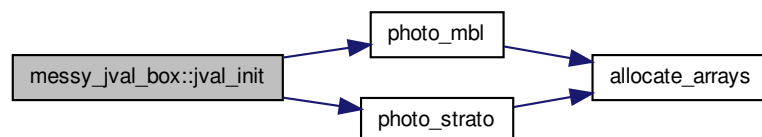
- INTEGER [ncid_jval](#)
- INTEGER, parameter [nsza](#) = 1
- INTEGER [nlev](#)
- REAL(DP), dimension(:, :), allocatable [v3](#)
- REAL(DP), dimension(:, :), allocatable [jpress](#)
- REAL(DP), dimension(:, :), allocatable [relo3](#)
- REAL(DP), dimension(:, :), allocatable [jrhum](#)
- REAL(DP), dimension(:, :), allocatable [jtemp](#)
- REAL(DP), dimension(:), allocatable [albedo](#)
- REAL(DP), dimension(:, :), allocatable [aclc](#)
- REAL(DP), dimension(:), allocatable [slf](#)
- REAL(DP), dimension(:, :), allocatable [clp](#)
- LOGICAL [lmidatm](#)
- LOGICAL [l_heating](#)
- INTEGER [pbllev](#)

5.24.1 Member Function/Subroutine Documentation

5.24.1.1 subroutine, public [messy_jval_box::jval_finish](#) ()

5.24.1.2 subroutine, public [messy_jval_box::jval_init](#) ()

Here is the call graph for this function:



5.24.1.3 subroutine, public messy_jval_box::jval_physc ()

5.24.1.4 subroutine, public messy_jval_box::jval_result ()

5.24.2 Member Data Documentation

5.24.2.1 REAL(DP), dimension(:,,:), allocatable messy_jval_box::aclc [private]

5.24.2.2 REAL(DP), dimension(:,), allocatable messy_jval_box::albedo [private]

5.24.2.3 REAL(DP), dimension(:,,:), allocatable messy_jval_box::clp [private]

5.24.2.4 REAL(DP), dimension(:,,:), allocatable messy_jval_box::jpress [private]

5.24.2.5 REAL(DP), dimension(:,,:), allocatable messy_jval_box::jrhumi [private]

5.24.2.6 REAL(DP), dimension(:,,:), allocatable messy_jval_box::jtemp [private]

5.24.2.7 LOGICAL messy_jval_box::l_heating [private]

5.24.2.8 LOGICAL messy_jval_box::lmidatm [private]

5.24.2.9 INTEGER messy_jval_box::ncid_jval [private]

5.24.2.10 INTEGER messy_jval_box::nlev [private]

5.24.2.11 INTEGER, parameter messy_jval_box::nsza = 1 [private]

5.24.2.12 INTEGER messy_jval_box::pbllev [private]

5.24.2.13 REAL(DP), dimension(:,,:), allocatable messy_jval_box::relo3 [private]

5.24.2.14 REAL(DP), dimension(:,), allocatable messy_jval_box::slf [private]

5.24.2.15 REAL(DP), dimension(:,,:), allocatable messy_jval_box::v3 [private]

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_jval_box.f90](#)

5.25 messy_main_blather Module Reference

Public Member Functions

- subroutine, public [start_message](#) (modstr, str, substr, l_print)
- subroutine, public [end_message](#) (modstr, str, substr, l_print)

- subroutine, public [info](#) (string, substr, *I_print*)
- subroutine, public [warning](#) (string, substr, *I_print*)

5.25.1 Member Function/Subroutine Documentation

- 5.25.1.1 subroutine, public `messy_main_blather::end_message` (CHARACTER(LEN=*),
intent(in) *modstr*, CHARACTER(LEN=*), intent(in) *str*, CHARACTER(LEN=*), intent(in)
substr, LOGICAL, intent(in), optional *I_print*)
- 5.25.1.2 subroutine, public `messy_main_blather::info` (CHARACTER(LEN=*), intent(in)
string, CHARACTER(LEN=*), intent(in), optional *substr*, LOGICAL, intent(in), optional
I_print)
- 5.25.1.3 subroutine, public `messy_main_blather::start_message` (CHARACTER(LEN=*),
intent(in) *modstr*, CHARACTER(LEN=*), intent(in) *str*, CHARACTER(LEN=*), intent(in)
substr, LOGICAL, intent(in), optional *I_print*)
- 5.25.1.4 subroutine, public `messy_main_blather::warning` (CHARACTER(LEN=*),
intent(in) *string*, CHARACTER(LEN=*), intent(in) *substr*, LOGICAL, intent(in), optional
I_print)

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_blather.f90](#)

5.26 messy_main_constants_mem Module Reference

Public Attributes

- CHARACTER(LEN=*), parameter [modstr](#) = 'MESSy'
- CHARACTER(LEN=*), parameter [modver](#) = 'd2.50s'
- INTEGER, parameter [sp](#) = SELECTED_REAL_KIND(6, 37)
- INTEGER, parameter [dp](#) = SELECTED_REAL_KIND(12, 307)
- INTEGER, parameter [i4](#) = SELECTED_INT_KIND(9)
- INTEGER, parameter [i8](#) = SELECTED_INT_KIND(14)
- INTEGER, parameter [wp](#) = [dp](#)
- REAL(DP), parameter [TINY_DP](#) = TINY(0._dp)
- REAL(DP), parameter [HUGE_DP](#) = HUGE(0._dp)
- REAL(DP), parameter [BIG_DP](#) = 1E40_dp
- INTEGER, parameter [nerr](#) = 6
- REAL(DP), parameter [FLAGGED_BAD](#) = -1.0E+34_dp
- CHARACTER(LEN=*), parameter [HLINE1](#) = '*****'
'*****'
- CHARACTER(LEN=*), parameter [HLINE2](#) = '-----'// '-----'
-----'

- CHARACTER(LEN=*), parameter `HLINE3` = '.....'//
'.....'
- INTEGER, parameter `STRLEN_SHORT` = 8
- INTEGER, parameter `STRLEN_MEDIUM` = 24
- INTEGER, parameter `STRLEN_LONG` = 64
- INTEGER, parameter `STRLEN_VLONG` = 80
- INTEGER, parameter `STRLEN_ULONG` = 256
- INTEGER, parameter `STRLEN_XLONG` = 512
- INTEGER, parameter `STRLEN_KPPSPECIES` = 15
- REAL(dp), parameter `pi` = 3.14159265358979323846_dp
- REAL(dp), parameter `R_gas` = 8.3144621_dp
- REAL(dp), parameter `h_Planck` = 6.62606957E34_dp
- REAL(dp), parameter `c_light` = 2.99792458E8_dp
- REAL(dp), parameter `stbo` = 5.670373E-8_dp
- REAL(dp), parameter `N_A` = 6.02214129E23_dp
- REAL(dp), parameter `N_A_kmol` = 6.02214129E26_dp
- REAL(dp), parameter `g` = 9.80665_dp
- REAL(dp), parameter `T0` = 298.15_dp
- REAL(dp), parameter `T0_INV` = 1._DP / `T0`
- REAL(dp), parameter `atm2Pa` = 101325._dp
- REAL(dp), parameter `cal2J` = 4.1868_dp
- REAL(dp), parameter `k_B` = 1.3806488E-23_dp
- REAL(dp), parameter `c_vKar` = 0.4_dp
- REAL(dp), parameter `stDTDZ` = 0.0065_dp
- REAL(dp), parameter `MH` = 1.01_dp
- REAL(dp), parameter `MD` = 2.01_dp
- REAL(dp), parameter `M13C` = 13.00_dp
- REAL(dp), parameter `M12C` = 12.00_dp
- REAL(dp), parameter `MC` = 12.01_dp
- REAL(dp), parameter `MN` = 14.01_dp
- REAL(dp), parameter `M18O` = 18.00_dp
- REAL(dp), parameter `MF` = 19.00_dp
- REAL(dp), parameter `MNa` = 22.99_dp
- REAL(dp), parameter `MO` = 16.00_dp
- REAL(dp), parameter `MS` = 32.07_dp
- REAL(dp), parameter `MCl` = 35.45_dp
- REAL(dp), parameter `MBr` = 79.90_dp
- REAL(dp), parameter `MI` = 126.90_dp
- REAL(dp), parameter `MHg` = 200.59_dp
- REAL(dp), parameter `M_O3` = `MO*3._dp`
- REAL(dp), parameter `M_O2` = `MO*2._dp`
- REAL(dp), parameter `M_H2O` = `MH*2._dp + MO`
- REAL(dp), parameter `M_HDO` = `MH + MD + MO`
- REAL(dp), parameter `M_HH18O` = `MH*2._dp + M18O`
- REAL(dp), parameter `M_N2` = `MN*2._dp`
- REAL(dp), parameter `tmelt` = 273.15_dp

- REAL(dp), parameter `ttrip` = 273.16_dp
- REAL(dp), parameter `rho_H2O` = 999.97_dp
- REAL(dp), parameter `rho_sea` = 1025._dp
- REAL(dp), parameter `M_air` = 28.970_dp
- REAL(dp), parameter `cp_air` = 1005.46_dp
- REAL(dp), parameter `alv` = 2.5008e6_dp
- REAL(dp), parameter `als` = 2.8345e6_dp
- REAL(dp), parameter `alf` = `als-alv`
- REAL(dp), parameter `rd` = 1000._dp * `R_gas/M_air`
- REAL(dp), parameter `rv` = 1000._dp * `R_gas/M_H2O`
- REAL(dp), parameter `cpv` = 1869.46_dp
- REAL(dp), parameter `vtmpc1` = `M_air / M_H2O - 1.0`_dp
- REAL(dp), parameter `vtmpc2` = `cpv/cp_air-1.0`_dp
- REAL(dp), parameter `MM_eps` = `M_H2O/M_air`
- REAL(dp), save `ceffmin` = 10.0_dp
- REAL(dp), parameter `ceffmax` = 150.0_dp
- REAL(dp), save `ccwmin` = 1.0e-7_dp
- REAL(dp), parameter `cemiss` = 0.996_dp
- REAL(dp), parameter `radius_earth` = 6371000.0_dp
- REAL(dp), parameter `OneDay` = 86400.0_dp
- REAL(dp), parameter `OneSiderialDay` = 86164.0_dp
- REAL(dp), parameter `omega` = 0.7292E-4_dp
- REAL(dp), parameter `solc` = 1365.0_dp
- REAL(dp), parameter `crae` = 0.1277e-02_dp
- REAL(dp), parameter `clw` = 4186.84_dp
- REAL(dp), parameter `csw` = 3994._dp
- REAL(dp), parameter `ctfreez` = 271.38_dp
- REAL(dp), parameter `AM` = 1.673e-27
- REAL(dp), parameter `ELCH` = 1.602E-19
- REAL(dp), parameter `TWOPI` = `pi*2.`_dp
- REAL(dp), parameter `PI_2` = `pi*0.5`_dp
- REAL(dp), parameter `DTR` = `pi/180.`_dp
- REAL(dp), parameter `RTD` = 180._dp/`pi`

5.26.1 Member Data Documentation

5.26.1.1 REAL(dp), parameter `messy_main_constants_mem::alf` = `als-alv`

5.26.1.2 REAL(dp), parameter `messy_main_constants_mem::als` = 2.8345e6_dp

5.26.1.3 REAL(dp), parameter `messy_main_constants_mem::alv` = 2.5008e6_dp

5.26.1.4 REAL(dp), parameter `messy_main_constants_mem::AM` = 1.673e-27

5.26.1.5 REAL(dp), parameter `messy_main_constants_mem::atm2Pa` = 101325._dp

- 5.26.1.6 REAL(DP), parameter messy_main_constants_mem::BIG_DP = 1E40_dp
- 5.26.1.7 REAL(dp), parameter messy_main_constants_mem::c_light = 2.99792458E8_dp
- 5.26.1.8 REAL(dp), parameter messy_main_constants_mem::c_vKar = 0.4_dp
- 5.26.1.9 REAL(dp), parameter messy_main_constants_mem::cal2J = 4.1868_dp
- 5.26.1.10 REAL(dp), save messy_main_constants_mem::ccwmin = 1.0e-7_dp
- 5.26.1.11 REAL(dp), parameter messy_main_constants_mem::ceffmax = 150.0_dp
- 5.26.1.12 REAL(dp), save messy_main_constants_mem::ceffmin = 10.0_dp
- 5.26.1.13 REAL(dp), parameter messy_main_constants_mem::cemiss = 0.996_dp
- 5.26.1.14 REAL(dp), parameter messy_main_constants_mem::clw = 4186.84_dp
- 5.26.1.15 REAL(dp), parameter messy_main_constants_mem::cp_air = 1005.46_dp
- 5.26.1.16 REAL(dp), parameter messy_main_constants_mem::cpv = 1869.46_dp
- 5.26.1.17 REAL(dp), parameter messy_main_constants_mem::crae = 0.1277e-02_dp
- 5.26.1.18 REAL(dp), parameter messy_main_constants_mem::csw = 3994._dp
- 5.26.1.19 REAL(dp), parameter messy_main_constants_mem::ctfreez = 271.38_dp
- 5.26.1.20 INTEGER, parameter messy_main_constants_mem::dp =
SELECTED_REAL_KIND(12, 307)
- 5.26.1.21 REAL(dp), parameter messy_main_constants_mem::DTR = pi/180._dp
- 5.26.1.22 REAL(dp), parameter messy_main_constants_mem::ELCH = 1.602E-19
- 5.26.1.23 REAL(DP), parameter messy_main_constants_mem::FLAGGED_BAD =
-1.0E+34_dp
- 5.26.1.24 REAL(dp), parameter messy_main_constants_mem::g = 9.80665_dp
- 5.26.1.25 REAL(dp), parameter messy_main_constants_mem::h_Planck =
6.62606957E34_dp
- 5.26.1.26 CHARACTER(LEN=*), parameter messy_main_constants_mem::HLINE1
= '*****'//
'*****'

- 5.26.1.27 CHARACTER(LEN=*), parameter messy_main_constants_mem::HLINE2 =
'-----'// '-----'
- 5.26.1.28 CHARACTER(LEN=*), parameter messy_main_constants_mem::HLINE3 =
'-----'// '-----'
- 5.26.1.29 REAL(DP), parameter messy_main_constants_mem::HUGE_DP =
HUGE(0._dp)
- 5.26.1.30 INTEGER, parameter messy_main_constants_mem::i4 =
SELECTED_INT_KIND(9)
- 5.26.1.31 INTEGER, parameter messy_main_constants_mem::i8 =
SELECTED_INT_KIND(14)
- 5.26.1.32 REAL(dp), parameter messy_main_constants_mem::k_B = 1.3806488E-23_dp
- 5.26.1.33 REAL(dp), parameter messy_main_constants_mem::M12C = 12.00_dp
- 5.26.1.34 REAL(dp), parameter messy_main_constants_mem::M13C = 13.00_dp
- 5.26.1.35 REAL(dp), parameter messy_main_constants_mem::M18O = 18.00_dp
- 5.26.1.36 REAL(dp), parameter messy_main_constants_mem::M_air = 28.970_dp
- 5.26.1.37 REAL(dp), parameter messy_main_constants_mem::M_H2O = MH*2._dp +
MO
- 5.26.1.38 REAL(dp), parameter messy_main_constants_mem::M_HDO = MH + MD +
MO
- 5.26.1.39 REAL(dp), parameter messy_main_constants_mem::M_HH18O = MH*2._dp+
M18O
- 5.26.1.40 REAL(dp), parameter messy_main_constants_mem::M_N2 = MN*2._dp
- 5.26.1.41 REAL(dp), parameter messy_main_constants_mem::M_O2 = MO*2._dp
- 5.26.1.42 REAL(dp), parameter messy_main_constants_mem::M_O3 = MO*3._dp
- 5.26.1.43 REAL(dp), parameter messy_main_constants_mem::MBr = 79.90_dp
- 5.26.1.44 REAL(dp), parameter messy_main_constants_mem::MC = 12.01_dp
- 5.26.1.45 REAL(dp), parameter messy_main_constants_mem::MCI = 35.45_dp
- 5.26.1.46 REAL(dp), parameter messy_main_constants_mem::MD = 2.01_dp

- 5.26.1.47 REAL(dp), parameter messy_main_constants_mem::MF = 19.00_dp
- 5.26.1.48 REAL(dp), parameter messy_main_constants_mem::MH = 1.01_dp
- 5.26.1.49 REAL(dp), parameter messy_main_constants_mem::MHg = 200.59_dp
- 5.26.1.50 REAL(dp), parameter messy_main_constants_mem::MI = 126.90_dp
- 5.26.1.51 REAL(dp), parameter messy_main_constants_mem::MM_eps =
M_H2O/M_air
- 5.26.1.52 REAL(dp), parameter messy_main_constants_mem::MN = 14.01_dp
- 5.26.1.53 REAL(dp), parameter messy_main_constants_mem::MNa = 22.99_dp
- 5.26.1.54 REAL(dp), parameter messy_main_constants_mem::MO = 16.00_dp
- 5.26.1.55 CHARACTER(LEN=*), parameter messy_main_constants_mem::modstr =
'MESSy'
- 5.26.1.56 CHARACTER(LEN=*), parameter messy_main_constants_mem::modver =
'd2.50s'
- 5.26.1.57 REAL(dp), parameter messy_main_constants_mem::MS = 32.07_dp
- 5.26.1.58 REAL(dp), parameter messy_main_constants_mem::N_A = 6.02214129E23_dp
- 5.26.1.59 REAL(dp), parameter messy_main_constants_mem::N_A_kmol =
6.02214129E26_dp
- 5.26.1.60 INTEGER, parameter messy_main_constants_mem::nerr = 6
- 5.26.1.61 REAL(dp), parameter messy_main_constants_mem::omega = 0.7292E-4_dp
- 5.26.1.62 REAL(dp), parameter messy_main_constants_mem::OneDay = 86400.0_dp
- 5.26.1.63 REAL(dp), parameter messy_main_constants_mem::OneSiderialDay =
86164.0_dp
- 5.26.1.64 REAL(dp), parameter messy_main_constants_mem::pi =
3.14159265358979323846_dp
- 5.26.1.65 REAL(dp), parameter messy_main_constants_mem::PI_2 = pi*0.5_dp
- 5.26.1.66 REAL(dp), parameter messy_main_constants_mem::R_gas = 8.3144621_dp
- 5.26.1.67 REAL(dp), parameter messy_main_constants_mem::radius_earth =
6371000.0_dp

- 5.26.1.68 REAL(dp), parameter messy_main_constants_mem::rd = 1000._dp *
R_gas/M_air
- 5.26.1.69 REAL(dp), parameter messy_main_constants_mem::rho_H2O = 999.97_dp
- 5.26.1.70 REAL(dp), parameter messy_main_constants_mem::rho_sea = 1025._dp
- 5.26.1.71 REAL(dp), parameter messy_main_constants_mem::RTD = 180._dp/pi
- 5.26.1.72 REAL(dp), parameter messy_main_constants_mem::rv = 1000._dp *
R_gas/M_H2O
- 5.26.1.73 REAL(dp), parameter messy_main_constants_mem::solc = 1365.0_dp
- 5.26.1.74 INTEGER, parameter messy_main_constants_mem::sp =
SELECTED_REAL_KIND(6, 37)
- 5.26.1.75 REAL(dp), parameter messy_main_constants_mem::stbo = 5.670373E-8_dp
- 5.26.1.76 REAL(dp), parameter messy_main_constants_mem::stDTDZ = 0.0065_dp
- 5.26.1.77 INTEGER, parameter messy_main_constants_mem::STRLEN_KPPSPECIE-
S = 15
- 5.26.1.78 INTEGER, parameter messy_main_constants_mem::STRLEN_LONG = 64
- 5.26.1.79 INTEGER, parameter messy_main_constants_mem::STRLEN_MEDIUM = 24
- 5.26.1.80 INTEGER, parameter messy_main_constants_mem::STRLEN_SHORT = 8
- 5.26.1.81 INTEGER, parameter messy_main_constants_mem::STRLEN_ULONG = 256
- 5.26.1.82 INTEGER, parameter messy_main_constants_mem::STRLEN_VLONG = 80
- 5.26.1.83 INTEGER, parameter messy_main_constants_mem::STRLEN_XLONG = 512
- 5.26.1.84 REAL(dp), parameter messy_main_constants_mem::T0 = 298.15_dp
- 5.26.1.85 REAL(dp), parameter messy_main_constants_mem::T0_INV = 1._DP / T0
- 5.26.1.86 REAL(DP), parameter messy_main_constants_mem::TINY_DP = TINY(0._dp)
- 5.26.1.87 REAL(dp), parameter messy_main_constants_mem::tmelt = 273.15_dp
- 5.26.1.88 REAL(dp), parameter messy_main_constants_mem::ttrip = 273.16_dp
- 5.26.1.89 REAL(dp), parameter messy_main_constants_mem::TWOPI = pi*2._dp

5.26.1.90 REAL(dp), parameter messy_main_constants_mem::vtmpc1 = M_air /
M_H2O - 1.0_dp

5.26.1.91 REAL(dp), parameter messy_main_constants_mem::vtmpc2 =
cpv/cp_air-1.0_dp

5.26.1.92 INTEGER, parameter messy_main_constants_mem::wp = dp

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_constants-_mem.f90](#)

5.27 messy_main_control_cb Module Reference

Public Member Functions

- subroutine [messy_init](#)
- subroutine [messy_physc](#)
- subroutine [messy_result](#)
- subroutine [messy_finish](#)

5.27.1 Member Function/Subroutine Documentation

5.27.1.1 subroutine messy_main_control_cb::messy_finish ()

5.27.1.2 subroutine messy_main_control_cb::messy_init ()

5.27.1.3 subroutine messy_main_control_cb::messy_physc ()

5.27.1.4 subroutine messy_main_control_cb::messy_result ()

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_control_-cb.f90](#)

5.28 messy_main_rnd Module Reference

Data Types

- interface [rnd_jump](#)

Public Member Functions

- subroutine, public `rnd_init` (status, id, method, pseed)
- subroutine, public `rnd_seed` (id, size, put, get)
- subroutine `rnd_jump_2` (status, id, n, p, get)
- subroutine, public `rnd_number` (id, harvest, get)
- subroutine, public `rnd_finish` (id)

Public Attributes

- CHARACTER(LEN=*), parameter, public `modstr` = 'rnd'
- CHARACTER(len=*), parameter, public `modver` = '1.1'
- INTEGER, parameter, public `RND_F90` = 1
- INTEGER, parameter, public `RND_MTW` = 2
- INTEGER, parameter, public `RND_LUX` = 3
- INTEGER, parameter, public `RND_F90_GAUSS` = 4
- INTEGER, parameter, public `RND_MTW_GAUSS` = 5
- INTEGER, parameter, public `RND_LUX_GAUSS` = 6
- INTEGER, parameter, public `RND_MAX_METHOD` = 6
- CHARACTER(LEN=12), dimension(rnd_max_method), public `RND_REPR_NAME` = (/ 'REPR_RND_F90', 'REPR_RND_MTW', 'REPR_RND_LUX', 'REPR_RND_F90', 'REPR_RND_MTW', 'REPR_RND_LUX' /)
- CHARACTER(LEN=11), dimension(rnd_max_method), public `RND_DIM_NAME` = (/ 'DIM_RND_F90', 'DIM_RND_MTW', 'DIM_RND_LUX', 'DIM_RND_F90', 'DIM_RND_MTW', 'DIM_RND_LUX' /)
- INTEGER, parameter, public `ID_MAX` = 20
- INTEGER, dimension(id_max), public `nstate` = 0
- INTEGER, dimension(id_max), public `rnd_method`
- TYPE(PTR_1D_ARRAY_INT), dimension(id_max), public `state`

Private Member Functions

- subroutine `rnd_jump_n` (status, id, n, get)

Private Attributes

- INTEGER, parameter `N_MAX_EXP` = 20
- LOGICAL, dimension(n_max_exp) `lpoly` = .FALSE.
- INTEGER, dimension(0:nn, n_max_exp) `pcoeff`

5.28.1 Member Function/Subroutine Documentation

- 5.28.1.1 subroutine, public messy_main_rnd::rnd_finish (INTEGER, intent(in) *id*)
- 5.28.1.2 subroutine, public messy_main_rnd::rnd_init (INTEGER, intent(out) *status*, INTEGER, intent(out) *id*, INTEGER, intent(in) *method*, INTEGER, intent(in), optional *pseed*)
- 5.28.1.3 subroutine messy_main_rnd::rnd_jump_2 (INTEGER, intent(out) *status*, INTEGER, intent(in) *id*, INTEGER, intent(in) *n*, INTEGER, intent(in) *p*, INTEGER, dimension(:), intent(out), optional *get*)
- 5.28.1.4 subroutine messy_main_rnd::rnd_jump_n (INTEGER, intent(out) *status*, INTEGER, intent(in) *id*, INTEGER, intent(in) *n*, INTEGER, dimension(:), intent(out), optional *get*) [private]
- 5.28.1.5 subroutine, public messy_main_rnd::rnd_number (INTEGER, intent(in) *id*, REAL(DP), dimension(:), intent(out) *harvest*, INTEGER, dimension(:), intent(out), optional *get*)
- 5.28.1.6 subroutine, public messy_main_rnd::rnd_seed (INTEGER, intent(in) *id*, INTEGER, intent(out), optional *size*, INTEGER, dimension(:), intent(in), optional *put*, INTEGER, dimension(:), intent(out), optional *get*)

5.28.2 Member Data Documentation

- 5.28.2.1 INTEGER, parameter, public messy_main_rnd::ID_MAX = 20
- 5.28.2.2 LOGICAL, dimension(n_max_exp) messy_main_rnd::lpoly = .FALSE. [private]
- 5.28.2.3 CHARACTER(LEN=*), parameter, public messy_main_rnd::modstr = 'rnd'
- 5.28.2.4 CHARACTER(len=*), parameter, public messy_main_rnd::modver = '1.1'
- 5.28.2.5 INTEGER, parameter messy_main_rnd::N_MAX_EXP = 20 [private]
- 5.28.2.6 INTEGER, dimension(id_max), public messy_main_rnd::nstate = 0
- 5.28.2.7 INTEGER, dimension(0:nn, n_max_exp) messy_main_rnd::pcoeff [private]
- 5.28.2.8 CHARACTER(LEN=11), dimension(rnd_max_method), public messy_main_rnd::RND_DIM_NAME = (/ 'DIM_RND_F90', 'DIM_RND_MTW', 'DIM_RND_LUX', 'DIM_RND_F90', 'DIM_RND_MTW', 'DIM_RND_LUX' /)
- 5.28.2.9 INTEGER, parameter, public messy_main_rnd::RND_F90 = 1
- 5.28.2.10 INTEGER, parameter, public messy_main_rnd::RND_F90_GAUSS = 4

- 5.28.2.11 INTEGER, parameter, public messy_main_rnd::RND_LUX = 3
- 5.28.2.12 INTEGER, parameter, public messy_main_rnd::RND_LUX_GAUSS = 6
- 5.28.2.13 INTEGER, parameter, public messy_main_rnd::RND_MAX_METHOD = 6
- 5.28.2.14 INTEGER, dimension(id_max), public messy_main_rnd::rnd_method
- 5.28.2.15 INTEGER, parameter, public messy_main_rnd::RND_MTW = 2
- 5.28.2.16 INTEGER, parameter, public messy_main_rnd::RND_MTW_GAUSS = 5
- 5.28.2.17 CHARACTER(LEN=12), dimension(rnd_max_method), public
messy_main_rnd::RND_REPR_NAME = (/ 'REPR_RND_F90', 'REPR_RND_MTW',
'REPR_RND_LUX', 'REPR_RND_F90', 'REPR_RND_MTW', 'REPR_RND_LUX' /)
- 5.28.2.18 TYPE(PTR_1D_ARRAY_INT), dimension(id_max), public messy_main_rnd::state

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_main_rnd.f90](#)

5.29 messy_main_rnd_lux Module Reference

Public Member Functions

- subroutine [ranlux](#) (rvec, lenv)
- subroutine [rluxin](#)
- subroutine [rluxut](#)
- subroutine [rluxat](#) (lout, inout, k1, k2)
- subroutine [rluxgo](#) (lux, ins, k1, k2)

Public Attributes

- INTEGER, dimension(25), public [isdext](#)
- INTEGER, parameter [maxlev](#) = 4
- INTEGER, parameter [lxdflt](#) = 3
- INTEGER, parameter [jsdflt](#) = 314159265
- INTEGER, dimension(0:[maxlev](#)), public [ndskip](#) = (/ 0, 24, 73, 199, 365 /)
- INTEGER [igiga](#) = 1000000000
- INTEGER, public [i24](#) = 24
- INTEGER, public [j24](#) = 10
- REAL, parameter [twop12](#) = 4096.
- INTEGER, parameter [itwo24](#) = 2**24
- INTEGER, parameter [icons](#) = 2147483563

- INTEGER, dimension(24), save, public `next`
- INTEGER, save, public `luxlev = lxdflt`
- INTEGER, save, public `nskip`
- INTEGER, save, public `inseed`
- INTEGER, save `jseed`
- LOGICAL, save, public `notyet = .true.`
- INTEGER, public `in24 = 0`
- INTEGER, public `kount = 0`
- INTEGER, public `mkount = 0`
- REAL, dimension(24), save, public `seeds`
- REAL, save, public `carry = 0.`
- REAL, save, public `twom24`
- REAL, save, public `twom12`

5.29.1 Member Function/Subroutine Documentation

- 5.29.1.1 subroutine `messy_main_rnd_lux::ranlux` (REAL, dimension(lenv), intent(out) *rvec*, INTEGER, intent(in) *lenv*)
- 5.29.1.2 subroutine `messy_main_rnd_lux::rluxat` (INTEGER, intent(out) *lout*, INTEGER, intent(out) *inout*, INTEGER, intent(out) *k1*, INTEGER, intent(out) *k2*)
- 5.29.1.3 subroutine `messy_main_rnd_lux::rluxgo` (INTEGER, intent(in) *lux*, INTEGER, intent(in) *ins*, INTEGER, intent(in) *k1*, INTEGER, intent(in) *k2*)
- 5.29.1.4 subroutine `messy_main_rnd_lux::rluxin` ()
- 5.29.1.5 subroutine `messy_main_rnd_lux::rluxut` ()

5.29.2 Member Data Documentation

- 5.29.2.1 REAL, save, public `messy_main_rnd_lux::carry = 0.`
- 5.29.2.2 INTEGER, public `messy_main_rnd_lux::i24 = 24`
- 5.29.2.3 INTEGER, parameter `messy_main_rnd_lux::icons = 2147483563`
- 5.29.2.4 INTEGER `messy_main_rnd_lux::igiga = 1000000000`
- 5.29.2.5 INTEGER, public `messy_main_rnd_lux::in24 = 0`
- 5.29.2.6 INTEGER, save, public `messy_main_rnd_lux::inseed`
- 5.29.2.7 INTEGER, dimension(25), public `messy_main_rnd_lux::isdext`
- 5.29.2.8 INTEGER, parameter `messy_main_rnd_lux::itwo24 = 2**24`

- 5.29.2.9 INTEGER, public messy_main_rnd_lux::j24 = 10
- 5.29.2.10 INTEGER, parameter messy_main_rnd_lux::jsdfit = 314159265
- 5.29.2.11 INTEGER, save messy_main_rnd_lux::jseed
- 5.29.2.12 INTEGER, public messy_main_rnd_lux::kount = 0
- 5.29.2.13 INTEGER, save, public messy_main_rnd_lux::luxlev = lxdflt
- 5.29.2.14 INTEGER, parameter messy_main_rnd_lux::lxdflt = 3
- 5.29.2.15 INTEGER, parameter messy_main_rnd_lux::maxlev = 4
- 5.29.2.16 INTEGER, public messy_main_rnd_lux::mkount = 0
- 5.29.2.17 INTEGER, dimension(0:maxlev), public messy_main_rnd_lux::ndskip = (/ 0, 24, 73, 199, 365 /)
- 5.29.2.18 INTEGER, dimension(24), save, public messy_main_rnd_lux::next
- 5.29.2.19 LOGICAL, save, public messy_main_rnd_lux::notyet = .true.
- 5.29.2.20 INTEGER, save, public messy_main_rnd_lux::nskip
- 5.29.2.21 REAL, dimension(24), save, public messy_main_rnd_lux::seeds
- 5.29.2.22 REAL, save, public messy_main_rnd_lux::twom12
- 5.29.2.23 REAL, save, public messy_main_rnd_lux::twom24
- 5.29.2.24 REAL, parameter messy_main_rnd_lux::twop12 = 4096.

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_lux.-f90](#)

5.30 messy_main_rnd_mtw Module Reference

Public Member Functions

- subroutine, public [init_genrand](#) (s)
- subroutine, public [init_by_array](#) (init_key)
- integer(kind=[wi](#)) function, public [genrand_int32](#) ()
- integer(kind=[wi](#)) function, public [genrand_int31](#) ()

- `real(kind=wr)` function, public `genrand_real1` ()
- `real(kind=wr)` function, public `genrand_real2` ()
- `real(kind=wr)` function, public `genrand_real3` ()
- `real(kind=wr)` function, public `genrand_res53` ()

Public Attributes

- integer, parameter, public `wi` = `intg`
- integer, parameter, public `wl` = `long`
- integer, parameter, public `wr` = `dobl`
- `integer(kind=wi)`, `dimension(n)`, public `mt`
- `logical(kind=wi)`, public `mtinit` = `.false._wi`
- `integer(kind=wi)`, public `mti` = `n + 1_wi`

Private Member Functions

- elemental function `uiadd` (a, b)
- elemental function `uisub` (a, b)
- elemental function `uimlt` (a, b)

Private Attributes

- integer, parameter `intg` = `selected_int_kind(9)`
- integer, parameter `long` = `selected_int_kind(18)`
- integer, parameter `flot` = `selected_real_kind(6, 37)`
- integer, parameter `dobl` = `selected_real_kind(15, 307)`
- `integer(kind=wi)`, parameter `n` = `624_wi`
- `integer(kind=wi)`, parameter `m` = `397_wi`
- `integer(kind=wi)`, parameter `hbs` = `bit_size(n) / 2_wi`
- `integer(kind=wi)`, parameter `qbs` = `hbs / 2_wi`
- `integer(kind=wi)`, parameter `tbs` = `3_wi * qbs`

5.30.1 Member Function/Subroutine Documentation

5.30.1.1 `integer(kind = wi)` function, public `messy_main_rnd_mtw::genrand_int31` ()

5.30.1.2 `integer(kind = wi)` function, public `messy_main_rnd_mtw::genrand_int32` ()

5.30.1.3 `real(kind = wr)` function, public `messy_main_rnd_mtw::genrand_real1` ()

5.30.1.4 `real(kind = wr)` function, public `messy_main_rnd_mtw::genrand_real2` ()

5.30.1.5 `real(kind = wr)` function, public `messy_main_rnd_mtw::genrand_real3` ()

- 5.30.1.6 `real(kind = wr)` function, public `messy_main_rnd_mtw::genrand_res53 ()`
- 5.30.1.7 subroutine, public `messy_main_rnd_mtw::init_by_array (integer(kind = wi), dimension(:), intent(in) init_key)`
- 5.30.1.8 subroutine, public `messy_main_rnd_mtw::init_genrand (integer(kind = wi), intent(in) s)`
- 5.30.1.9 elemental function `messy_main_rnd_mtw::uiadd (integer(kind = wi), intent(in) a, integer(kind = wi), intent(in) b)` [private]
- 5.30.1.10 elemental function `messy_main_rnd_mtw::uimlt (integer(kind = wi), intent(in) a, integer(kind = wi), intent(in) b)` [private]
- 5.30.1.11 elemental function `messy_main_rnd_mtw::uisub (integer(kind = wi), intent(in) a, integer(kind = wi), intent(in) b)` [private]

5.30.2 Member Data Documentation

- 5.30.2.1 integer, parameter `messy_main_rnd_mtw::dobl = selected_real_kind(15, 307)` [private]
- 5.30.2.2 integer, parameter `messy_main_rnd_mtw::flot = selected_real_kind(6, 37)` [private]
- 5.30.2.3 integer(kind = wi), parameter `messy_main_rnd_mtw::hbs = bit_size(n) / 2_wi` [private]
- 5.30.2.4 integer, parameter `messy_main_rnd_mtw::intg = selected_int_kind(9)` [private]
- 5.30.2.5 integer, parameter `messy_main_rnd_mtw::long = selected_int_kind(18)` [private]
- 5.30.2.6 integer(kind = wi), parameter `messy_main_rnd_mtw::m = 397_wi` [private]
- 5.30.2.7 integer(kind = wi), dimension(n), public `messy_main_rnd_mtw::mt`
- 5.30.2.8 integer(kind = wi), public `messy_main_rnd_mtw::mti = n + 1_wi`
- 5.30.2.9 logical(kind = wi), public `messy_main_rnd_mtw::mtinit = .false._wi`
- 5.30.2.10 integer(kind = wi), parameter `messy_main_rnd_mtw::n = 624_wi` [private]
- 5.30.2.11 integer(kind = wi), parameter `messy_main_rnd_mtw::qbs = hbs / 2_wi` [private]

5.30.2.12 integer(kind = wi), parameter messy_main_rnd_mtw::tbs = 3_wi * qbs
[private]

5.30.2.13 integer, parameter, public messy_main_rnd_mtw::wi = intg

5.30.2.14 integer, parameter, public messy_main_rnd_mtw::wl = long

5.30.2.15 integer, parameter, public messy_main_rnd_mtw::wr = dobl

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw.-f90](#)

5.31 messy_main_rnd_mtw_ja Module Reference

Data Types

- interface [add](#)
- interface [add_assign](#)
- interface [assign](#)
- interface [delete](#)
- interface [div](#)
- interface [div_by_x](#)
- interface [divrem](#)
- type [gf2x_obj](#)
- type [gf2x_prime_obj](#)
- interface [mod_by_x](#)
- interface [mult](#)
- interface [mult_assign](#)
- interface [mult_by_x](#)
- interface [new](#)
- interface [pow](#)
- interface [print_bit](#)
- interface [print_hex](#)
- interface [rem](#)
- interface [set_coef](#)
- interface [set_prime](#)
- interface [shift](#)
- interface [square](#)

Public Member Functions

- subroutine, public [mt_jump_ahead](#) (v, w, jp, id, getp, putp)

Public Attributes

- integer([INT32](#)), parameter, public [nn](#) = 624

Private Member Functions

- integer([INT32](#)) function [get_size](#) (deg)
- subroutine [gf2x_new](#) (this, deg)
- subroutine [gf2x_delete](#) (this)
- subroutine [gf2x_print_bit](#) (this)
- subroutine [gf2x_print_hex](#) (this)
- subroutine [gf2x_assign](#) (c, a)
- logical function [is_zero](#) (a)
- integer([INT32](#)) function [get_deg](#) (a)
- subroutine [gf2x_set_coef](#) (a, i)
- subroutine [gf2x_add_assign](#) (c, a)
- subroutine [gf2x_add](#) (c, a, b)
- subroutine [gf2x_pow](#) (c, a, e)
- subroutine [gf2x_square](#) (c, a)
- recursive subroutine [gf2x_mult_kara](#) (c, a, b)
- subroutine [gf2x_mult_assign_kara](#) (a, b)
- subroutine [gf2x_mult_assign_normal](#) (a, b)
- subroutine [gf2x_mult_normal](#) (c, a, b)
- subroutine [gf2x_shift](#) (c, a, i)
- subroutine [gf2x_divrem](#) (q, r, a, b)
- subroutine [gf2x_div](#) (q, a, b)
- subroutine [gf2x_rem](#) (r, a, b)
- subroutine [gf2x_set_prime](#) (mp, m)
- subroutine [gf2x_delete_prime](#) (mp)
- subroutine [gf2x_rem_barrett](#) (r, a, m)
- subroutine [gf2x_mod_by_x](#) (c, a, i)
- subroutine [gf2x_mult_by_x](#) (c, a, i)
- subroutine [gf2x_div_by_x](#) (c, a, i)
- subroutine [gf2x_pow_pow_2](#) (c, e, m)
- subroutine [gf2x_pow_mod](#) (c, a, e, m)
- integer([INT32](#)) function [deg_i32](#) (a)
- integer([INT32](#)) function [deg_i64](#) (a)
- subroutine [square_i32](#) (a, ch, cl)
- subroutine [mult_i32](#) (a, b, ch, cl)
- subroutine [mult_i32_old](#) (a, b, ch, cl)
- subroutine [shift_i32](#) (a, i, ch, cm, cl)
- subroutine [f_get_coeff](#) ([nn](#), [mm](#), [rr](#), [ww](#), [avec](#), nj, id, pp, np)
- subroutine [mt_matvec](#) (v, w)

Private Attributes

- integer, parameter `INT32` = selected_int_kind(9)
- integer, parameter `INT64` = selected_int_kind(18)
- integer, parameter `REAL64` = selected_real_kind(15)
- integer(`INT32`), parameter `mm` = 397
- integer(`INT32`), parameter `rr` = 31
- integer(`INT32`), parameter `ww` = 32
- integer(`INT32`), parameter `avec` = Z'9908b0df'
- integer(`INT32`), parameter `MT19937_N` = 624
- integer(`INT32`), parameter `MT19937_M` = 397
- integer(`INT32`), parameter `MT19937_W` = 32
- integer(`INT32`), parameter `MT19937_R` = 31
- integer(`INT32`), parameter `MT19937_MATA` = Z'9908b0df'
- integer(`INT32`), parameter `MT19937_WMASK` = Z'ffffff'
- integer(`INT32`), parameter `MT19937_UMASK` = Z'80000000'
- integer(`INT32`), parameter `MT19937_LMASK` = Z'7ffffff'
- integer(`INT32`), parameter `MT19937_SHFT0` = 11
- integer(`INT32`), parameter `MT19937_SHFT1` = 18
- integer(`INT32`), parameter `MT19937_SHFTB` = 7
- integer(`INT32`), parameter `MT19937_SHFTC` = 15
- integer(`INT32`), parameter `MT19937_MASKB` = Z'9d2c5680'
- integer(`INT32`), parameter `MT19937_MASKC` = Z'efc60000'
- integer(`INT32`), parameter `MT19937_MAG` = (/ 0 , `MT19937_MATA` /)
- integer(`INT32`), parameter `MAX_KARA` = 64

5.31.1 Member Function/Subroutine Documentation

5.31.1.1 integer(`INT32`) function messy_main_rnd_mtw_ja::deg_i32 (integer(`INT32`) *a*) [private]

5.31.1.2 integer(`INT32`) function messy_main_rnd_mtw_ja::deg_i64 (integer(`INT64`) *a*) [private]

5.31.1.3 subroutine messy_main_rnd_mtw_ja::f_get_coeff (integer(`INT32`), intent(in) *nn*, integer(`INT32`), intent(in) *mm*, integer(`INT32`), intent(in) *rr*, integer(`INT32`), intent(in) *ww*, integer(`INT32`), intent(in) *avec*, integer(`INT32`), intent(in) *nj*, integer(`INT32`), intent(in) *id*, integer(`INT32`), dimension(0:nn-1), intent(inout) *pp*, integer(`INT32`), intent(inout) *np*) [private]

5.31.1.4 integer(`INT32`) function messy_main_rnd_mtw_ja::get_deg (type(gf2x_obj), intent(in) *a*) [private]

5.31.1.5 integer(`INT32`) function messy_main_rnd_mtw_ja::get_size (integer(`INT32`) *deg*) [private]

- 5.31.1.6 subroutine messy_main_rnd_mtw_ja::gf2x_add (type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a, type(gf2x_obj), intent(in) b) [private]
- 5.31.1.7 subroutine messy_main_rnd_mtw_ja::gf2x_add_assign (type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a) [private]
- 5.31.1.8 subroutine messy_main_rnd_mtw_ja::gf2x_assign (type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a) [private]
- 5.31.1.9 subroutine messy_main_rnd_mtw_ja::gf2x_delete (type(gf2x_obj), intent(inout) this) [private]
- 5.31.1.10 subroutine messy_main_rnd_mtw_ja::gf2x_delete_prime (type(gf2x_prime_obj), intent(inout) mp) [private]
- 5.31.1.11 subroutine messy_main_rnd_mtw_ja::gf2x_div (type(gf2x_obj), intent(inout) q, type(gf2x_obj), intent(in) a, type(gf2x_obj), intent(in) b) [private]
- 5.31.1.12 subroutine messy_main_rnd_mtw_ja::gf2x_div_by_x (type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a, integer(INT32), intent(in) i) [private]
- 5.31.1.13 subroutine messy_main_rnd_mtw_ja::gf2x_divrem (type(gf2x_obj), intent(inout) q, type(gf2x_obj), intent(inout) r, type(gf2x_obj), intent(in) a, type(gf2x_obj), intent(in) b) [private]
- 5.31.1.14 subroutine messy_main_rnd_mtw_ja::gf2x_mod_by_x (type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a, integer(INT32), intent(in) i) [private]
- 5.31.1.15 subroutine messy_main_rnd_mtw_ja::gf2x_mult_assign_kara (type(gf2x_obj), intent(inout) a, type(gf2x_obj), intent(in) b) [private]
- 5.31.1.16 subroutine messy_main_rnd_mtw_ja::gf2x_mult_assign_normal (type(gf2x_obj), intent(inout) a, type(gf2x_obj), intent(in) b) [private]
- 5.31.1.17 subroutine messy_main_rnd_mtw_ja::gf2x_mult_by_x (type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a, integer(INT32), intent(in) i) [private]
- 5.31.1.18 recursive subroutine messy_main_rnd_mtw_ja::gf2x_mult_kara (type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a, type(gf2x_obj), intent(in) b) [private]
- 5.31.1.19 subroutine messy_main_rnd_mtw_ja::gf2x_mult_normal (type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a, type(gf2x_obj), intent(in) b) [private]

- 5.31.1.20 subroutine messy_main_rnd_mtw_ja::gf2x_new (type(gf2x_obj),
intent(inout) *this*, integer(INT32), intent(in) *deg*) [private]
- 5.31.1.21 subroutine messy_main_rnd_mtw_ja::gf2x_pow (type(gf2x_obj),
intent(inout) *c*, type(gf2x_obj), intent(in) *a*, integer(INT32), intent(in) *e*)
[private]
- 5.31.1.22 subroutine messy_main_rnd_mtw_ja::gf2x_pow_mod (type(gf2x_obj),
intent(inout) *c*, type(gf2x_obj), intent(in) *a*, integer(INT32), intent(in) *e*,
type(gf2x_prime_obj), intent(in) *m*) [private]
- 5.31.1.23 subroutine messy_main_rnd_mtw_ja::gf2x_pow_pow_2 (type(gf2x_obj),
intent(inout) *c*, integer(INT32), intent(in) *e*, type(gf2x_prime_obj), intent(in) *m*)
[private]
- 5.31.1.24 subroutine messy_main_rnd_mtw_ja::gf2x_print_bit (type(gf2x_obj),
intent(in) *this*) [private]
- 5.31.1.25 subroutine messy_main_rnd_mtw_ja::gf2x_print_hex (type(gf2x_obj),
intent(in) *this*) [private]
- 5.31.1.26 subroutine messy_main_rnd_mtw_ja::gf2x_rem (type(gf2x_obj),
intent(inout) *r*, type(gf2x_obj), intent(in) *a*, type(gf2x_obj), intent(in) *b*)
[private]
- 5.31.1.27 subroutine messy_main_rnd_mtw_ja::gf2x_rem_barrett (type(gf2x_obj),
intent(inout) *r*, type(gf2x_obj), intent(in) *a*, type(gf2x_prime_obj), intent(in) *m*)
[private]
- 5.31.1.28 subroutine messy_main_rnd_mtw_ja::gf2x_set_coef (type(gf2x_obj),
intent(inout) *a*, integer(INT32), intent(in) *i*) [private]
- 5.31.1.29 subroutine messy_main_rnd_mtw_ja::gf2x_set_prime (type(gf2x_prime_obj), intent(inout) *mp*, type(gf2x_obj), intent(in) *m*)
[private]
- 5.31.1.30 subroutine messy_main_rnd_mtw_ja::gf2x_shift (type(gf2x_obj),
intent(inout) *c*, type(gf2x_obj), intent(in) *a*, integer(INT32), intent(in) *i*)
[private]
- 5.31.1.31 subroutine messy_main_rnd_mtw_ja::gf2x_square (type(gf2x_obj),
intent(inout) *c*, type(gf2x_obj), intent(in) *a*) [private]
- 5.31.1.32 logical function messy_main_rnd_mtw_ja::is_zero (type(gf2x_obj), intent(in)
a) [private]

- 5.31.1.33 subroutine, public messy_main_rnd_mtw_ja::mt_jump_ahead (integer(INT32), dimension(0:nn-1), intent(in) *v*, integer(INT32), dimension(0:nn-1), intent(out) *w*, integer(INT32), intent(in) *jp*, integer(INT32), intent(in) *id*, integer, dimension(0:nn), intent(out), optional *getp*, integer, dimension(0:nn), intent(in), optional *putp*)
- 5.31.1.34 subroutine messy_main_rnd_mtw_ja::mt_matvec (integer(INT32), dimension(0:nn-1), intent(in) *v*, integer(INT32), dimension(0:nn-1), intent(out) *w*) [private]
- 5.31.1.35 subroutine messy_main_rnd_mtw_ja::mult_i32 (integer(INT32), intent(in) *a*, integer(INT32), intent(in) *b*, integer(INT32), intent(out) *ch*, integer(INT32), intent(out) *cl*) [private]
- 5.31.1.36 subroutine messy_main_rnd_mtw_ja::mult_i32_old (integer(INT32), intent(in) *a*, integer(INT32), intent(in) *b*, integer(INT32), intent(out) *ch*, integer(INT32), intent(out) *cl*) [private]
- 5.31.1.37 subroutine messy_main_rnd_mtw_ja::shift_i32 (integer(INT32), intent(in) *a*, integer(INT32), intent(in) *i*, integer(INT32), intent(out) *ch*, integer(INT32), intent(out) *cm*, integer(INT32), intent(out) *cl*) [private]
- 5.31.1.38 subroutine messy_main_rnd_mtw_ja::square_i32 (integer(INT32), intent(in) *a*, integer(INT32), intent(out) *ch*, integer(INT32), intent(out) *cl*) [private]

5.31.2 Member Data Documentation

- 5.31.2.1 integer(INT32), parameter messy_main_rnd_mtw_ja::avec = Z'9908b0df' [private]
- 5.31.2.2 integer, parameter messy_main_rnd_mtw_ja::INT32 = selected_int_kind(9) [private]
- 5.31.2.3 integer, parameter messy_main_rnd_mtw_ja::INT64 = selected_int_kind(18) [private]
- 5.31.2.4 integer(INT32), parameter messy_main_rnd_mtw_ja::MAX_KARA = 64 [private]
- 5.31.2.5 integer(INT32), parameter messy_main_rnd_mtw_ja::mm = 397 [private]
- 5.31.2.6 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_LMASK = Z'7ffffff' [private]
- 5.31.2.7 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_M = 397 [private]

- 5.31.2.8 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_MAG = (/ 0 ,
MT19937_MATA /) [private]
- 5.31.2.9 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_MASKB =
Z'9d2c5680' [private]
- 5.31.2.10 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_MASKC =
Z'efc60000' [private]
- 5.31.2.11 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_MATA =
Z'9908b0df' [private]
- 5.31.2.12 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_N = 624
[private]
- 5.31.2.13 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_R = 31
[private]
- 5.31.2.14 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_SHFT0 = 11
[private]
- 5.31.2.15 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_SHFT1 = 18
[private]
- 5.31.2.16 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_SHFTB = 7
[private]
- 5.31.2.17 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_SHFTC = 15
[private]
- 5.31.2.18 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_UMASK =
Z'80000000' [private]
- 5.31.2.19 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_W = 32
[private]
- 5.31.2.20 integer(INT32), parameter messy_main_rnd_mtw_ja::MT19937_WMASK =
Z'ffffff' [private]
- 5.31.2.21 integer(INT32), parameter, public messy_main_rnd_mtw_ja::nn = 624
- 5.31.2.22 integer, parameter messy_main_rnd_mtw_ja::REAL64 = selected_real_kind(15)
[private]
- 5.31.2.23 integer(INT32), parameter messy_main_rnd_mtw_ja::rr = 31 [private]

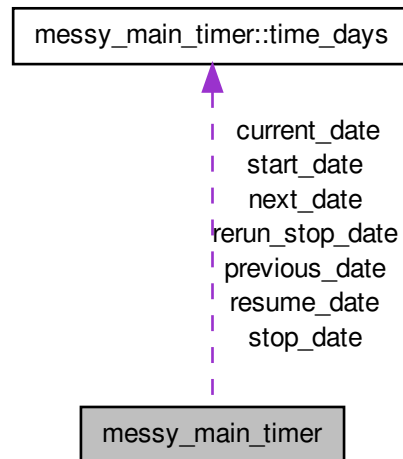
5.31.2.24 integer(INT32), parameter messy_main_rnd_mtw_ja::ww = 32 [private]

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.32 messy_main_timer Module Reference

Collaboration diagram for messy_main_timer:



Data Types

- type [time_days](#)
- interface [timer_get_date](#)
- interface [timer_set_date](#)

Public Member Functions

- subroutine, public [date_set](#) (day, second, time)
- subroutine, public [date_get](#) (time, day, second, ierr)
- subroutine, public [add_date](#) (days, seconds, my_day, ierr)
- subroutine, public [copy_date](#) (date1, date2, ierr)

- subroutine, public [print_date](#) (day, ierr, mess)
- subroutine, public [print_date_components](#) (day, ierr, mess)
- subroutine, public [if_less](#) (date1, date2, lless, ierr)
- subroutine, public [if_equal](#) (date1, date2, leq, ierr)
- subroutine, public [is_init](#) (date, linit)
- INTEGER function, public [MonthLength](#) (ky, km)
- INTEGER function, public [JulianMonthLength](#) (ky, km)
- INTEGER function, public [YearLength](#) (yr)
- INTEGER function, public [JulianYearLength](#) (yr)
- REAL(dp) function, public [YearDay](#) (date)
- REAL(DP) function, public [julian_day](#) (DD, MM, YY)
- subroutine, public [time_span_s](#) (dts, yy1, mo1, dy1, hr1, mi1, se1, yy2, mo2, dy2, hr2, mi2, se2)
- subroutine, public [time_span_d](#) (dtd, yy1, mo1, dy1, hr1, mi1, se1, yy2, mo2, dy2, hr2, mi2, se2)
- REAL(DP) function, public [gregor2julian](#) (YY, MM, DD, hr, mi, se)
- subroutine, public [julian2gregor](#) (jdate, year, month, day, hrs, mins, secs)
- REAL(dp) function, public [utc2lt](#) (status, model_time, degree_lon)
- subroutine [timer_set_date_str](#) (status, strflag, yr, mo, dy, hr, mi, se)
- subroutine, public [timer_set_calendar](#) (status, strcal)
- subroutine, public [timer_get_calendar](#) (status, ical)
- subroutine, public [timer_set_delta_time](#) (status, dt)
- subroutine, public [timer_get_delta_time](#) (status, dt)
- subroutine, public [timer_add_date](#) (status, add_seconds, iyr, imo, idy, ihr, imi, ise, oyr, omo, ody, ohr, omi, ose)
- subroutine, public [timer_set_lresume](#)
- subroutine, public [timer_get_lresume](#) (lr)
- subroutine, public [timer_set_time_step_len](#) (l2tts)
- subroutine, public [timer_set_no_cycles](#) (ncyc)
- subroutine, public [timer_get_no_cycles](#) (ncyc)
- subroutine, public [timer_set_labort](#) (la)
- subroutine, public [timer_get_labort](#) (la)
- subroutine, public [eval_time_str](#) (status, z_time_string, z_tuf, z_year, z_month, z_day, z_hour, z_min, z_sec)

Public Attributes

- CHARACTER(LEN=*), parameter, public [modstr](#) = 'timer'
- CHARACTER(LEN=*), parameter, public [modver](#) = '0.1'
- INTEGER, parameter, public [CAL_JULIAN](#) = 0
- INTEGER, parameter, public [CAL_360D](#) = 1
- INTEGER, public [CAL_TYPE](#) = 0
- CHARACTER(LEN=8), parameter, public [CALENDER](#) = (/ 'standard', '360_day' /)
- CHARACTER(len=3), parameter, public [CMONTHS](#) = (/ 'Jan','Feb','Mar','Apr','May','Jun','Jul','Aug','Sep','Oct','Nov','Dec' /)

- LOGICAL, public [LDEBUG2](#) = .FALSE.
- LOGICAL, public [LDEBUG](#) = .FALSE.
- INTEGER, public [INIT_STEP](#) = 0
- REAL(dp), public [delta_time](#) = -999._dp
- REAL(dp), public [time_step_len](#) = 0._dp
- LOGICAL, public [lstart](#) = .TRUE.
- LOGICAL, public [lfirst_cycle](#) = .TRUE.
- LOGICAL, public [lresume](#) = .FALSE.
- LOGICAL, public [lbreak](#) = .FALSE.
- LOGICAL, public [lstop](#) = .FALSE.
- LOGICAL, public [l_rerun](#) = .FALSE.
- LOGICAL, public [L_TRIGGER_RESTART](#) = .FALSE.
- LOGICAL, public [lcycbreak](#) = .FALSE.
- LOGICAL, public [lforcedtime](#) = .FALSE.
- INTEGER, public [NO_CYCLES](#) = 9999
- INTEGER, public [NO_DAYS](#) = -9999
- INTEGER, public [NO_STEPS](#) = -9999
- LOGICAL, public [LABORT](#) = .FALSE.
- INTEGER, public [YEAR](#)
- INTEGER, public [MONTH](#)
- INTEGER, public [DAY](#)
- INTEGER, public [HOUR](#)
- INTEGER, public [MINUTE](#)
- INTEGER, public [SECOND](#)
- INTEGER, public [YEAR_START](#)
- INTEGER, public [MONTH_START](#)
- INTEGER, public [DAY_START](#)
- INTEGER, public [HOUR_START](#)
- INTEGER, public [MINUTE_START](#)
- INTEGER, public [SECOND_START](#)
- INTEGER, public [YEAR_NEXT](#)
- INTEGER, public [MONTH_NEXT](#)
- INTEGER, public [DAY_NEXT](#)
- INTEGER, public [HOUR_NEXT](#)
- INTEGER, public [MINUTE_NEXT](#)
- INTEGER, public [SECOND_NEXT](#)
- INTEGER, public [current_time_step](#)
- REAL(dp), public [JULIAN_DATE_START](#)
- INTEGER, public [DAYOFYEAR](#)
- TYPE([time_days](#)), public [start_date](#)
- TYPE([time_days](#)), public [stop_date](#)
- TYPE([time_days](#)), public [resume_date](#)
- TYPE([time_days](#)), public [previous_date](#)
- TYPE([time_days](#)), public [current_date](#)
- TYPE([time_days](#)), public [next_date](#)
- TYPE([time_days](#)), public [rerun_stop_date](#)

Private Member Functions

- subroutine [date_set_components](#) (nyr, nmo, ndy, nhr, nmin, nsec, i_time)
- subroutine [date_get_components](#) (time, year, month, day, hour, minute, second, ierror)
- subroutine [timer_set_date_myd](#) (status, my_date, yr, mo, dy, hr, mi, se)
- subroutine [timer_set_date_str_ds](#) (status, strflag, day, second)
- subroutine [timer_set_date_myd_ds](#) (status, my_date, day, second)
- subroutine [timer_get_date_str](#) (status, strflag, yr, mo, dy, hr, mi, se)
- subroutine [timer_get_date_myd](#) (status, my_date, yr, mo, dy, hr, mi, se)

5.32.1 Member Function/Subroutine Documentation

- 5.32.1.1 subroutine, public messy_main_timer::add_date (INTEGER, intent(in) *days*, INTEGER, intent(in) *seconds*, TYPE (time_days), intent(inout) *my_date*, INTEGER, intent(out), optional *ierr*)
- 5.32.1.2 subroutine, public messy_main_timer::copy_date (TYPE(time_days), intent(in) *date1*, TYPE(time_days), intent(out) *date2*, INTEGER, intent(out), optional *ierr*)
- 5.32.1.3 subroutine, public messy_main_timer::date_get (TYPE(time_days), intent(in) *time*, INTEGER, intent(out), optional *day*, INTEGER, intent(out), optional *second*, INTEGER, intent(out), optional *ierr*)
- 5.32.1.4 subroutine messy_main_timer::date_get_components (TYPE (time_days), intent(in) *time*, INTEGER, intent(out) *year*, INTEGER, intent(out) *month*, INTEGER, intent(out) *day*, INTEGER, intent(out) *hour*, INTEGER, intent(out), optional *minute*, INTEGER, intent(out), optional *second*, INTEGER, intent(out), optional *ierror*)
[private]
- 5.32.1.5 subroutine, public messy_main_timer::date_set (INTEGER, intent(in) *day*, INTEGER, intent(in) *second*, TYPE(time_days), intent(out) *time*)
- 5.32.1.6 subroutine messy_main_timer::date_set_components (INTEGER, intent(in) *nyr*, INTEGER, intent(in) *nmo*, INTEGER, intent(in) *ndy*, INTEGER, intent(in) *nhr*, INTEGER, intent(in) *nmin*, INTEGER, intent(in) *nsec*, TYPE(time_days), intent(out) *i_time*) [private]
- 5.32.1.7 subroutine, public messy_main_timer::eval_time_str (INTEGER, intent(out) *status*, CHARACTER(LEN=*), intent(inout) *z_time_string*, REAL(DP), intent(out) *z_tuf*, INTEGER, intent(out), optional *z_year*, INTEGER, intent(out), optional *z_month*, INTEGER, intent(out), optional *z_day*, INTEGER, intent(out), optional *z_hour*, INTEGER, intent(out), optional *z_min*, INTEGER, intent(out), optional *z_sec*)
- 5.32.1.8 REAL(DP) function, public messy_main_timer::gregor2julian (INTEGER, intent(in) *YY*, INTEGER, intent(in) *MM*, INTEGER, intent(in) *DD*, INTEGER, intent(in) *hr*, INTEGER, intent(in) *mi*, INTEGER, intent(in) *se*)

- 5.32.1.9 subroutine, public messy_main_timer::if_equal (TYPE (time_days), intent(in) *date1*, TYPE (time_days), intent(in) *date2*, LOGICAL, intent(out) *leq*, INTEGER, intent(out), optional *ierr*)
- 5.32.1.10 subroutine, public messy_main_timer::if_less (TYPE (time_days), intent(in) *date1*, TYPE (time_days), intent(in) *date2*, LOGICAL, intent(out) *lless*, INTEGER, intent(out), optional *ierr*)
- 5.32.1.11 subroutine, public messy_main_timer::is_init (TYPE (time_days), intent(in) *date*, LOGICAL, intent(out) *linit*)
- 5.32.1.12 subroutine, public messy_main_timer::julian2gregor (REAL(dp), intent(in) *jdate*, INTEGER, intent(out) *year*, INTEGER, intent(out) *month*, INTEGER, intent(out) *day*, INTEGER, intent(out) *hrs*, INTEGER, intent(out) *mins*, INTEGER, intent(out) *secs*)
- 5.32.1.13 REAL(DP) function, public messy_main_timer::julian_day (REAL(dp), intent(in) *DD*, INTEGER, intent(in) *MM*, INTEGER, intent(in) *YY*)
- 5.32.1.14 INTEGER function, public messy_main_timer::JulianMonthLength (INTEGER, intent(in) *ky*, INTEGER, intent(in) *km*)
- 5.32.1.15 INTEGER function, public messy_main_timer::JulianYearLength (INTEGER, intent(in) *yr*)
- 5.32.1.16 INTEGER function, public messy_main_timer::MonthLength (INTEGER, intent(in) *ky*, INTEGER, intent(in) *km*)
- 5.32.1.17 subroutine, public messy_main_timer::print_date (TYPE (time_days), intent(in) *day*, INTEGER, intent(out) *ierr*, CHARACTER(len=*), intent(out), optional *mess*)
- 5.32.1.18 subroutine, public messy_main_timer::print_date_components (TYPE (time_days), intent(in) *day*, INTEGER, intent(out) *ierr*, CHARACTER(len=STRLEN_ULONG), intent(out), optional *mess*)
- 5.32.1.19 subroutine, public messy_main_timer::time_span_d (REAL(dp), intent(out) *dtd*, INTEGER, intent(in) *yy1*, INTEGER, intent(in) *mo1*, INTEGER, intent(in) *dy1*, INTEGER, intent(in) *hr1*, INTEGER, intent(in) *mi1*, INTEGER, intent(in) *se1*, INTEGER, intent(in) *yy2*, INTEGER, intent(in) *mo2*, INTEGER, intent(in) *dy2*, INTEGER, intent(in) *hr2*, INTEGER, intent(in) *mi2*, INTEGER, intent(in) *se2*)
- 5.32.1.20 subroutine, public messy_main_timer::time_span_s (INTEGER, intent(out) *dts*, INTEGER, intent(in) *yy1*, INTEGER, intent(in) *mo1*, INTEGER, intent(in) *dy1*, INTEGER, intent(in) *hr1*, INTEGER, intent(in) *mi1*, INTEGER, intent(in) *se1*, INTEGER, intent(in) *yy2*, INTEGER, intent(in) *mo2*, INTEGER, intent(in) *dy2*, INTEGER, intent(in) *hr2*, INTEGER, intent(in) *mi2*, INTEGER, intent(in) *se2*)

- 5.32.1.21 subroutine, public messy_main_timer::timer_add_date (INTEGER, intent(out) *status*, INTEGER, intent(in) *add_seconds*, INTEGER, intent(in) *iy*, INTEGER, intent(in) *imo*, INTEGER, intent(in) *idy*, INTEGER, intent(in) *ihr*, INTEGER, intent(in) *imi*, INTEGER, intent(in) *ise*, INTEGER, intent(out) *oyr*, INTEGER, intent(out) *omo*, INTEGER, intent(out) *ody*, INTEGER, intent(out) *ohr*, INTEGER, intent(out) *omi*, INTEGER, intent(out) *ose*)
- 5.32.1.22 subroutine, public messy_main_timer::timer_get_calendar (INTEGER, intent(out) *status*, INTEGER, intent(out) *ical*)
- 5.32.1.23 subroutine messy_main_timer::timer_get_date_myd (INTEGER, intent(out) *status*, TYPE(time_days), intent(in) *my_date*, INTEGER, intent(out) *yr*, INTEGER, intent(out) *mo*, INTEGER, intent(out) *dy*, INTEGER, intent(out) *hr*, INTEGER, intent(out) *mi*, INTEGER, intent(out) *se*) [private]
- 5.32.1.24 subroutine messy_main_timer::timer_get_date_str (INTEGER, intent(out) *status*, CHARACTER(LEN=*), intent(in) *strflag*, INTEGER, intent(out) *yr*, INTEGER, intent(out) *mo*, INTEGER, intent(out) *dy*, INTEGER, intent(out) *hr*, INTEGER, intent(out) *mi*, INTEGER, intent(out) *se*) [private]
- 5.32.1.25 subroutine, public messy_main_timer::timer_get_delta_time (INTEGER, intent(out) *status*, REAL(dp), intent(out) *dt*)
- 5.32.1.26 subroutine, public messy_main_timer::timer_get_labort (LOGICAL, intent(out) *la*)
- 5.32.1.27 subroutine, public messy_main_timer::timer_get_lresume (LOGICAL, intent(out) *lr*)
- 5.32.1.28 subroutine, public messy_main_timer::timer_get_no_cycles (INTEGER, intent(out) *ncyc*)
- 5.32.1.29 subroutine, public messy_main_timer::timer_set_calendar (INTEGER, intent(out) *status*, CHARACTER(LEN=*), intent(in) *strcal*)
- 5.32.1.30 subroutine messy_main_timer::timer_set_date_myd (INTEGER, intent(out) *status*, TYPE(time_days), intent(out) *my_date*, INTEGER, intent(in) *yr*, INTEGER, intent(in) *mo*, INTEGER, intent(in) *dy*, INTEGER, intent(in) *hr*, INTEGER, intent(in) *mi*, INTEGER, intent(in) *se*) [private]
- 5.32.1.31 subroutine messy_main_timer::timer_set_date_myd_ds (INTEGER, intent(out) *status*, TYPE(time_days), intent(out) *my_date*, INTEGER, intent(in) *day*, INTEGER, intent(in) *second*) [private]
- 5.32.1.32 subroutine messy_main_timer::timer_set_date_str (INTEGER, intent(out) *status*, CHARACTER(LEN=*), intent(in) *strflag*, INTEGER, intent(in) *yr*, INTEGER, intent(in) *mo*, INTEGER, intent(in) *dy*, INTEGER, intent(in) *hr*, INTEGER, intent(in) *mi*, INTEGER, intent(in) *se*)

- 5.32.1.33 subroutine messy_main_timer::timer_set_date_str_ds (INTEGER, intent(out) *status*, CHARACTER(LEN=*), intent(in) *strflag*, INTEGER, intent(in) *day*, INTEGER, intent(in) *second*) [private]
- 5.32.1.34 subroutine, public messy_main_timer::timer_set_delta_time (INTEGER, intent(out) *status*, REAL(dp), intent(in) *dt*)
- 5.32.1.35 subroutine, public messy_main_timer::timer_set_labort (LOGICAL, intent(in) *la*)
- 5.32.1.36 subroutine, public messy_main_timer::timer_set_lresume ()
- 5.32.1.37 subroutine, public messy_main_timer::timer_set_no_cycles (INTEGER, intent(in) *ncyc*)
- 5.32.1.38 subroutine, public messy_main_timer::timer_set_time_step_len (LOGICAL, intent(in) *l2tfs*)
- 5.32.1.39 REAL(dp) function, public messy_main_timer::utc2lt (INTEGER, intent(out) *status*, REAL(dp), intent(in) *model_time*, REAL(dp), intent(in) *degree_lon*)
- 5.32.1.40 REAL(dp) function, public messy_main_timer::YearDay (TYPE(time_days) *date*)
- 5.32.1.41 INTEGER function, public messy_main_timer::YearLength (INTEGER, intent(in), optional *yr*)

5.32.2 Member Data Documentation

- 5.32.2.1 INTEGER, parameter, public messy_main_timer::CAL_360D = 1
- 5.32.2.2 INTEGER, parameter, public messy_main_timer::CAL_JULIAN = 0
- 5.32.2.3 INTEGER, public messy_main_timer::CAL_TYPE = 0
- 5.32.2.4 CHARACTER(LEN=8), parameter, public messy_main_timer::CALENDER = (/ 'standard', '360_day' /)
- 5.32.2.5 CHARACTER(len=3), parameter, public messy_main_timer::CMONTHS = (/ 'Jan','Feb','Mar','Apr','May','Jun','Jul','Aug','Sep','Oct','Nov','Dec' /)
- 5.32.2.6 TYPE(time_days), public messy_main_timer::current_date
- 5.32.2.7 INTEGER, public messy_main_timer::current_time_step
- 5.32.2.8 INTEGER, public messy_main_timer::DAY

- 5.32.2.9 INTEGER, public messy_main_timer::DAY_NEXT
- 5.32.2.10 INTEGER, public messy_main_timer::DAY_START
- 5.32.2.11 INTEGER, public messy_main_timer::DAYOFTYEAR
- 5.32.2.12 REAL(dp), public messy_main_timer::delta_time = -999._dp
- 5.32.2.13 INTEGER, public messy_main_timer::HOUR
- 5.32.2.14 INTEGER, public messy_main_timer::HOUR_NEXT
- 5.32.2.15 INTEGER, public messy_main_timer::HOUR_START
- 5.32.2.16 INTEGER, public messy_main_timer::INIT_STEP = 0
- 5.32.2.17 REAL(dp), public messy_main_timer::JULIAN_DATE_START
- 5.32.2.18 LOGICAL, public messy_main_timer::l_rerun = .FALSE.
- 5.32.2.19 LOGICAL, public messy_main_timer::L_TRIGGER_RESTART = .FALSE.
- 5.32.2.20 LOGICAL, public messy_main_timer::LABORT = .FALSE.
- 5.32.2.21 LOGICAL, public messy_main_timer::lbreak = .FALSE.
- 5.32.2.22 LOGICAL, public messy_main_timer::lcycbreak = .FALSE.
- 5.32.2.23 LOGICAL, public messy_main_timer::LDEBUG = .FALSE.
- 5.32.2.24 LOGICAL, public messy_main_timer::LDEBUG2 = .FALSE.
- 5.32.2.25 LOGICAL, public messy_main_timer::lfirst_cycle = .TRUE.
- 5.32.2.26 LOGICAL, public messy_main_timer::lforcedtime = .FALSE.
- 5.32.2.27 LOGICAL, public messy_main_timer::lresume = .FALSE.
- 5.32.2.28 LOGICAL, public messy_main_timer::lstart = .TRUE.
- 5.32.2.29 LOGICAL, public messy_main_timer::lstop = .FALSE.
- 5.32.2.30 INTEGER, public messy_main_timer::MINUTE
- 5.32.2.31 INTEGER, public messy_main_timer::MINUTE_NEXT
- 5.32.2.32 INTEGER, public messy_main_timer::MINUTE_START

- 5.32.2.33 CHARACTER(LEN=*), parameter, public messy_main_timer::modstr = 'timer'
- 5.32.2.34 CHARACTER(LEN=*), parameter, public messy_main_timer::modver = '0.1'
- 5.32.2.35 INTEGER, public messy_main_timer::MONTH
- 5.32.2.36 INTEGER, public messy_main_timer::MONTH_NEXT
- 5.32.2.37 INTEGER, public messy_main_timer::MONTH_START
- 5.32.2.38 TYPE(time_days), public messy_main_timer::next_date
- 5.32.2.39 INTEGER, public messy_main_timer::NO_CYCLES = 9999
- 5.32.2.40 INTEGER, public messy_main_timer::NO_DAYS = -9999
- 5.32.2.41 INTEGER, public messy_main_timer::NO_STEPS = -9999
- 5.32.2.42 TYPE(time_days), public messy_main_timer::previous_date
- 5.32.2.43 TYPE(time_days), public messy_main_timer::rerun_stop_date
- 5.32.2.44 TYPE(time_days), public messy_main_timer::resume_date
- 5.32.2.45 INTEGER, public messy_main_timer::SECOND
- 5.32.2.46 INTEGER, public messy_main_timer::SECOND_NEXT
- 5.32.2.47 INTEGER, public messy_main_timer::SECOND_START
- 5.32.2.48 TYPE(time_days), public messy_main_timer::start_date
- 5.32.2.49 TYPE(time_days), public messy_main_timer::stop_date
- 5.32.2.50 REAL(dp), public messy_main_timer::time_step_len = 0._dp
- 5.32.2.51 INTEGER, public messy_main_timer::YEAR
- 5.32.2.52 INTEGER, public messy_main_timer::YEAR_NEXT
- 5.32.2.53 INTEGER, public messy_main_timer::YEAR_START

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_main_timer.f90](#)

5.33 messy_main_tools Module Reference

Data Types

- interface [ind2val](#)
- interface [iso2ind](#)
- type [PTR_0D_ARRAY](#)
- type [PTR_1D_ARRAY](#)
- type [PTR_1D_ARRAY_INT](#)
- type [PTR_2D_ARRAY](#)
- type [PTR_3D_ARRAY](#)
- type [PTR_4D_ARRAY](#)
- type [PTR_5D_ARRAY](#)
- interface [remap_bounds](#)
- interface [str](#)
- interface [str2num](#)
- type [t_reset_par](#)

Public Member Functions

- subroutine, public [read_nml_open](#) (lex, substr, iou, nmlstr, modstr)
- subroutine, public [read_nml_check](#) (fstat, substr, iou, nmlstr, modstr)
- subroutine, public [read_nml_close](#) (substr, iou, modstr)
- subroutine [iso2ind_1d](#) (field, iso, k, f, lrev)
- subroutine, public [int2str](#) (str, ii, cpad, cerr)
- subroutine, public [strcrack](#) (str, ch, el, n)
- subroutine, public [ns_index](#) (list, value, idx, idx2, l_periodic)
- subroutine, public [nn_index](#) (list, value, idx, idx2, fac, status)
- subroutine, public [nl_index](#) (list, value, idx, status)
- REAL(DP) function, dimension(:), allocatable, public [fliparray](#) (list)
- subroutine, public [init_convect_tables](#)
- LOGICAL function, public [match_wild](#) (pattern, string)
- subroutine, public [str2chob](#) (status, str, n, c, o)
- subroutine, public [bilin_weight](#) (vn, v, w)
- REAL(dp) function, public [psat_mk](#) (p_temp, p_l_liquid)
- subroutine, public [ucase](#) (string)
- REAL(dp) function, public [spec2relhumwmo](#) (status, z_spechum, z_temp, z_press, z_l_psat_ema)
- REAL(dp) function, public [spec2relhum](#) (status, z_spechum, z_temp, z_press, z_l_psat_ema)
- subroutine, public [spec2relhum_q](#) (status, relhum, spechum, temp, press, liq_only)
- REAL(dp) function, public [rel2spechumwmo](#) (status, z_relhum, z_temp, z_press, z_l_psat_ema)
- REAL(dp) function, public [rel2spechum](#) (status, z_relhum, z_temp, z_press, z_l_psat_ema)

- REAL(dp) function, public [rh2mr](#) (status, p_relhum, p_temp, p_press, p_l_psat_ -
emac, p_l_relhum_wmo)
- REAL(dp) function, public [relhum2mr](#) (status, z_relhum, z_temp, z_press, z_l_ -
psat_ emac)
- REAL(dp) function, public [relhumwmo2mr](#) (status, z_relhum, z_temp, z_press, z_l_ -
psat_ emac)
- REAL(dp) function, public [cair_trad](#) (status, z_relhum, z_temp, z_press, z_l_psat_ -
emac)
- REAL(dp) function, public [cair_wmo](#) (status, z_relhum, z_temp, z_press, z_l_ -
psat_ emac)
- REAL(dp) function, dimension(:), pointer [remap_bounds1](#) (lb1, array)
- subroutine, public [full2half](#) (full, half, press, pressi)
- subroutine, public [CalcTimeAngles](#) (utsec, sda, ssa, rlt, csza, sza, daylen_sec, rlat, phi)
- subroutine, public [Spline1D](#) (X, Y, N, YP1, YPN, Y2, natspline)
- subroutine, public [Splint1D](#) (XA, YA, Y2A, N, X, Y, status)
- INTEGER function, public [find_next_free_unit](#) (istart, istop)
- ELEMENTAL REAL(dp) function, public [mass_density](#) (press, temp, sphum)
- ELEMENTAL REAL(dp) function, public [layerthickness](#) (geopot_u, geopot_l)
- subroutine [str2num_real_dp](#) (str, out, err)
- subroutine, public [ERRFUNC](#) (X, ERESULT, JINT)
- subroutine, public [calc_hybrid_coeff](#) (ke, vcoord, vcflat, irefatm, ivctype, hyam, hyai, hybm, hybi)
- subroutine, public [interpol_stag2mid](#) (stag_field, mid_field, ie, je, ke, intdim)
- subroutine, public [interpol_mid2stag](#) (mid_field, stag_field, ie, je, ke, intdim)

Public Attributes

- INTEGER, parameter, public [jptlucu1](#) = 50000
- INTEGER, parameter, public [jptlucu2](#) = 400000
- REAL(dp), dimension(jptlucu1:jptlucu2), target, save, public [tlucua](#)
- REAL(dp), dimension(jptlucu1:jptlucu2), target, save, public [tlucub](#)
- REAL(dp), dimension(jptlucu1:jptlucu2), target, save, public [tlucuc](#)
- REAL(dp), dimension(jptlucu1:jptlucu2), target, save, public [tlucuaw](#)

Private Member Functions

- subroutine [iso2ind_2d](#) (kproma, field, iso, k, f, lrev)
- subroutine [ind2val_1d](#) (val, field, k, f)
- subroutine [ind2val_2d](#) (kproma, val, field, k, f)
- CHARACTER(LEN=5) function [str_logical](#) (zlogical, fmt)
- CHARACTER(LEN=STRLEN_LONG) function [str_integer](#) (zinteger, fmt)
- CHARACTER(LEN=STRLEN_LONG) function [str_real_sp](#) (zreal_sp, fmt)
- CHARACTER(LEN=STRLEN_LONG) function [str_real_dp](#) (zreal_dp, fmt)
- REAL(dp) function, dimension(:, :), pointer [remap_bounds2](#) (lb1, lb2, array)
- REAL(dp) function, dimension(:, :, :), pointer [remap_bounds3](#) (lb1, lb2, lb3, array)

- REAL(dp) function, dimension(:, :, :), pointer [remap_bounds4](#) (lb1, lb2, lb3, lb4, array)
- subroutine [str2num_real_sp](#) (str, out, err)
- subroutine [str2num_integer](#) (str, out, err)

5.33.1 Member Function/Subroutine Documentation

- 5.33.1.1 subroutine, public messy_main_tools::bilin_weight (REAL(dp), dimension(4, 2), intent(in) *vn*, REAL(dp), dimension(2), intent(in) *v*, REAL(dp), dimension(4), intent(out) *w*)
- 5.33.1.2 REAL(dp) function, public messy_main_tools::cair_trad (INTEGER, intent(out) *status*, REAL(dp), intent(in) *z_relhum*, REAL(dp), intent(in) *z_temp*, REAL(dp), intent(in) *z_press*, LOGICAL, intent(in), optional *z_lpsat_emac*)
- 5.33.1.3 REAL(dp) function, public messy_main_tools::cair_wmo (INTEGER, intent(out) *status*, REAL(dp), intent(in) *z_relhum*, REAL(dp), intent(in) *z_temp*, REAL(dp), intent(in) *z_press*, LOGICAL, intent(in), optional *z_lpsat_emac*)
- 5.33.1.4 subroutine, public messy_main_tools::calc_hybrid_coeff (INTEGER, intent(in) *ke*, REAL(dp), dimension(ke+1), intent(in) *vcoord*, REAL(dp), intent(in) *vcflat*, INTEGER, intent(in) *irefatm*, INTEGER, intent(in) *ivctype*, REAL(dp), dimension(ke), intent(out), optional *hyam*, REAL(dp), dimension(ke+1), intent(out), optional *hyai*, REAL(dp), dimension(ke), intent(out), optional *hybm*, REAL(dp), dimension(ke+1), intent(out), optional *hybi*)
- 5.33.1.5 subroutine, public messy_main_tools::CalcTimeAngles (REAL(dp), intent(in) *utsec*, REAL(dp), intent(in) *sda*, REAL(dp), dimension(:), intent(out) *ssa*, REAL(dp), dimension(:), intent(out) *rlt*, REAL(dp), dimension(:, :), intent(out) *csza*, REAL(dp), dimension(:, :), intent(out) *sza*, REAL(dp), intent(in) *daylen_sec*, REAL(dp), dimension(:), intent(in) *rlat*, REAL(dp), dimension(:), intent(in) *phi*)
- 5.33.1.6 subroutine, public messy_main_tools::ERRFUNC (REAL *X*, REAL *ERESULT*, INTEGER *JINT*)
- 5.33.1.7 INTEGER function, public messy_main_tools::find_next_free_unit (INTEGER *istart*, INTEGER *istop*)
- 5.33.1.8 REAL(DP) function, dimension(:), allocatable, public messy_main_tools::fliparray (REAL(DP), dimension(:), intent(in) *list*)
- 5.33.1.9 subroutine, public messy_main_tools::full2half (REAL(dp), dimension(:, :), intent(in) *full*, REAL(dp), dimension(:, :), intent(out) *half*, REAL(dp), dimension(:, :), intent(in) *press*, REAL(dp), dimension(:, :), intent(in) *pressi*)

- 5.33.1.10 subroutine `messy_main_tools::ind2val_1d` (`REAL(DP)`, intent(out) *val*, `REAL(DP)`, dimension(:), intent(in) *field*, `INTEGER`, intent(in) *k*, `REAL(DP)`, intent(in), optional *f*) [`private`]
- 5.33.1.11 subroutine `messy_main_tools::ind2val_2d` (`INTEGER`, intent(in) *kproma*, `REAL(DP)`, dimension(:), intent(out) *val*, `REAL(DP)`, dimension(:,,:), intent(in) *field*, `INTEGER`, dimension(:), intent(in) *k*, `REAL(DP)`, dimension(:), intent(in), optional *f*) [`private`]
- 5.33.1.12 subroutine, public `messy_main_tools::init_convect_tables` ()
- 5.33.1.13 subroutine, public `messy_main_tools::int2str` (`CHARACTER(LEN=*)`, intent(out) *str*, `INTEGER`, intent(in) *ii*, `CHARACTER`, intent(in), optional *cpad*, `CHARACTER`, intent(in), optional *cerr*)
- 5.33.1.14 subroutine, public `messy_main_tools::interpol_mid2stag` (`REAL(DP)`, dimension(:,,:), intent(in) *mid_field*, `REAL(DP)`, dimension(:,,:), intent(out) *stag_field*, `INTEGER`, intent(in) *ie*, `INTEGER`, intent(in) *je*, `INTEGER`, intent(in) *ke*, `INTEGER`, intent(in) *intdim*)
- 5.33.1.15 subroutine, public `messy_main_tools::interpol_stag2mid` (`REAL(DP)`, dimension(:,,:), intent(in) *stag_field*, `REAL(DP)`, dimension(:,,:), intent(out) *mid_field*, `INTEGER`, intent(in) *ie*, `INTEGER`, intent(in) *je*, `INTEGER`, intent(in) *ke*, `INTEGER`, intent(in) *intdim*)
- 5.33.1.16 subroutine `messy_main_tools::iso2ind_1d` (`REAL(DP)`, dimension(:), intent(in) *field*, `REAL(DP)`, intent(in) *iso*, `INTEGER`, intent(out) *k*, `REAL(DP)`, intent(out), optional *f*, `LOGICAL`, intent(in), optional *lrev*)
- 5.33.1.17 subroutine `messy_main_tools::iso2ind_2d` (`INTEGER`, intent(in) *kproma*, `REAL(DP)`, dimension(:,,:), intent(in) *field*, `REAL(DP)`, dimension(:), intent(in) *iso*, `INTEGER`, dimension(:), intent(out) *k*, `REAL(DP)`, dimension(:), intent(out), optional *f*, `LOGICAL`, intent(in), optional *lrev*) [`private`]
- 5.33.1.18 ELEMENTAL `REAL(dp)` function, public `messy_main_tools::layerthickness` (`REAL(dp)`, intent(in) *geopot_u*, `REAL(dp)`, intent(in) *geopot_l*)
- 5.33.1.19 ELEMENTAL `REAL(dp)` function, public `messy_main_tools::mass_density` (`REAL(dp)`, intent(in) *press*, `REAL(dp)`, intent(in) *temp*, `REAL(dp)`, intent(in) *sphum*)
- 5.33.1.20 `LOGICAL` function, public `messy_main_tools::match_wild` (`CHARACTER(LEN=*)`, intent(in) *pattern*, `CHARACTER(LEN=*)`, intent(in) *string*)
- 5.33.1.21 subroutine, public `messy_main_tools::nl_index` (`REAL(DP)`, dimension(:), intent(in) *list*, `REAL(DP)`, intent(in) *value*, `INTEGER`, intent(out) *idx*, `INTEGER`, intent(out), optional *status*)

- 5.33.1.22 subroutine, public messy_main_tools::nn_index (REAL(DP), dimension(:), intent(in) *list*, REAL(DP), intent(in) *value*, INTEGER, intent(out) *idx*, INTEGER, intent(out), optional *idx2*, REAL(DP), intent(in), optional *fac*, INTEGER, intent(out), optional *status*)
- 5.33.1.23 subroutine, public messy_main_tools::ns_index (REAL(DP), dimension(:), intent(in) *list*, REAL(DP), intent(in) *value*, INTEGER, intent(out) *idx*, INTEGER, intent(out), optional *idx2*, LOGICAL, intent(in), optional *l_periodic*)
- 5.33.1.24 REAL(dp) function, public messy_main_tools::psat_mk (REAL(dp), intent(in) *p_temp*, LOGICAL, intent(in), optional *p_l_liquid*)
- 5.33.1.25 subroutine, public messy_main_tools::read_nml_check (INTEGER, intent(in) *fstat*, CHARACTER(LEN=*), intent(in) *substr*, INTEGER, intent(in) *iou*, CHARACTER(LEN=*), intent(in) *nmlstr*, CHARACTER(LEN=*), intent(in) *modstr*)
- 5.33.1.26 subroutine, public messy_main_tools::read_nml_close (CHARACTER(LEN=*), intent(in) *substr*, INTEGER, intent(in) *iou*, CHARACTER(LEN=*), intent(in) *modstr*)
- 5.33.1.27 subroutine, public messy_main_tools::read_nml_open (LOGICAL, intent(out) *lex*, CHARACTER(LEN=*), intent(in) *substr*, INTEGER, intent(in) *iou*, CHARACTER(LEN=*), intent(in) *nmlstr*, CHARACTER(LEN=*), intent(in) *modstr*)
- 5.33.1.28 REAL(dp) function, public messy_main_tools::rel2spechum (INTEGER, intent(out) *status*, REAL(dp), intent(in) *z_relhum*, REAL(dp), intent(in) *z_temp*, REAL(dp), intent(in) *z_press*, LOGICAL, intent(in), optional *z_l_psat_ema*)
- 5.33.1.29 REAL(dp) function, public messy_main_tools::rel2spechumwmo (INTEGER, intent(out) *status*, REAL(dp), intent(in) *z_relhum*, REAL(dp), intent(in) *z_temp*, REAL(dp), intent(in) *z_press*, LOGICAL, intent(in), optional *z_l_psat_ema*)
- 5.33.1.30 REAL(dp) function, public messy_main_tools::relhum2mr (INTEGER, intent(out) *status*, REAL(dp), intent(in) *z_relhum*, REAL(dp), intent(in) *z_temp*, REAL(dp), intent(in) *z_press*, LOGICAL, intent(in) *z_l_psat_ema*)
- 5.33.1.31 REAL(dp) function, public messy_main_tools::relhumwmo2mr (INTEGER, intent(out) *status*, REAL(dp), intent(in) *z_relhum*, REAL(dp), intent(in) *z_temp*, REAL(dp), intent(in) *z_press*, LOGICAL, intent(in) *z_l_psat_ema*)
- 5.33.1.32 REAL(dp) function, dimension(:), pointer messy_main_tools::remap_bounds1 (INTEGER, intent(in) *lb1*, REAL(dp), dimension(lb1:), intent(in), target *array*)
- 5.33.1.33 REAL(dp) function, dimension(:, :), pointer messy_main_tools::remap_bounds2 (INTEGER, intent(in) *lb1*, INTEGER, intent(in) *lb2*, REAL(dp), dimension(lb1:, lb2:), intent(in), target *array*) [private]

- 5.33.1.34 REAL(dp) function, dimension(:,:,:), pointer messy_main_tools::remap_
bounds3 (INTEGER, intent(in) lb1, INTEGER, intent(in) lb2, INTEGER, intent(in) lb3,
REAL(dp), dimension(lb1:,lb2:,lb3:), intent(in), target array) [private]
- 5.33.1.35 REAL(dp) function, dimension(:,:,:), pointer messy_main_tools::remap_
bounds4 (INTEGER, intent(in) lb1, INTEGER, intent(in) lb2, INTEGER, intent(in) lb3,
INTEGER, intent(in) lb4, REAL(dp), dimension(lb1:,lb2:,lb3:,lb4:), intent(in), target
array) [private]
- 5.33.1.36 REAL(dp) function, public messy_main_tools::rh2mr (INTEGER, intent(out)
status, REAL(dp), intent(in) p_relhum, REAL(dp), intent(in) p_temp, REAL(dp),
intent(in) p_press, LOGICAL, intent(in), optional p_l_psat_emac, LOGICAL, intent(in),
optional p_l_relhum_wmo)
- 5.33.1.37 REAL(dp) function, public messy_main_tools::spec2relhum (INTEGER,
intent(out) status, REAL(dp), intent(in) z_spechum, REAL(dp), intent(in) z_temp,
REAL(dp), intent(in) z_press, LOGICAL, intent(in), optional z_l_psat_emac)
- 5.33.1.38 subroutine, public messy_main_tools::spec2relhum_q (INTEGER, intent(out)
status, REAL(dp), intent(out) relhum, REAL(dp), intent(in) spechum, REAL(dp),
intent(in) temp, REAL(dp), intent(in) press, LOGICAL, intent(in), optional liq_only)
- 5.33.1.39 REAL(dp) function, public messy_main_tools::spec2relhumwmo (INTEGER,
intent(out) status, REAL(dp), intent(in) z_spechum, REAL(dp), intent(in) z_temp,
REAL(dp), intent(in) z_press, LOGICAL, intent(in), optional z_l_psat_emac)
- 5.33.1.40 subroutine, public messy_main_tools::Spline1D (REAL(dp), dimension(:),
intent(in) X, REAL(dp), dimension(:), intent(in) Y, INTEGER, intent(in) N, REAL(dp),
intent(in) YP1, REAL(dp), intent(in) YPN, REAL(dp), dimension(:), intent(out) Y2,
LOGICAL, intent(in), optional natspline)
- 5.33.1.41 subroutine, public messy_main_tools::Splint1D (REAL(dp), dimension(:),
intent(in) XA, REAL(dp), dimension(:), intent(in) YA, REAL(dp), dimension(:), intent(in)
Y2A, INTEGER, intent(in) N, REAL(dp), intent(in) X, REAL(dp), intent(out) Y,
INTEGER, intent(out) status)
- 5.33.1.42 subroutine, public messy_main_tools::str2chob (INTEGER, intent(out) status,
CHARACTER(LEN=*), intent(in) str, INTEGER, intent(out) n, CHARACTER(LEN=*),
dimension(:), pointer c, CHARACTER(LEN=*), dimension(:), pointer o)
- 5.33.1.43 subroutine messy_main_tools::str2num_integer (CHARACTER(LEN=*),
intent(in) str, INTEGER, intent(out) out, INTEGER, intent(out), optional err)
[private]
- 5.33.1.44 subroutine messy_main_tools::str2num_real_dp (CHARACTER(LEN=*),
intent(in) str, REAL(dp), intent(out) out, INTEGER, intent(out), optional err)

- 5.33.1.45 subroutine messy_main_tools::str2num_real_sp (CHARACTER(LEN=*),
intent(in) *str*, REAL(sp), intent(out) *out*, INTEGER, intent(out), optional *err*)
[private]
- 5.33.1.46 CHARACTER(LEN=STRLEN_LONG) function messy_main_tools::str_integer (INTEGER, intent(in) *zinteger*, CHARACTER(LEN=*), intent(in), optional *fmt*)
[private]
- 5.33.1.47 CHARACTER(LEN=5) function messy_main_tools::str_logical (LOGICAL, intent(in) *zlogical*, CHARACTER(LEN=*), intent(in), optional *fmt*) [private]
- 5.33.1.48 CHARACTER(LEN=STRLEN_LONG) function messy_main_tools::str_real_dp (REAL(dp), intent(in) *zreal_dp*, CHARACTER(LEN=*), intent(in), optional *fmt*)
[private]
- 5.33.1.49 CHARACTER(LEN=STRLEN_LONG) function messy_main_tools::str_real_sp (REAL(sp), intent(in) *zreal_sp*, CHARACTER(LEN=*), intent(in), optional *fmt*)
[private]
- 5.33.1.50 subroutine, public messy_main_tools::strcrack (CHARACTER(LEN=*),
intent(in) *str*, CHARACTER, intent(in) *ch*, CHARACTER(LEN=*), dimension(:), pointer
el, INTEGER, intent(out) *n*)
- 5.33.1.51 subroutine, public messy_main_tools::ucase (CHARACTER(LEN=*),
intent(inout) *string*)

5.33.2 Member Data Documentation

- 5.33.2.1 INTEGER, parameter, public messy_main_tools::jptlucu1 = 50000
- 5.33.2.2 INTEGER, parameter, public messy_main_tools::jptlucu2 = 400000
- 5.33.2.3 REAL(dp), dimension(jptlucu1:jptlucu2), target, save, public
messy_main_tools::tlucua
- 5.33.2.4 REAL(dp), dimension(jptlucu1:jptlucu2), target, save, public
messy_main_tools::tlucuaw
- 5.33.2.5 REAL(dp), dimension(jptlucu1:jptlucu2), target, save, public
messy_main_tools::tlucub
- 5.33.2.6 REAL(dp), dimension(jptlucu1:jptlucu2), target, save, public
messy_main_tools::tlucuc

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90

5.34 messy_main_tools_kp4_compress Module Reference

Data Types

- interface [kco_compress](#)
- interface [kco_finalize](#)
- interface [kco_initialize](#)

Public Member Functions

- subroutine, public [kco_initialize](#) (npoints_initial, f, IERR, Kacc, Krej)
- subroutine, public [kco_compress](#) (n_points, T, H, Hnew, IERR, f, RCONST, FIX, RejectLastH, RejectMoreH, Kacc, Krej)
- subroutine, public [kco_finalize](#) (f, IERR, Kacc, Krej)

Public Attributes

- integer, dimension(:), allocatable, public [index_org](#)
- logical, dimension(:), allocatable, public [cell_done](#)

Private Attributes

- INTEGER, parameter [dp](#) = SELECTED_REAL_KIND(12, 307)
- integer [kpoints](#)
- integer [kpoints_save](#)
- integer, dimension(:), allocatable [index_step](#)
- logical, dimension(:), allocatable [done_check](#)
- real(kind=[dp](#)), dimension(:,:), allocatable [f_done](#)
- integer, dimension(:), allocatable [Kacc_done](#)
- integer, dimension(:), allocatable [Krej_done](#)
- integer, dimension(:), allocatable [ierr_done](#)

5.34.1 Member Function/Subroutine Documentation

- 5.34.1.1 subroutine, public messy_main_tools_kp4_compress::kco_compress
 (integer, intent(inout) *n_points*, real(kind=[dp](#)), dimension(:), intent(inout) *T*,
 real(kind=[dp](#)), dimension(:), intent(inout) *H*, real(kind=[dp](#)), dimension(:), intent(inout)
Hnew, INTEGER, dimension(:), intent(inout) *IERR*, real(kind=[dp](#)), dimension(:,:),
 intent(inout) *f*, real(kind=[dp](#)), dimension(:,:), intent(inout) *RCONST*, real(kind=[dp](#)),
 dimension(:,:), intent(inout) *FIX*, LOGICAL, dimension(:), intent(inout) *RejectLastH*,
 LOGICAL, dimension(:), intent(inout) *RejectMoreH*, integer, dimension(:), intent(inout)
Kacc, integer, dimension(:), intent(inout) *Krej*)

5.34.1.2 subroutine, public messy_main_tools_kp4_compress::kco_finalize (
 real(kind=dp), dimension(:,:), intent(inout) *f*, integer, dimension(:), intent(inout) *IERR*,
 integer, dimension(:), intent(inout) *Kacc*, integer, dimension(:), intent(inout) *Krej*)

5.34.1.3 subroutine, public messy_main_tools_kp4_compress::kco_initialize (
 integer, intent(in) *npoints_initial*, real(kind=dp), dimension(:,:), intent(in) *f*, integer,
 dimension(:), intent(in) *IERR*, integer, dimension(:), intent(in) *Kacc*, integer,
 dimension(:), intent(in) *Krej*)

5.34.2 Member Data Documentation

5.34.2.1 logical, dimension(:), allocatable, public messy_main_tools_kp4_compress-
 ::cell_done

5.34.2.2 logical, dimension(:), allocatable messy_main_tools_kp4_compress::done_
 check [private]

5.34.2.3 INTEGER, parameter messy_main_tools_kp4_compress::dp =
 SELECTED_REAL_KIND(12, 307) [private]

5.34.2.4 real(kind=dp), dimension(:,:), allocatable messy_main_tools_kp4_compress::f-
 _done [private]

5.34.2.5 integer, dimension(:), allocatable messy_main_tools_kp4_compress::ierr_
 done [private]

5.34.2.6 integer, dimension(:), allocatable, public messy_main_tools_kp4_compress-
 ::index_org

5.34.2.7 integer, dimension(:), allocatable messy_main_tools_kp4_compress::index_
 step [private]

5.34.2.8 integer, dimension(:), allocatable messy_main_tools_kp4_compress::Kacc_
 done [private]

5.34.2.9 integer messy_main_tools_kp4_compress::kpoints [private]

5.34.2.10 integer messy_main_tools_kp4_compress::kpoints_save [private]

5.34.2.11 integer, dimension(:), allocatable messy_main_tools_kp4_compress::Krej_
 done [private]

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools_kp4-
 _compress.f90

5.35 messy_mecca Module Reference

Public Member Functions

- subroutine, public [mecca_read_nml_ctrl](#) (status, iou)
- subroutine, public [initialize_kpp_variables](#)
- LOGICAL function, public [steady_state_reached](#) (c, timesteplen)
- subroutine, public [define_mcexp](#) (status, mcexp)

Public Attributes

- CHARACTER(LEN=*), parameter, public [modstr](#) = 'mecca'
- CHARACTER(LEN=*), parameter, public [modver](#) = '3.7g'
- LOGICAL, save, public [l_aero](#)
- CHARACTER(LEN=STRLEN_SHORT), save, public [mecca_aero](#) = 'AUTO'
- LOGICAL, save, public [l_force_khet](#) = .FALSE.
- LOGICAL, save, public [l_kpp_debug](#) = .FALSE.
- LOGICAL, save, public [l_tag](#) = .FALSE.
- LOGICAL, save, public [l_dbl](#) = .FALSE.
- INTEGER, save, public [mcexp_seed](#) = 0

5.35.1 Member Function/Subroutine Documentation

- 5.35.1.1 subroutine, public `messy_mecca::define_mcexp` (`INTEGER`, intent(out) *status*, `REAL(DP)`, dimension(:), intent(out) *mcexp*)
- 5.35.1.2 subroutine, public `messy_mecca::initialize_kpp_variables` ()
- 5.35.1.3 subroutine, public `messy_mecca::mecca_read_nml_ctrl` (`INTEGER`, intent(out) *status*, `INTEGER`, intent(in) *iou*)
- 5.35.1.4 LOGICAL function, public `messy_mecca::steady_state_reached` (`REAL(DP)`, dimension(:), intent(in) *c*, `REAL(DP)`, intent(in) *timesteplen*)

5.35.2 Member Data Documentation

- 5.35.2.1 LOGICAL, save, public `messy_mecca::l_aero`
- 5.35.2.2 LOGICAL, save, public `messy_mecca::l_dbl` = .FALSE.
- 5.35.2.3 LOGICAL, save, public `messy_mecca::l_force_khet` = .FALSE.
- 5.35.2.4 LOGICAL, save, public `messy_mecca::l_kpp_debug` = .FALSE.
- 5.35.2.5 LOGICAL, save, public `messy_mecca::l_tag` = .FALSE.

5.35.2.6 INTEGER, save, public messy_mecca::mcexp_seed = 0

5.35.2.7 CHARACTER(LEN=STRLEN_SHORT), save, public messy_mecca::mecca_aero = 'AUTO'

5.35.2.8 CHARACTER(LEN=*), parameter, public messy_mecca::modstr = 'mecca'

5.35.2.9 CHARACTER(LEN=*), parameter, public messy_mecca::modver = '3.7g'

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_mecca.f90](#)

5.36 messy_mecca_aero Module Reference

Public Member Functions

- subroutine, public [mecca_aero_init_gasaq](#) (l_print)
- subroutine, public [mecca_aero_calc_k_ex](#) (radius, temp, press, loghet, xaer, lwc, C, k_exf, k_exb, k_exf_N2O5, k_exf_CINO3, k_exf_BrNO3)
- subroutine, public [mecca_aero_calc_k_ex_ocean](#) (xaer, radius, temp, zmix, k_exf, k_exb)
- subroutine, public [mecca_aero_diag](#) (zmr_Brsalt, zmr_Brorg, zmr_BrSScap, zmrac_Brsalt, zmrac_Brorg, zmrac_BrSScap)

Public Attributes

- CHARACTER(len=*), parameter, public [submodstr](#) = 'mecca_aero'

Private Attributes

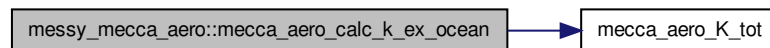
- REAL(DP) [alpha_T0](#)
- REAL(DP) [alpha_Tdep](#)
- REAL(DP) [Henry_T0](#)
- REAL(DP) [Henry_Tdep](#)
- REAL(DP), dimension(0:nspec) [molar_mass](#)

5.36.1 Member Function/Subroutine Documentation

5.36.1.1 subroutine, public messy_mecca_aero::mecca_aero_calc_k_ex (REAL(DP), dimension(:), intent(in) *radius*, REAL(DP), intent(in) *temp*, REAL(DP), intent(in) *press*, LOGICAL, dimension(:), intent(in) *loghet*, REAL(DP), dimension(:), intent(in) *xaer*, REAL(DP), dimension(:), intent(in) *lwc*, REAL(DP), dimension(:), intent(in) *C*, REAL(DP), dimension(:, :), intent(out) *k_exf*, REAL(DP), dimension(:, :), intent(out) *k_exb*, REAL(DP), dimension(:), intent(out) *k_exf_N2O5*, REAL(DP), dimension(:), intent(out) *k_exf_CINO3*, REAL(DP), dimension(:), intent(out) *k_exf_BrNO3*)

5.36.1.2 subroutine, public messy_mecca_aero::mecca_aero_calc_k_ex_ocean (REAL(dp), dimension(:), intent(in) *xaer*, REAL(dp), dimension(:), intent(in) *radius*, REAL(DP), intent(in) *temp*, REAL(dp), intent(in) *zmix*, REAL(dp), dimension(:, :), intent(inout) *k_exf*, REAL(dp), dimension(:, :), intent(inout) *k_exb*)

Here is the call graph for this function:



5.36.1.3 subroutine, public messy_mecca_aero::mecca_aero_diag (REAL(DP), intent(in) *zmr_Brsalt*, REAL(DP), intent(in) *zmr_Brorg*, REAL(DP), intent(in) *zmr_BrSScap*, REAL(DP), intent(inout) *zmrac_Brsalt*, REAL(DP), intent(inout) *zmrac_Brorg*, REAL(DP), intent(in) *zmrac_BrSScap*)

5.36.1.4 subroutine, public messy_mecca_aero::mecca_aero_init_gasaq (LOGICAL, intent(in), optional *I_print*)

5.36.2 Member Data Documentation

5.36.2.1 REAL(DP) messy_mecca_aero::alpha_T0 [private]

5.36.2.2 REAL(DP) messy_mecca_aero::alpha_Tdep [private]

5.36.2.3 REAL(DP) messy_mecca_aero::Henry_T0 [private]

5.36.2.4 REAL(DP) messy_mecca_aero::Henry_Tdep [private]

5.36.2.5 REAL(DP), dimension(0:nspec) messy_mecca_aero::molar_mass [private]

5.36.2.6 CHARACTER(len=*), parameter, public messy_mecca_aero::submodstr =
'mecca_aero'

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_aero.f90

5.37 messy_mecca_box Module Reference

Public Member Functions

- subroutine, public [mecca_init](#)
- subroutine [define_aerosol](#)
- subroutine [x0](#)
- subroutine, public [mecca_physc](#)
- subroutine, public [mecca_result](#)
- subroutine, public [mecca_finish](#)

Public Attributes

- INTEGER, parameter [NBL](#) = 1
- REAL(DP), dimension(ip_max) [jx](#) = 0.
- REAL(DP), dimension(:), allocatable [xaer](#)
- REAL(DP), dimension(apn) [cvfac](#)
- REAL(DP), dimension(:), allocatable [lwc](#)
- REAL(DP), dimension(apn, nspec) [k_exf](#)
- REAL(DP), dimension(apn, nspec) [k_exb](#)
- REAL(DP) [k_exf_N2O5](#)
- REAL(DP) [k_exf_CINO3](#)
- REAL(DP) [k_exf_BrNO3](#)
- REAL(DP) [dummy_khet_Tr](#)
- REAL(DP) [dummy_khet_St](#)
- REAL(DP), dimension(nspec) [output](#)
- CHARACTER(LEN=20), dimension(nspec) [c_unit](#)
- INTEGER [ncid_aero](#)
- INTEGER [ncid_tracer](#)
- INTEGER [ncid_spec](#)
- REAL(DP) [HCO3m_rel](#)
- REAL(DP) [NO3m_rel](#)
- REAL(DP) [Clm_rel](#)
- REAL(DP) [Brm_rel](#)
- REAL(DP) [Im_rel](#)
- REAL(DP) [IO3m_rel](#)
- REAL(DP) [SO4mm_rel](#)
- REAL(DP), dimension(:), allocatable [csalt](#)

- REAL(DP), dimension(:), allocatable [exchng](#)
- REAL(DP), dimension(:), allocatable [radius](#)
- REAL(DP), dimension(:), allocatable [c0_NH4p](#)
- REAL(DP), dimension(:), allocatable [c0_Nap](#)
- REAL(DP), dimension(:), allocatable [c0_HCO3m](#)
- REAL(DP), dimension(:), allocatable [c0_NO3m](#)
- REAL(DP), dimension(:), allocatable [c0_Clm](#)
- REAL(DP), dimension(:), allocatable [c0_Brm](#)
- REAL(DP), dimension(:), allocatable [c0_Im](#)
- REAL(DP), dimension(:), allocatable [c0_IO3m](#)
- REAL(DP), dimension(:), allocatable [c0_SO4mm](#)
- REAL(DP), dimension(:), allocatable [c0_HSO4m](#)
- REAL(DP), dimension(max_mcexp) [mcexp](#)

5.37.1 Member Function/Subroutine Documentation

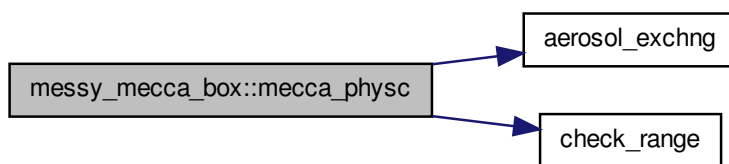
5.37.1.1 subroutine `messy_mecca_box::define_aerosol` ()

5.37.1.2 subroutine, public `messy_mecca_box::mecca_finish` ()

5.37.1.3 subroutine, public `messy_mecca_box::mecca_init` ()

5.37.1.4 subroutine, public `messy_mecca_box::mecca_physc` ()

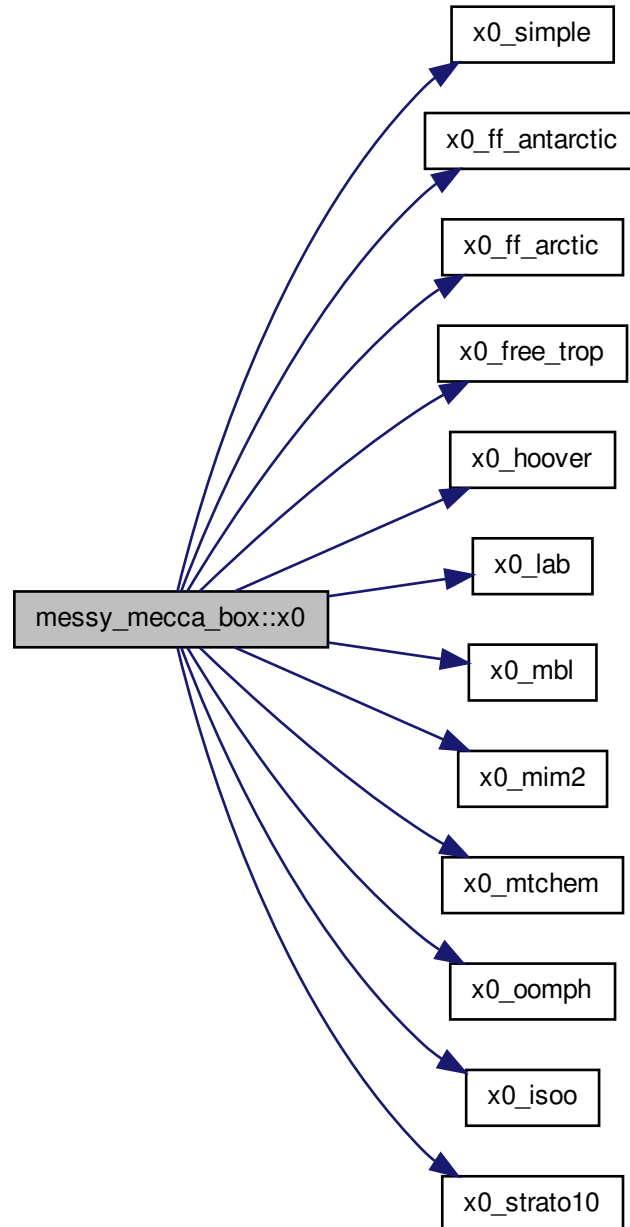
Here is the call graph for this function:



5.37.1.5 subroutine, public `messy_mecca_box::mecca_result` ()

5.37.1.6 subroutine messy_mecca_box::x0 ()

Here is the call graph for this function:



5.37.2 Member Data Documentation

- 5.37.2.1 REAL(DP) messy_mecca_box::Brm_rel
- 5.37.2.2 REAL(DP), dimension(:), allocatable messy_mecca_box::c0_Brm
- 5.37.2.3 REAL(DP), dimension(:), allocatable messy_mecca_box::c0_Clm
- 5.37.2.4 REAL(DP), dimension(:), allocatable messy_mecca_box::c0_HCO3m
- 5.37.2.5 REAL(DP), dimension(:), allocatable messy_mecca_box::c0_HSO4m
- 5.37.2.6 REAL(DP), dimension(:), allocatable messy_mecca_box::c0_lm
- 5.37.2.7 REAL(DP), dimension(:), allocatable messy_mecca_box::c0_IO3m
- 5.37.2.8 REAL(DP), dimension(:), allocatable messy_mecca_box::c0_Nap
- 5.37.2.9 REAL(DP), dimension(:), allocatable messy_mecca_box::c0_NH4p
- 5.37.2.10 REAL(DP), dimension(:), allocatable messy_mecca_box::c0_NO3m
- 5.37.2.11 REAL(DP), dimension(:), allocatable messy_mecca_box::c0_SO4mm
- 5.37.2.12 CHARACTER(LEN=20), dimension(nspec) messy_mecca_box::c_unit
- 5.37.2.13 REAL(DP) messy_mecca_box::CIm_rel
- 5.37.2.14 REAL(DP), dimension(:), allocatable messy_mecca_box::csalt
- 5.37.2.15 REAL(DP), dimension(apn) messy_mecca_box::cvfac
- 5.37.2.16 REAL(DP) messy_mecca_box::dummy_khet_St
- 5.37.2.17 REAL(DP) messy_mecca_box::dummy_khet_Tr
- 5.37.2.18 REAL(DP), dimension(:), allocatable messy_mecca_box::exchnng
- 5.37.2.19 REAL(DP) messy_mecca_box::HCO3m_rel
- 5.37.2.20 REAL(DP) messy_mecca_box::lm_rel
- 5.37.2.21 REAL(DP) messy_mecca_box::IO3m_rel
- 5.37.2.22 REAL(DP), dimension(ip_max) messy_mecca_box::jx = 0.
- 5.37.2.23 REAL(DP), dimension(apn,nspec) messy_mecca_box::k_exb

- 5.37.2.24 REAL(DP), dimension(apn,nspec) messy_mecca_box::k_exf
- 5.37.2.25 REAL(DP) messy_mecca_box::k_exf_BrNO3
- 5.37.2.26 REAL(DP) messy_mecca_box::k_exf_CINO3
- 5.37.2.27 REAL(DP) messy_mecca_box::k_exf_N2O5
- 5.37.2.28 REAL(DP), dimension(:), allocatable messy_mecca_box::lwc
- 5.37.2.29 REAL(DP), dimension(max_mcexp) messy_mecca_box::mcexp
- 5.37.2.30 INTEGER, parameter messy_mecca_box::NBL = 1
- 5.37.2.31 INTEGER messy_mecca_box::ncid_aero
- 5.37.2.32 INTEGER messy_mecca_box::ncid_spec
- 5.37.2.33 INTEGER messy_mecca_box::ncid_tracer
- 5.37.2.34 REAL(DP) messy_mecca_box::NO3m_rel
- 5.37.2.35 REAL(DP), dimension(nspec) messy_mecca_box::output
- 5.37.2.36 REAL(DP), dimension(:), allocatable messy_mecca_box::radius
- 5.37.2.37 REAL(DP) messy_mecca_box::SO4mm_rel
- 5.37.2.38 REAL(DP), dimension(:), allocatable messy_mecca_box::xaer

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_box.f90](#)

5.38 messy_mecca_dbl_box Module Reference

Public Member Functions

- subroutine [mecca_dbl_x0](#)
- subroutine, public [mecca_dbl_emis](#)
- subroutine, public [mecca_dbl_preprocess](#)
- subroutine, public [mecca_dbl_postprocess](#)
- subroutine, public [mecca_dbl_init](#)
- subroutine, public [mecca_dbl_result](#) (model_time)
- subroutine, public [mecca_dbl_finish](#)

5.38.1 Member Function/Subroutine Documentation

- 5.38.1.1 subroutine, public `messy_mecca_dbl_box::mecca_dbl_emis` ()
- 5.38.1.2 subroutine, public `messy_mecca_dbl_box::mecca_dbl_finish` ()
- 5.38.1.3 subroutine, public `messy_mecca_dbl_box::mecca_dbl_init` ()
- 5.38.1.4 subroutine, public `messy_mecca_dbl_box::mecca_dbl_postprocess` ()
- 5.38.1.5 subroutine, public `messy_mecca_dbl_box::mecca_dbl_preprocess` ()
- 5.38.1.6 subroutine, public `messy_mecca_dbl_box::mecca_dbl_result` (`REAL(dp)`,
intent(in) *model_time*)
- 5.38.1.7 subroutine `messy_mecca_dbl_box::mecca_dbl_x0` ()

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_dbl_box.f90](#)

5.39 messy_mecca_khet Module Reference

Public Member Functions

- subroutine, public `mecca_khet_read_nml_ctrl` (status, iou)
- ELEMENTAL `REAL(dp)` function, public `k_mt` (M, T, A, gamma)

Public Attributes

- `CHARACTER(LEN=*)`, parameter, public `submodstr` = `modstr/'_khet'`
- `LOGICAL`, save, public `l_troposphere` = `.FALSE.`
- `LOGICAL`, save, public `l_stratosphere` = `.FALSE.`
- `REAL(dp)`, parameter, public `M_HNO3` = `63.012_dp`
- `REAL(dp)`, parameter, public `M_N2O5` = `108.00_dp`
- `REAL(dp)`, parameter, public `gamma_N2O5` = `0.02_dp`
- `REAL(dp)`, parameter, public `gamma_HNO3` = `0.1_dp`
- `REAL(dp)`, parameter, public `gamma_Hg` = `0.0_dp`
- `REAL(dp)`, parameter, public `gamma_RGM` = `0.1_dp`

5.39.1 Member Function/Subroutine Documentation

- 5.39.1.1 ELEMENTAL REAL(dp) function, public messy_mecca_khet::k_mt (REAL(dp), intent(in) *M*, REAL(dp), intent(in) *T*, REAL(dp), intent(in) *A*, REAL(dp), intent(in) *gamma*)
- 5.39.1.2 subroutine, public messy_mecca_khet::mecca_khet_read_nml_ctrl (INTEGER, intent(out) *status*, INTEGER, intent(in) *iou*)
- 5.39.2 Member Data Documentation
- 5.39.2.1 REAL(dp), parameter, public messy_mecca_khet::gamma_Hg = 0.0_dp
- 5.39.2.2 REAL(dp), parameter, public messy_mecca_khet::gamma_HNO3 = 0.1_dp
- 5.39.2.3 REAL(dp), parameter, public messy_mecca_khet::gamma_N2O5 = 0.02_dp
- 5.39.2.4 REAL(dp), parameter, public messy_mecca_khet::gamma_RGM = 0.1_dp
- 5.39.2.5 LOGICAL, save, public messy_mecca_khet::l_stratosphere = .FALSE.
- 5.39.2.6 LOGICAL, save, public messy_mecca_khet::l_troposphere = .FALSE.
- 5.39.2.7 REAL(dp), parameter, public messy_mecca_khet::M_HNO3 = 63.012_dp
- 5.39.2.8 REAL(dp), parameter, public messy_mecca_khet::M_N2O5 = 108.00_dp
- 5.39.2.9 CHARACTER(LEN=*), parameter, public messy_mecca_khet::submodstr = modstr//'_khet'

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_mecca_khet.f90](#)

5.40 messy_mecca_kpp Module Reference

Public Member Functions

- subroutine [initialize_kpp_ctrl](#) (status, iou, modstr)
- subroutine [error_output](#) (C, ierr, PE)
- subroutine [kpp_integrate](#) (time_step, Conc, ierrf, xNacc, xNrej, istatus, l_debug, PE)
- subroutine [fill_TEMP](#) (status, array)
- subroutine [fill_cair](#) (status, array)
- subroutine [fill_press](#) (status, array)
- subroutine [fill_mcexp](#) (status, array)
- subroutine [fill_xaer](#) (status, array)
- subroutine [fill_cvfac](#) (status, array)

- subroutine [fill_lwc](#) (status, array)
- subroutine [fill_k_exf](#) (status, array)
- subroutine [fill_k_exb](#) (status, array)
- subroutine [fill_k_exf_N2O5](#) (status, array)
- subroutine [fill_k_exf_CINO3](#) (status, array)
- subroutine [fill_k_exf_BrNO3](#) (status, array)
- subroutine [fill_JX](#) (status, array)
- subroutine [fill_khet_Tr](#) (status, array)
- subroutine [fill_khet_St](#) (status, array)
- subroutine [fill_temp_ion](#) (status, array)
- subroutine [fill_temp_elec](#) (status, array)

Public Attributes

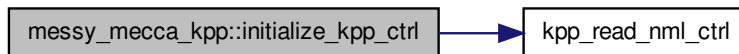
- INTEGER, parameter [NMAXFIXSTEPS](#) = 50
- LOGICAL, public [l_fixed_step](#) = .FALSE.
- INTEGER, public [nfsteps](#) = 1
- INTEGER, parameter, public [NKPPCTRL](#) = 20
- INTEGER, dimension(nkppctrl), public [icntrl](#) = 0
- REAL(DP), dimension(nkppctrl), public [rcntrl](#) = 0.0_dp
- REAL(DP), dimension(nmaxfixsteps), public [t_steps](#) = 0.0_dp

5.40.1 Member Function/Subroutine Documentation

- 5.40.1.1 subroutine [messy_mecca_kpp::error_output](#) (REAL(dp), dimension(:), intent(in) C, INTEGER, intent(in) *ierr*, INTEGER, intent(in) *PE*)
- 5.40.1.2 subroutine [messy_mecca_kpp::fill_cair](#) (INTEGER, intent(out) *status*, REAL (dp), dimension(:), intent(in) *array*)
- 5.40.1.3 subroutine [messy_mecca_kpp::fill_cvfac](#) (INTEGER, intent(out) *status*, REAL (dp), dimension(:, :, :), intent(in) *array*)
- 5.40.1.4 subroutine [messy_mecca_kpp::fill_JX](#) (INTEGER, intent(out) *status*, REAL (dp), dimension(:, :, :), intent(in) *array*)
- 5.40.1.5 subroutine [messy_mecca_kpp::fill_k_exb](#) (INTEGER, intent(out) *status*, REAL (dp), dimension(:, :, :), intent(in) *array*)
- 5.40.1.6 subroutine [messy_mecca_kpp::fill_k_exf](#) (INTEGER, intent(out) *status*, REAL (dp), dimension(:, :, :), intent(in) *array*)
- 5.40.1.7 subroutine [messy_mecca_kpp::fill_k_exf_BrNO3](#) (INTEGER, intent(out) *status*, REAL (dp), dimension(:, :, :), intent(in) *array*)

- 5.40.1.8 subroutine messy_mecca_kpp::fill_k_exf_CINO3 (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.9 subroutine messy_mecca_kpp::fill_k_exf_N2O5 (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.10 subroutine messy_mecca_kpp::fill_khet_St (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.11 subroutine messy_mecca_kpp::fill_khet_Tr (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.12 subroutine messy_mecca_kpp::fill_lwc (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.13 subroutine messy_mecca_kpp::fill_mcexp (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.14 subroutine messy_mecca_kpp::fill_press (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.15 subroutine messy_mecca_kpp::fill_TEMP (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.16 subroutine messy_mecca_kpp::fill_temp_elec (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.17 subroutine messy_mecca_kpp::fill_temp_ion (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.18 subroutine messy_mecca_kpp::fill_xaer (INTEGER, intent(out) *status*, REAL (dp), dimension(:,:), intent(in) *array*)
- 5.40.1.19 subroutine messy_mecca_kpp::initialize_kpp_ctrl (INTEGER, intent(out) *status*, INTEGER, intent(in) *iou*, CHARACTER(LEN=*), intent(in) *modstr*)

Here is the call graph for this function:



5.40.1.20 subroutine `messy_mecca_kpp::kpp_integrate` (`REAL(dp)`, intent(in) *time_step*, `REAL(dp)`, dimension(:,:), intent(inout) *Conc*, `INTEGER`, dimension(:), intent(out), optional *ierrf*, `INTEGER`, dimension(:), intent(out), optional *xNacc*, `INTEGER`, dimension(:), intent(out), optional *xNrej*, `INTEGER`, dimension(:), intent(inout), optional *istatus*, `LOGICAL`, intent(in), optional *l_debug*, `INTEGER`, intent(in), optional *PE*)

5.40.2 Member Data Documentation

5.40.2.1 `INTEGER`, dimension(`nkppctrl`), public `messy_mecca_kpp::icntrl` = 0

5.40.2.2 `LOGICAL`, public `messy_mecca_kpp::l_fixed_step` = `.FALSE.`

5.40.2.3 `INTEGER`, public `messy_mecca_kpp::nfsteps` = 1

5.40.2.4 `INTEGER`, parameter, public `messy_mecca_kpp::NKPPCTRL` = 20

5.40.2.5 `INTEGER`, parameter `messy_mecca_kpp::NMAXFIXSTEPS` = 50

5.40.2.6 `REAL(DP)`, dimension(`nkppctrl`), public `messy_mecca_kpp::rcntrl` = 0.0_dp

5.40.2.7 `REAL(DP)`, dimension(`nmaxfixsteps`), public `messy_mecca_kpp::t_steps` = 0.0_dp

The documentation for this module was generated from the following file:

- `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp.f90`

5.41 messy_mecca_kpp Function Module Reference

Public Member Functions

- subroutine `Fun` (`V`, `F`, `RCT`, `Vdot`)

Public Attributes

- `REAL(kind=dp)` `A`

5.41.1 Member Function/Subroutine Documentation

5.41.1.1 subroutine `messy_mecca_kpp_Function::Fun` (`REAL(kind=dp)`, dimension(`nvar`) *V*, `REAL(kind=dp)`, dimension(`nfix`) *F*, `REAL(kind=dp)`, dimension(`nreact`) *RCT*, `REAL(kind=dp)`, dimension(`nvar`) *Vdot*)

5.41.2 Member Data Documentation

5.41.2.1 REAL(kind=dp) messy_mecca_kpp_Function::A

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_function.f90](#)

5.42 messy_mecca_kpp_Global Module Reference

Public Attributes

- REAL(kind=dp) [C](#)
- REAL(kind=dp) [VAR](#)
- REAL(kind=dp) [FIX](#)
- REAL(kind=dp) [RCONST](#)
- REAL(kind=dp) [TIME](#)
- REAL(kind=dp) [SUN](#)
- REAL(kind=dp) [TEMP](#)
- REAL(kind=dp) [TSTART](#)
- REAL(kind=dp) [TEND](#)
- REAL(kind=dp) [DT](#)
- REAL(kind=dp) [ATOL](#)
- REAL(kind=dp) [RTOL](#)
- REAL(kind=dp) [STEPMIN](#)
- REAL(kind=dp) [STEPMAX](#)
- REAL(kind=dp) [CFACTOR](#)
- CHARACTER(LEN=*), parameter, public [timestamp](#) = 'xmecca was run on 2015-06-20 at 14:09:00 by sander on machine bromine'
- CHARACTER(LEN=*), parameter, public [batchfile](#) = 'simple'
- CHARACTER(LEN=*), parameter, public [gas_spc_file](#) = '-rw----- 1 sander sander 35285 Nov 7 2014 gas.spc'
- CHARACTER(LEN=*), parameter, public [aqueous_spc_file](#) = '-rw----- 1 sander sander 8444 Apr 19 2010 aqueous.spc'
- CHARACTER(LEN=*), parameter, public [gas_eqn_file](#) = '-rw-r--r-- 1 sander sander 150920 Mar 23 16:46 gas.eqn'
- CHARACTER(LEN=*), parameter, public [aqueous_eqn_file](#) = '-rw----- 1 sander sander 58889 Mar 26 16:22 aqueous.eqn'
- CHARACTER(LEN=*), parameter, public [gas_spc_file_sum](#) = '14323 35'
- CHARACTER(LEN=*), parameter, public [aqueous_spc_file_sum](#) = '54945 9'
- CHARACTER(LEN=*), parameter, public [gas_eqn_file_sum](#) = '61164 148'
- CHARACTER(LEN=*), parameter, public [aqueous_eqn_file_sum](#) = '42695 58'
- CHARACTER(LEN=*), parameter, public [rplfile](#) = ''
- CHARACTER(LEN=*), parameter, public [wanted](#) = 'Tr && G && !C && !S && !Cl && !Br && !I && !Hg'
- CHARACTER(LEN=*), parameter, public [diagtracfile](#) = ''
- CHARACTER(LEN=*), parameter, public [rxnrates](#) = 'n'

- CHARACTER(LEN=*), parameter, public `tagdbl` = 'n'
- LOGICAL, parameter `REQ_MCFCT` = .FALSE.
- INTEGER, parameter, public `APN` = 1
- INTEGER, dimension(apn), public `ind_O2_a` = 0
- INTEGER, dimension(apn), public `ind_O3_a` = 0
- INTEGER, dimension(apn), public `ind_OH_a` = 0
- INTEGER, dimension(apn), public `ind_HO2_a` = 0
- INTEGER, dimension(apn), public `ind_H2O_a` = 0
- INTEGER, dimension(apn), public `ind_H2O2_a` = 0
- INTEGER, dimension(apn), public `ind_NH3_a` = 0
- INTEGER, dimension(apn), public `ind_NO_a` = 0
- INTEGER, dimension(apn), public `ind_NO2_a` = 0
- INTEGER, dimension(apn), public `ind_NO3_a` = 0
- INTEGER, dimension(apn), public `ind_HONO_a` = 0
- INTEGER, dimension(apn), public `ind_HNO3_a` = 0
- INTEGER, dimension(apn), public `ind_HNO4_a` = 0
- INTEGER, dimension(apn), public `ind_N2O5_a` = 0
- INTEGER, dimension(apn), public `ind_CH3OH_a` = 0
- INTEGER, dimension(apn), public `ind_HCOOH_a` = 0
- INTEGER, dimension(apn), public `ind_HCHO_a` = 0
- INTEGER, dimension(apn), public `ind_CH3O2_a` = 0
- INTEGER, dimension(apn), public `ind_CH3OOH_a` = 0
- INTEGER, dimension(apn), public `ind_CO2_a` = 0
- INTEGER, dimension(apn), public `ind_CH3CO2H_a` = 0
- INTEGER, dimension(apn), public `ind_PAN_a` = 0
- INTEGER, dimension(apn), public `ind_C2H5O2_a` = 0
- INTEGER, dimension(apn), public `ind_CH3CHO_a` = 0
- INTEGER, dimension(apn), public `ind_CH3COCH3_a` = 0
- INTEGER, dimension(apn), public `ind_Cl_a` = 0
- INTEGER, dimension(apn), public `ind_Cl2_a` = 0
- INTEGER, dimension(apn), public `ind_HCl_a` = 0
- INTEGER, dimension(apn), public `ind_HOCl_a` = 0
- INTEGER, dimension(apn), public `ind_Br_a` = 0
- INTEGER, dimension(apn), public `ind_Br2_a` = 0
- INTEGER, dimension(apn), public `ind_HBr_a` = 0
- INTEGER, dimension(apn), public `ind_HOBr_a` = 0
- INTEGER, dimension(apn), public `ind_BrCl_a` = 0
- INTEGER, dimension(apn), public `ind_I2_a` = 0
- INTEGER, dimension(apn), public `ind_IO_a` = 0
- INTEGER, dimension(apn), public `ind_HI_a` = 0
- INTEGER, dimension(apn), public `ind_HOI_a` = 0
- INTEGER, dimension(apn), public `ind_ICl_a` = 0
- INTEGER, dimension(apn), public `ind_IBr_a` = 0
- INTEGER, dimension(apn), public `ind_HIO3_a` = 0
- INTEGER, dimension(apn), public `ind_SO2_a` = 0
- INTEGER, dimension(apn), public `ind_H2SO4_a` = 0

- INTEGER, dimension(apn), public [ind_DMS_a](#) = 0
- INTEGER, dimension(apn), public [ind_DMSO_a](#) = 0
- INTEGER, dimension(apn), public [ind_Hg_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgO_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgOH_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgOHOH_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgOHCl_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgCl2_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgBr2_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgSO3_a](#) = 0
- INTEGER, dimension(apn), public [ind_ClHgBr_a](#) = 0
- INTEGER, dimension(apn), public [ind_BrHgOBr_a](#) = 0
- INTEGER, dimension(apn), public [ind_ClHgOBr_a](#) = 0
- INTEGER, dimension(apn), public [ind_O2m_a](#) = 0
- INTEGER, dimension(apn), public [ind_OHm_a](#) = 0
- INTEGER, dimension(apn), public [ind_Hp_a](#) = 0
- INTEGER, dimension(apn), public [ind_NH4p_a](#) = 0
- INTEGER, dimension(apn), public [ind_NO2m_a](#) = 0
- INTEGER, dimension(apn), public [ind_NO3m_a](#) = 0
- INTEGER, dimension(apn), public [ind_NO4m_a](#) = 0
- INTEGER, dimension(apn), public [ind_CO3m_a](#) = 0
- INTEGER, dimension(apn), public [ind_HCOOm_a](#) = 0
- INTEGER, dimension(apn), public [ind_HCO3m_a](#) = 0
- INTEGER, dimension(apn), public [ind_CH3COOm_a](#) = 0
- INTEGER, dimension(apn), public [ind_Clm_a](#) = 0
- INTEGER, dimension(apn), public [ind_Cl2m_a](#) = 0
- INTEGER, dimension(apn), public [ind_ClOm_a](#) = 0
- INTEGER, dimension(apn), public [ind_ClOHm_a](#) = 0
- INTEGER, dimension(apn), public [ind_Brm_a](#) = 0
- INTEGER, dimension(apn), public [ind_Br2m_a](#) = 0
- INTEGER, dimension(apn), public [ind_BrOm_a](#) = 0
- INTEGER, dimension(apn), public [ind_BrOHm_a](#) = 0
- INTEGER, dimension(apn), public [ind_BrCl2m_a](#) = 0
- INTEGER, dimension(apn), public [ind_Br2Clm_a](#) = 0
- INTEGER, dimension(apn), public [ind_Im_a](#) = 0
- INTEGER, dimension(apn), public [ind_IO2m_a](#) = 0
- INTEGER, dimension(apn), public [ind_IO3m_a](#) = 0
- INTEGER, dimension(apn), public [ind_ICl2m_a](#) = 0
- INTEGER, dimension(apn), public [ind_IClBrm_a](#) = 0
- INTEGER, dimension(apn), public [ind_IBr2m_a](#) = 0
- INTEGER, dimension(apn), public [ind_SO3m_a](#) = 0
- INTEGER, dimension(apn), public [ind_SO3mm_a](#) = 0
- INTEGER, dimension(apn), public [ind_SO4m_a](#) = 0
- INTEGER, dimension(apn), public [ind_SO4mm_a](#) = 0
- INTEGER, dimension(apn), public [ind_SO5m_a](#) = 0
- INTEGER, dimension(apn), public [ind_HSO3m_a](#) = 0

- INTEGER, dimension(apn), public [ind_HSO4m_a](#) = 0
- INTEGER, dimension(apn), public [ind_HSO5m_a](#) = 0
- INTEGER, dimension(apn), public [ind_CH3SO3m_a](#) = 0
- INTEGER, dimension(apn), public [ind_CH2OHSO3m_a](#) = 0
- INTEGER, dimension(apn), public [ind_Hgp_a](#) = 0
- INTEGER, dimension(apn), public [ind_Hgpp_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgOHp_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgClp_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgCl3m_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgCl4mm_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgBrp_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgBr3m_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgBr4mm_a](#) = 0
- INTEGER, dimension(apn), public [ind_HgSO32mm_a](#) = 0
- INTEGER, dimension(apn), public [ind_D1O_a](#) = 0
- INTEGER, dimension(apn), public [ind_D2O_a](#) = 0
- INTEGER, dimension(apn), public [ind_DAHp_a](#) = 0
- INTEGER, dimension(apn), public [ind_DA_a](#) = 0
- INTEGER, dimension(apn), public [ind_DAm_a](#) = 0
- INTEGER, dimension(apn), public [ind_DGtAi_a](#) = 0
- INTEGER, dimension(apn), public [ind_DGtAs_a](#) = 0
- INTEGER, dimension(apn), public [ind_PROD1_a](#) = 0
- INTEGER, dimension(apn), public [ind_PROD2_a](#) = 0
- INTEGER, dimension(apn), public [ind_Nap_a](#) = 0
- REAL [k_HO2_HO2](#)
- REAL [k_NO3_NO2](#)
- REAL [k_NO2_HO2](#)
- REAL [k_HNO3_OH](#)
- REAL [k_CH3O2](#)
- REAL [k_CH3OOH_OH](#)
- REAL [k_CH3CO3_NO2](#)
- REAL [k_PAN_M](#)
- REAL [k_CIO_CIO](#)
- REAL [k_BrO_NO2](#)
- REAL [k_I_NO2](#)
- REAL [k_DMS_OH](#)
- REAL [G7402a_yield](#)
- REAL [beta_null_CH3NO3](#)
- REAL [beta_inf_CH3NO3](#)
- REAL [beta_CH3NO3](#)
- REAL [k_NO2_CH3O2](#)
- REAL [k_G4138](#)
- REAL [k_G9408](#)
- REAL [KRO2NO](#)
- REAL [KRO2HO2](#)
- REAL [KAPHO2](#)

- REAL KAPNO
- REAL KRO2NO3
- REAL KNO3AL
- REAL J_IC3H7NO3
- REAL J_ACETOL
- REAL(dp) RO2
- REAL k_O3s
- REAL k_PrO2_HO2
- REAL k_PrO2_NO
- REAL k_PrO2_CH3O2
- REAL k0_NO_HO2
- REAL k1d_NO_HO2
- REAL k1w_NO_HO2
- REAL k2d_NO_HO2
- REAL k2w_NO_HO2
- REAL alpha_NO_HO2
- REAL beta_NO_HO2
- REAL(kind=dp), parameter k_s = 8.42E-13
- REAL(kind=dp), parameter k_t = 1.75E-12
- REAL(kind=dp), parameter k_p = 1.24E-13
- REAL(kind=dp), parameter k_rohro = 1.6E-13
- REAL(kind=dp), parameter f_soh = 3.44
- REAL(kind=dp), parameter f_toh = 2.68
- REAL(kind=dp), parameter f_sooH = 7.
- REAL(kind=dp), parameter f_tooh = 7.
- REAL(kind=dp), parameter f_ono2 = 0.04
- REAL(kind=dp), parameter f_ch2ono2 = 0.2
- REAL(kind=dp), parameter f_cpan = .25
- REAL(kind=dp), parameter f_allyl = 3.6
- REAL(kind=dp), parameter f_alk = 1.23
- REAL(kind=dp), parameter f_cho = 0.55
- REAL(kind=dp), parameter f_co2h = 1.67
- REAL(kind=dp), parameter f_co = 0.73
- REAL(kind=dp), parameter f_o = 8.15
- REAL(kind=dp), parameter f_pch2oh = 1.29
- REAL(kind=dp), parameter f_tch2oh = 0.53
- REAL(kind=dp), parameter k_adp = 0.45E-11
- REAL(kind=dp), parameter k_ads = 3.0E-11
- REAL(kind=dp), parameter k_adt = 5.5E-11
- REAL(kind=dp), parameter k_adsecprim = 3.0E-11
- REAL(kind=dp), parameter k_adtertprim = 5.7E-11
- REAL(kind=dp), parameter a_pan = 0.56
- REAL(kind=dp), parameter a_cho = 0.31
- REAL(kind=dp), parameter a_coch3 = 0.76
- REAL(kind=dp), parameter a_ch2ono2 = 0.47
- REAL(kind=dp), parameter a_ch2oh = 1.7

- REAL(kind=dp), parameter [a_ch2ooh](#) = 0.21
- REAL(kind=dp), parameter [a_coh](#) = 2.2
- REAL(kind=dp), parameter [a_cooH](#) = 2.2
- REAL(kind=dp), parameter [a_co2h](#) = 0.25
- REAL(dp), parameter [RCO3_OH](#) = 0.69
- REAL(dp), parameter [RCO3_O3](#) = 0.10
- REAL(dp), parameter [RCO3_OOH](#) = 0.21
- REAL(dp) [cair](#)
- REAL(dp) [press](#)
- REAL(dp) [temp_ion](#)
- REAL(dp) [temp_elec](#)
- REAL(dp), dimension(apn) [xaer](#)
- REAL(dp), dimension(apn) [cvfac](#)
- REAL(dp), dimension(apn) [lwc](#)
- REAL(dp), dimension(apn, nspec) [k_exf](#) = 0.
- REAL(dp), dimension(apn, nspec) [k_exb](#) = 0.
- REAL(dp) [k_exf_N2O5](#) = 0.
- REAL(dp) [k_exf_CINO3](#) = 0.
- REAL(dp) [k_exf_BrNO3](#) = 0.
- INTEGER, public [xnom7sulf](#) = 1
- REAL(dp), dimension(ip_max) [jx](#) = 0.
- INTEGER, parameter, public [iht_N2O5](#) = 1
- INTEGER, parameter, public [iht_HNO3](#) = 2
- INTEGER, parameter, public [iht_Hg](#) = 3
- INTEGER, parameter, public [iht_RGM](#) = 4
- INTEGER, parameter, public [IHT_MAX](#) = 4
- REAL(dp) [khet_Tr](#) = 0.
- INTEGER, parameter [ihs_N2O5_H2O](#) = 1
- INTEGER, parameter [ihs_HOCl_HCl](#) = 2
- INTEGER, parameter [ihs_CINO3_HCl](#) = 3
- INTEGER, parameter [ihs_CINO3_H2O](#) = 4
- INTEGER, parameter [ihs_N2O5_HCl](#) = 5
- INTEGER, parameter [ihs_CINO3_HBr](#) = 6
- INTEGER, parameter [ihs_BrNO3_HCl](#) = 7
- INTEGER, parameter [ihs_HOCl_HBr](#) = 8
- INTEGER, parameter [ihs_HOBr_HCl](#) = 9
- INTEGER, parameter [ihs_HOBr_HBr](#) = 10
- INTEGER, parameter [ihs_BrNO3_H2O](#) = 11
- INTEGER, parameter [ihs_Hg](#) = 12
- INTEGER, parameter [ihs_RGM](#) = 13
- INTEGER, parameter, public [IHS_MAX](#) = 13
- REAL(dp) [khet_St](#) = 0.
- REAL(dp), parameter [testfac_HO2](#) = 1.e5_dp
- REAL(dp), parameter [testfac_HONO](#) = 1.e5_dp
- REAL(dp), parameter [testfac_HNO3](#) = 1.e7_dp
- REAL(dp), parameter [testfac_HNO4](#) = 1.e5_dp

- REAL(dp), parameter `testfac_HCOOH` = 1.e5_dp
- REAL(dp), parameter `testfac_SO2` = 1.e9_dp
- REAL(dp), parameter `testfac_HSO3m` = 1.e9_dp
- REAL(dp), parameter `testfac_HSO4m` = 1.e7_dp
- REAL(dp), parameter `testfac_NH3` = 1.e7_dp
- REAL(dp), parameter `testfac_H2O` = 1.e9_dp
- REAL(dp), parameter `testfac_CO2` = 1.e5_dp
- REAL(dp), parameter `testfac_HCl` = 1.e2_dp
- REAL(dp), parameter `testfac_HBr` = 1.e6_dp
- REAL(dp), parameter `testfac_HOCl` = 1.e2_dp
- REAL(dp), parameter `testfac_HOBr` = 1.e2_dp
- REAL(dp), parameter `testfac_ICl` = 1.e2_dp
- REAL(dp), parameter `testfac_IBr` = 1.e2_dp
- REAL(dp), parameter `testfac_ICIBr` = 1.e2_dp
- REAL(dp), parameter `testfac_H2SO4` = 1.e7_dp
- LOGICAL, parameter `REQ_HET` = .FALSE.
- LOGICAL, parameter `REQ_PHOTRAT` = .TRUE.
- LOGICAL, parameter `REQ_AEROSOL` = .FALSE.
- INTEGER, parameter, public `MAX_MCEXP` = 1
- REAL, dimension(max_mcexp) `mcexp`
- CHARACTER(LEN=*), parameter, public `mecca_spc_file` = '-rw-r--r-- 1 sander sander 44126 Jun 20 14:09 mecca.spc'
- CHARACTER(LEN=*), parameter, public `mecca_eqn_file` = '-rw----- 1 sander sander 42671 Jun 20 14:09 mecca.eqn'
- CHARACTER(LEN=*), parameter, public `mecca_spc_file_sum` = '20767 44'
- CHARACTER(LEN=*), parameter, public `mecca_eqn_file_sum` = '55078 42'
- CHARACTER(LEN=*), parameter, public `kppoption` = 'k'
- CHARACTER(LEN=*), parameter, public `KPP_HOME` = '/home/sander/e2/messy-_d2.50s_rs/messy/tools/kpp'
- CHARACTER(LEN=*), parameter, public `KPP_version` = '2.2.1_rs5'
- CHARACTER(LEN=*), parameter, public `integr` = 'rosenbrock_posdef'

5.42.1 Member Data Documentation

5.42.1.1 REAL(kind=dp), parameter `messy_mecca_kpp_Global::a_ch2oh` = 1.7

5.42.1.2 REAL(kind=dp), parameter `messy_mecca_kpp_Global::a_ch2ono2` = 0.47

5.42.1.3 REAL(kind=dp), parameter `messy_mecca_kpp_Global::a_ch2ooh` = 0.21

5.42.1.4 REAL(kind=dp), parameter `messy_mecca_kpp_Global::a_cho` = 0.31

5.42.1.5 REAL(kind=dp), parameter `messy_mecca_kpp_Global::a_co2h` = 0.25

5.42.1.6 REAL(kind=dp), parameter `messy_mecca_kpp_Global::a_coch3` = 0.76

- 5.42.1.7 REAL(kind=dp), parameter messy_mecca_kpp_Global::a_coh = 2.2
- 5.42.1.8 REAL(kind=dp), parameter messy_mecca_kpp_Global::a_cooH = 2.2
- 5.42.1.9 REAL(kind=dp), parameter messy_mecca_kpp_Global::a_pan = 0.56
- 5.42.1.10 REAL messy_mecca_kpp_Global::alpha_NO_HO2
- 5.42.1.11 INTEGER, parameter, public messy_mecca_kpp_Global::APN = 1
- 5.42.1.12 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::aqueous_eqn_file = 'rw----- 1 sander sander 58889 Mar 26 16:22 aqueous.eqn'
- 5.42.1.13 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::aqueous_eqn_file_sum = '42695 58'
- 5.42.1.14 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::aqueous_spc_file = 'rw----- 1 sander sander 8444 Apr 19 2010 aqueous.spc'
- 5.42.1.15 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::aqueous_spc_file_sum = '54945 9'
- 5.42.1.16 REAL(kind=dp) messy_mecca_kpp_Global::ATOL
- 5.42.1.17 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::batchfile = 'simple'
- 5.42.1.18 REAL messy_mecca_kpp_Global::beta_CH3NO3
- 5.42.1.19 REAL messy_mecca_kpp_Global::beta_inf_CH3NO3
- 5.42.1.20 REAL messy_mecca_kpp_Global::beta_NO_HO2
- 5.42.1.21 REAL messy_mecca_kpp_Global::beta_null_CH3NO3
- 5.42.1.22 REAL(kind=dp) messy_mecca_kpp_Global::C
- 5.42.1.23 REAL(dp) messy_mecca_kpp_Global::cair
- 5.42.1.24 REAL(kind=dp) messy_mecca_kpp_Global::CFACITOR
- 5.42.1.25 REAL(dp), dimension(apn) messy_mecca_kpp_Global::cvfac
- 5.42.1.26 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::diagtracfile = ''

- 5.42.1.27 REAL(kind=dp) messy_mecca_kpp_Global::DT
- 5.42.1.28 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_alk = 1.23
- 5.42.1.29 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_allyl = 3.6
- 5.42.1.30 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_ch2ono2 = 0.2
- 5.42.1.31 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_cho = 0.55
- 5.42.1.32 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_co = 0.73
- 5.42.1.33 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_co2h = 1.67
- 5.42.1.34 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_cpan = .25
- 5.42.1.35 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_o = 8.15
- 5.42.1.36 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_ono2 = 0.04
- 5.42.1.37 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_pch2oh = 1.29
- 5.42.1.38 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_soh = 3.44
- 5.42.1.39 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_sohh = 7.
- 5.42.1.40 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_tch2oh = 0.53
- 5.42.1.41 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_toh = 2.68
- 5.42.1.42 REAL(kind=dp), parameter messy_mecca_kpp_Global::f_tooh = 7.
- 5.42.1.43 REAL(kind=dp) messy_mecca_kpp_Global::FIX
- 5.42.1.44 REAL messy_mecca_kpp_Global::G7402a_yield
- 5.42.1.45 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::gas_eqn_file = '-rw-r--r-- 1 sander sander 150920 Mar 23 16:46 gas.eqn'
- 5.42.1.46 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::gas_eqn_file_sum = '61164 148'
- 5.42.1.47 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::gas_spc_file = '-rw----- 1 sander sander 35285 Nov 7 2014 gas.spc'

- 5.42.1.48 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::gas_spc-_file_sum = '14323 35'
- 5.42.1.49 INTEGER, parameter messy_mecca_kpp_Global::ihs_BrNO3_H2O = 11
- 5.42.1.50 INTEGER, parameter messy_mecca_kpp_Global::ihs_BrNO3_HCl = 7
- 5.42.1.51 INTEGER, parameter messy_mecca_kpp_Global::ihs_CINO3_H2O = 4
- 5.42.1.52 INTEGER, parameter messy_mecca_kpp_Global::ihs_CINO3_HBr = 6
- 5.42.1.53 INTEGER, parameter messy_mecca_kpp_Global::ihs_CINO3_HCl = 3
- 5.42.1.54 INTEGER, parameter messy_mecca_kpp_Global::ihs_Hg = 12
- 5.42.1.55 INTEGER, parameter messy_mecca_kpp_Global::ihs_HOBr_HBr = 10
- 5.42.1.56 INTEGER, parameter messy_mecca_kpp_Global::ihs_HOBr_HCl = 9
- 5.42.1.57 INTEGER, parameter messy_mecca_kpp_Global::ihs_HOCl_HBr = 8
- 5.42.1.58 INTEGER, parameter messy_mecca_kpp_Global::ihs_HOCl_HCl = 2
- 5.42.1.59 INTEGER, parameter, public messy_mecca_kpp_Global::IHS_MAX = 13
- 5.42.1.60 INTEGER, parameter messy_mecca_kpp_Global::ihs_N2O5_H2O = 1
- 5.42.1.61 INTEGER, parameter messy_mecca_kpp_Global::ihs_N2O5_HCl = 5
- 5.42.1.62 INTEGER, parameter messy_mecca_kpp_Global::ihs_RGM = 13
- 5.42.1.63 INTEGER, parameter, public messy_mecca_kpp_Global::iht_Hg = 3
- 5.42.1.64 INTEGER, parameter, public messy_mecca_kpp_Global::iht_HNO3 = 2
- 5.42.1.65 INTEGER, parameter, public messy_mecca_kpp_Global::IHT_MAX = 4
- 5.42.1.66 INTEGER, parameter, public messy_mecca_kpp_Global::iht_N2O5 = 1
- 5.42.1.67 INTEGER, parameter, public messy_mecca_kpp_Global::iht_RGM = 4
- 5.42.1.68 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Br2_a = 0
- 5.42.1.69 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Br2Clm_a = 0
- 5.42.1.70 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Br2m_a = 0

- 5.42.1.71 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Br_a = 0
- 5.42.1.72 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_BrCl2m_a = 0
- 5.42.1.73 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_BrCl_a = 0
- 5.42.1.74 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_BrHgOBr_a = 0
- 5.42.1.75 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Brm_a = 0
- 5.42.1.76 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_BrOHm_a = 0
- 5.42.1.77 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_BrOm_a = 0
- 5.42.1.78 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_C2H5O2_a = 0
- 5.42.1.79 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CH2OHS-O3m_a = 0
- 5.42.1.80 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CH3CHO_a = 0
- 5.42.1.81 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CH3CO2H_a = 0
- 5.42.1.82 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CH3COC-H3_a = 0
- 5.42.1.83 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CH3CO-Om_a = 0
- 5.42.1.84 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CH3O2_a = 0
- 5.42.1.85 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CH3OH_a = 0
- 5.42.1.86 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CH3OOH_a = 0
- 5.42.1.87 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CH3S-O3m_a = 0

- 5.42.1.88 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Cl2_a = 0
- 5.42.1.89 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Cl2m_a = 0
- 5.42.1.90 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Cl_a = 0
- 5.42.1.91 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_ClHgBr_a = 0
- 5.42.1.92 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_ClHgOBr_a = 0
- 5.42.1.93 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Clm_a = 0
- 5.42.1.94 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_ClOHm_a = 0
- 5.42.1.95 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_ClOm_a = 0
- 5.42.1.96 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CO2_a = 0
- 5.42.1.97 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_CO3m_a = 0
- 5.42.1.98 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_D1O_a = 0
- 5.42.1.99 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_D2O_a = 0
- 5.42.1.100 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_DA_a = 0
- 5.42.1.101 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_DAHp_a = 0
- 5.42.1.102 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_DAm_a = 0
- 5.42.1.103 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_DGtAi_a = 0
- 5.42.1.104 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_DGtAs_a = 0
- 5.42.1.105 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_DMS_a = 0
- 5.42.1.106 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_DMSO_a = 0

- 5.42.1.107 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_H2O2_a = 0
- 5.42.1.108 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_H2O_a = 0
- 5.42.1.109 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_H2SO4_a = 0
- 5.42.1.110 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HBr_a = 0
- 5.42.1.111 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HCHO_a = 0
- 5.42.1.112 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HCl_a = 0
- 5.42.1.113 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HCO3m_a = 0
- 5.42.1.114 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HCOOH_a = 0
- 5.42.1.115 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HCOOm_a = 0
- 5.42.1.116 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Hg_a = 0
- 5.42.1.117 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgBr2_a = 0
- 5.42.1.118 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgBr3m_a = 0
- 5.42.1.119 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgBr4mm_a = 0
- 5.42.1.120 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgBrp_a = 0
- 5.42.1.121 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgCl2_a = 0
- 5.42.1.122 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgCl3m_a = 0
- 5.42.1.123 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgCl4mm_a = 0

- 5.42.1.124 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgClp_a = 0
- 5.42.1.125 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgO_a = 0
- 5.42.1.126 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgOH_a = 0
- 5.42.1.127 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgOHCl-_a = 0
- 5.42.1.128 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgOHOH-_a = 0
- 5.42.1.129 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgOHp_a = 0
- 5.42.1.130 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Hgp_a = 0
- 5.42.1.131 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Hgpp_a = 0
- 5.42.1.132 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgS-O32mm_a = 0
- 5.42.1.133 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HgSO3_a = 0
- 5.42.1.134 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HI_a = 0
- 5.42.1.135 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HIO3_a = 0
- 5.42.1.136 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HNO3_a = 0
- 5.42.1.137 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HNO4_a = 0
- 5.42.1.138 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HO2_a = 0
- 5.42.1.139 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HOBr_a = 0
- 5.42.1.140 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HOCl_a = 0
- 5.42.1.141 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HOI_a = 0

- 5.42.1.142 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HONO_a = 0
- 5.42.1.143 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Hp_a = 0
- 5.42.1.144 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HSO3m_a = 0
- 5.42.1.145 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HSO4m_a = 0
- 5.42.1.146 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_HSO5m_a = 0
- 5.42.1.147 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_I2_a = 0
- 5.42.1.148 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_IBr2m_a = 0
- 5.42.1.149 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_IBr_a = 0
- 5.42.1.150 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_ICl2m_a = 0
- 5.42.1.151 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_ICl_a = 0
- 5.42.1.152 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_IClBrm_a = 0
- 5.42.1.153 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Im_a = 0
- 5.42.1.154 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_IO2m_a = 0
- 5.42.1.155 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_IO3m_a = 0
- 5.42.1.156 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_IO_a = 0
- 5.42.1.157 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_N2O5_a = 0
- 5.42.1.158 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_Nap_a = 0
- 5.42.1.159 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_NH3_a = 0
- 5.42.1.160 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_NH4p_a = 0

- 5.42.1.161 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_NO2_a = 0
- 5.42.1.162 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_NO2m_a = 0
- 5.42.1.163 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_NO3_a = 0
- 5.42.1.164 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_NO3m_a = 0
- 5.42.1.165 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_NO4m_a = 0
- 5.42.1.166 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_NO_a = 0
- 5.42.1.167 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_O2_a = 0
- 5.42.1.168 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_O2m_a = 0
- 5.42.1.169 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_O3_a = 0
- 5.42.1.170 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_OH_a = 0
- 5.42.1.171 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_OHm_a = 0
- 5.42.1.172 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_PAN_a = 0
- 5.42.1.173 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_PROD1_a = 0
- 5.42.1.174 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_PROD2_a = 0
- 5.42.1.175 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_SO2_a = 0
- 5.42.1.176 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_SO3m_a = 0
- 5.42.1.177 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_SO3mm_a = 0
- 5.42.1.178 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_SO4m_a = 0
- 5.42.1.179 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_SO4mm_a = 0

- 5.42.1.180 INTEGER, dimension(apn), public messy_mecca_kpp_Global::ind_SO5m_a = 0
- 5.42.1.181 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::integr = 'rosenbrock_posdef'
- 5.42.1.182 REAL messy_mecca_kpp_Global::J_ACETOL
- 5.42.1.183 REAL messy_mecca_kpp_Global::J_IC3H7NO3
- 5.42.1.184 REAL(dp), dimension(ip_max) messy_mecca_kpp_Global::jx = 0.
- 5.42.1.185 REAL messy_mecca_kpp_Global::k0_NO_HO2
- 5.42.1.186 REAL messy_mecca_kpp_Global::k1d_NO_HO2
- 5.42.1.187 REAL messy_mecca_kpp_Global::k1w_NO_HO2
- 5.42.1.188 REAL messy_mecca_kpp_Global::k2d_NO_HO2
- 5.42.1.189 REAL messy_mecca_kpp_Global::k2w_NO_HO2
- 5.42.1.190 REAL(kind=dp), parameter messy_mecca_kpp_Global::k_adp = 0.45E-11
- 5.42.1.191 REAL(kind=dp), parameter messy_mecca_kpp_Global::k_ads = 3.0E-11
- 5.42.1.192 REAL(kind=dp), parameter messy_mecca_kpp_Global::k_adsecprim = 3.0E-11
- 5.42.1.193 REAL(kind=dp), parameter messy_mecca_kpp_Global::k_adt = 5.5E-11
- 5.42.1.194 REAL(kind=dp), parameter messy_mecca_kpp_Global::k_adtertprim = 5.7E-11
- 5.42.1.195 REAL messy_mecca_kpp_Global::k_BrO_NO2
- 5.42.1.196 REAL messy_mecca_kpp_Global::k_CH3CO3_NO2
- 5.42.1.197 REAL messy_mecca_kpp_Global::k_CH3O2
- 5.42.1.198 REAL messy_mecca_kpp_Global::k_CH3OOH_OH
- 5.42.1.199 REAL messy_mecca_kpp_Global::k_CIO_CIO
- 5.42.1.200 REAL messy_mecca_kpp_Global::k_DMS_OH
- 5.42.1.201 REAL(dp), dimension(apn,nspec) messy_mecca_kpp_Global::k_exb = 0.

- 5.42.1.202 REAL(dp), dimension(apn,nspec) messy_mecca_kpp_Global::k_exf = 0.
- 5.42.1.203 REAL(dp) messy_mecca_kpp_Global::k_exf_BrNO3 = 0.
- 5.42.1.204 REAL(dp) messy_mecca_kpp_Global::k_exf_CINO3 = 0.
- 5.42.1.205 REAL(dp) messy_mecca_kpp_Global::k_exf_N2O5 = 0.
- 5.42.1.206 REAL messy_mecca_kpp_Global::k_G4138
- 5.42.1.207 REAL messy_mecca_kpp_Global::k_G9408
- 5.42.1.208 REAL messy_mecca_kpp_Global::k_HNO3_OH
- 5.42.1.209 REAL messy_mecca_kpp_Global::k_HO2_HO2
- 5.42.1.210 REAL messy_mecca_kpp_Global::k_I_NO2
- 5.42.1.211 REAL messy_mecca_kpp_Global::k_NO2_CH3O2
- 5.42.1.212 REAL messy_mecca_kpp_Global::k_NO2_HO2
- 5.42.1.213 REAL messy_mecca_kpp_Global::k_NO3_NO2
- 5.42.1.214 REAL messy_mecca_kpp_Global::k_O3s
- 5.42.1.215 REAL(kind=dp), parameter messy_mecca_kpp_Global::k_p = 1.24E-13
- 5.42.1.216 REAL messy_mecca_kpp_Global::k_PAN_M
- 5.42.1.217 REAL messy_mecca_kpp_Global::k_PrO2_CH3O2
- 5.42.1.218 REAL messy_mecca_kpp_Global::k_PrO2_HO2
- 5.42.1.219 REAL messy_mecca_kpp_Global::k_PrO2_NO
- 5.42.1.220 REAL(kind=dp), parameter messy_mecca_kpp_Global::k_rohro = 1.6E-13
- 5.42.1.221 REAL(kind=dp), parameter messy_mecca_kpp_Global::k_s = 8.42E-13
- 5.42.1.222 REAL(kind=dp), parameter messy_mecca_kpp_Global::k_t = 1.75E-12
- 5.42.1.223 REAL messy_mecca_kpp_Global::KAPHO2
- 5.42.1.224 REAL messy_mecca_kpp_Global::KAPNO
- 5.42.1.225 REAL(dp) messy_mecca_kpp_Global::khet_St = 0.

- 5.42.1.226 REAL(dp) messy_mecca_kpp_Global::khet_Tr = 0.
- 5.42.1.227 REAL messy_mecca_kpp_Global::KNO3AL
- 5.42.1.228 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::KPP_HOME = '/home/sander/e2/messy_d2.50s_rs/messy/tools/kpp'
- 5.42.1.229 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::KPP_version = '2.2.1_rs5'
- 5.42.1.230 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::kppoption = 'k'
- 5.42.1.231 REAL messy_mecca_kpp_Global::KRO2HO2
- 5.42.1.232 REAL messy_mecca_kpp_Global::KRO2NO
- 5.42.1.233 REAL messy_mecca_kpp_Global::KRO2NO3
- 5.42.1.234 REAL(dp), dimension(apn) messy_mecca_kpp_Global::lwc
- 5.42.1.235 INTEGER, parameter, public messy_mecca_kpp_Global::MAX_MCEXP = 1
- 5.42.1.236 REAL, dimension(max_mcexp) messy_mecca_kpp_Global::mcexp
- 5.42.1.237 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::mecca_eqn_file = '-rw----- 1 sander sander 42671 Jun 20 14:09 mecca.eqn'
- 5.42.1.238 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::mecca_eqn_file_sum = '55078 42'
- 5.42.1.239 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::mecca_spc_file = '-rw-r--r-- 1 sander sander 44126 Jun 20 14:09 mecca.spc'
- 5.42.1.240 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::mecca_spc_file_sum = '20767 44'
- 5.42.1.241 REAL(dp) messy_mecca_kpp_Global::press
- 5.42.1.242 REAL(dp), parameter messy_mecca_kpp_Global::RCO3_O3 = 0.10
- 5.42.1.243 REAL(dp), parameter messy_mecca_kpp_Global::RCO3_OH = 0.69
- 5.42.1.244 REAL(dp), parameter messy_mecca_kpp_Global::RCO3_OOH = 0.21
- 5.42.1.245 REAL(kind=dp) messy_mecca_kpp_Global::RCONST

- 5.42.1.246 LOGICAL, parameter messy_mecca_kpp_Global::REQ_AEROSOL = .FALSE.
- 5.42.1.247 LOGICAL, parameter messy_mecca_kpp_Global::REQ_HET = .FALSE.
- 5.42.1.248 LOGICAL, parameter messy_mecca_kpp_Global::REQ_MCFCT = .FALSE.
- 5.42.1.249 LOGICAL, parameter messy_mecca_kpp_Global::REQ_PHOTRAT = .TRUE.
- 5.42.1.250 REAL(dp) messy_mecca_kpp_Global::RO2
- 5.42.1.251 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::rplfile = "
- 5.42.1.252 REAL(kind=dp) messy_mecca_kpp_Global::RTOL
- 5.42.1.253 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::rxnrates = 'n'
- 5.42.1.254 REAL(kind=dp) messy_mecca_kpp_Global::STEPMAX
- 5.42.1.255 REAL(kind=dp) messy_mecca_kpp_Global::STEPMIN
- 5.42.1.256 REAL(kind=dp) messy_mecca_kpp_Global::SUN
- 5.42.1.257 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::tagdbl = 'n'
- 5.42.1.258 REAL(kind=dp) messy_mecca_kpp_Global::TEMP
- 5.42.1.259 REAL(dp) messy_mecca_kpp_Global::temp_elec
- 5.42.1.260 REAL(dp) messy_mecca_kpp_Global::temp_ion
- 5.42.1.261 REAL(kind=dp) messy_mecca_kpp_Global::TEND
- 5.42.1.262 REAL(dp), parameter messy_mecca_kpp_Global::testfac_CO2 = 1.e5_dp
- 5.42.1.263 REAL(dp), parameter messy_mecca_kpp_Global::testfac_H2O = 1.e9_dp
- 5.42.1.264 REAL(dp), parameter messy_mecca_kpp_Global::testfac_H2SO4 = 1.e7_dp
- 5.42.1.265 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HBr = 1.e6_dp
- 5.42.1.266 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HCl = 1.e2_dp
- 5.42.1.267 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HCOOH = 1.e5_dp

- 5.42.1.268 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HNO3 = 1.e7_dp
- 5.42.1.269 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HNO4 = 1.e5_dp
- 5.42.1.270 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HO2 = 1.e5_dp
- 5.42.1.271 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HOBr = 1.e2_dp
- 5.42.1.272 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HOCl = 1.e2_dp
- 5.42.1.273 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HONO = 1.e5_dp
- 5.42.1.274 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HSO3m = 1.e9_dp
- 5.42.1.275 REAL(dp), parameter messy_mecca_kpp_Global::testfac_HSO4m = 1.e7_dp
- 5.42.1.276 REAL(dp), parameter messy_mecca_kpp_Global::testfac_IBr = 1.e2_dp
- 5.42.1.277 REAL(dp), parameter messy_mecca_kpp_Global::testfac_ICl = 1.e2_dp
- 5.42.1.278 REAL(dp), parameter messy_mecca_kpp_Global::testfac_ICIBr = 1.e2_dp
- 5.42.1.279 REAL(dp), parameter messy_mecca_kpp_Global::testfac_NH3 = 1.e7_dp
- 5.42.1.280 REAL(dp), parameter messy_mecca_kpp_Global::testfac_SO2 = 1.e9_dp
- 5.42.1.281 REAL(kind=dp) messy_mecca_kpp_Global::TIME
- 5.42.1.282 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::timestamp = 'xmecca was run on 2015-06-20 at 14:09:00 by sander on machine bromine'
- 5.42.1.283 REAL(kind=dp) messy_mecca_kpp_Global::TSTART
- 5.42.1.284 REAL(kind=dp) messy_mecca_kpp_Global::VAR
- 5.42.1.285 CHARACTER(LEN=*), parameter, public messy_mecca_kpp_Global::wanted = 'Tr && G && !C && !S && !Cl && !Br && !I && !Hg'
- 5.42.1.286 REAL(dp), dimension(apn) messy_mecca_kpp_Global::xaer
- 5.42.1.287 INTEGER, public messy_mecca_kpp_Global::xnom7sulf = 1

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_global.f90](#)

5.43 messy_mecca_kpp_Initialize Module Reference

Public Member Functions

- subroutine [Initialize](#) ()

5.43.1 Member Function/Subroutine Documentation

5.43.1.1 subroutine messy_mecca_kpp_Initialize::Initialize ()

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_mecca_kpp_initialize.f90](#)

5.44 messy_mecca_kpp_Integrator Module Reference

Public Member Functions

- subroutine [INTEGRATE](#) (TIN, TOUT, ICNTRL_U, RCNTRL_U, ISTATUS_U, RSTATUS_U, IERR_U)
- subroutine [Rosenbrock](#) (N, Y, Tstart, Tend, AbsTol, RelTol, RCNTRL, ICNTRL, RSTATUS, ISTATUS, IERR)
- subroutine [FunTemplate](#) (T, Y, Ydot)
- subroutine [JacTemplate](#) (T, Y, Jcb)

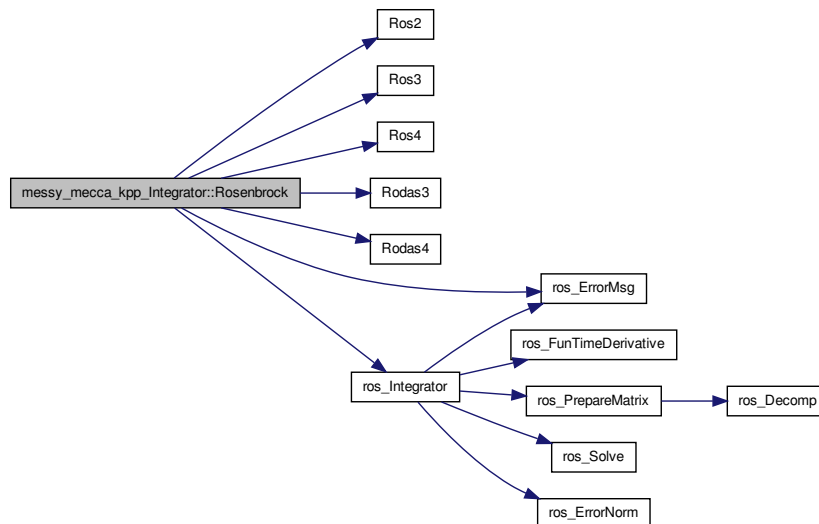
Public Attributes

- INTEGER, parameter [Nfun](#) = 1
- INTEGER, parameter [Njac](#) = 2
- INTEGER, parameter [Nstp](#) = 3
- INTEGER, parameter [Nacc](#) = 4
- INTEGER, parameter [Nrej](#) = 5
- INTEGER, parameter [Ndec](#) = 6
- INTEGER, parameter [Nsol](#) = 7
- INTEGER, parameter [Nsng](#) = 8
- INTEGER, parameter [Ntexit](#) = 1
- INTEGER, parameter [Nhexit](#) = 2
- INTEGER, parameter [Nhnew](#) = 3
- CHARACTER(LEN=50), dimension(-8:1), parameter [IERR_NAMES](#) = (/ 'Matrix is repeatedly singular ', 'Step size too small ', 'No of steps exceeds maximum bound ', 'Improper tolerance values ', 'FacMin/FacMax/FacRej must be positive ', 'Hmin/Hmax/Hstart must be positive ', 'Selected [Rosenbrock](#) method not implemented ', 'Improper value for maximal no of steps ', ' ', 'Success ' /)

5.44.1 Member Function/Subroutine Documentation

- 5.44.1.1 subroutine `messy_mecca_kpp_Integrator::FunTemplate` (`REAL(kind=dp) T`, `REAL(kind=dp), dimension(nvar) Y`, `REAL(kind=dp), dimension(nvar) Ydot`)
- 5.44.1.2 subroutine `messy_mecca_kpp_Integrator::INTEGRATE` (`REAL(kind=dp)`, `intent(in) TIN`, `REAL(kind=dp)`, `intent(in) TOUT`, `INTEGER, dimension(20)`, `intent(in)`, `optional ICNTRL_U`, `REAL(kind=dp), dimension(20)`, `intent(in)`, `optional RCNTRL_U`, `INTEGER, dimension(20)`, `intent(out)`, `optional ISTATUS_U`, `REAL(kind=dp), dimension(20)`, `intent(out)`, `optional RSTATUS_U`, `INTEGER, intent(out)`, `optional IERR_U`)
- 5.44.1.3 subroutine `messy_mecca_kpp_Integrator::JacTemplate` (`REAL(kind=dp) T`, `REAL(kind=dp), dimension(nvar) Y`, `REAL(kind=dp), dimension(lu_nonzero) Jcb`)
- 5.44.1.4 subroutine `messy_mecca_kpp_Integrator::Rosenbrock` (`INTEGER, intent(in) N`, `REAL(kind=dp), dimension(n)`, `intent(inout) Y`, `REAL(kind=dp)`, `intent(in) Tstart`, `REAL(kind=dp)`, `intent(in) Tend`, `REAL(kind=dp), dimension(n)`, `intent(in) AbsTol`, `REAL(kind=dp), dimension(n)`, `intent(in) RelTol`, `REAL(kind=dp), dimension(20)`, `intent(in) RCNTRL`, `INTEGER, dimension(20)`, `intent(in) ICNTRL`, `REAL(kind=dp), dimension(20)`, `intent(inout) RSTATUS`, `INTEGER, dimension(20)`, `intent(inout) ISTATUS`, `INTEGER, intent(out) IERR`)

Here is the call graph for this function:



5.44.2 Member Data Documentation

- 5.44.2.1 CHARACTER(LEN=50), dimension(-8:1), parameter messy_mecca_kpp_Integrator::IERR_NAMES = (/ 'Matrix is repeatedly singular ', 'Step size too small ', 'No of steps exceeds maximum bound ', 'Improper tolerance values ', 'FacMin/FacMax/FacRej must be positive ', 'Hmin/Hmax/Hstart must be positive ', 'Selected Rosenbrock method not implemented ', 'Improper value for maximal no of steps ', ' ', 'Success ' /)
- 5.44.2.2 INTEGER, parameter messy_mecca_kpp_Integrator::Nacc = 4
- 5.44.2.3 INTEGER, parameter messy_mecca_kpp_Integrator::Ndec = 6
- 5.44.2.4 INTEGER, parameter messy_mecca_kpp_Integrator::Nfun = 1
- 5.44.2.5 INTEGER, parameter messy_mecca_kpp_Integrator::Nhexit = 2
- 5.44.2.6 INTEGER, parameter messy_mecca_kpp_Integrator::Nhnew = 3
- 5.44.2.7 INTEGER, parameter messy_mecca_kpp_Integrator::Njac = 2
- 5.44.2.8 INTEGER, parameter messy_mecca_kpp_Integrator::Nrej = 5
- 5.44.2.9 INTEGER, parameter messy_mecca_kpp_Integrator::Nsng = 8
- 5.44.2.10 INTEGER, parameter messy_mecca_kpp_Integrator::Nsol = 7
- 5.44.2.11 INTEGER, parameter messy_mecca_kpp_Integrator::Nstp = 3
- 5.44.2.12 INTEGER, parameter messy_mecca_kpp_Integrator::Ntexit = 1

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_mecca_kpp_integrator.f90](#)

5.45 messy_mecca_kpp_Jacobian Module Reference

Public Member Functions

- subroutine [Jac_SP](#) (V, F, RCT, JVS)
- subroutine [Jac_SP_Vec](#) (JVS, UV, JUV)
- subroutine [JacTR_SP_Vec](#) (JVS, UV, JTUV)

5.45.1 Member Function/Subroutine Documentation

38, 40, 15, 36, 38, 42, 16, 34, 37, 38, 17, 32, 33, 38, 40, 18, 38, 39, 42, 19, 27, 34, 37, 38, 40, 20, 38, 40, 42, 21, 31, 38, 40, 22, 26, 35, 36, 40, 7, 23, 31, 36, 38, 39, 41, 24, 34, 37, 38, 40, 42, 25, 28, 29, 30, 32, 33, 38, 39, 3, 22, 26, 34, 35, 36, 38, 40, 13, 22, 26, 27, 34, 35, 36, 37, 38, 40, 4, 28, 30, 35, 37, 38, 10, 21, 23, 29, 31, 33, 34, 36, 38, 39, 40, 41, 8, 28, 30, 33, 35, 37, 38, 40, 41, 42, 21, 23, 31, 32, 33, 34, 36, 38, 39, 40, 41, 15, 16, 18, 20, 24, 25, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 5, 14, 17, 20, 21, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 13, 16, 19, 22, 26, 27, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 22, 26, 28, 30, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 6, 9, 10, 12, 14, 18, 21, 23, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 15, 16, 18, 20, 24, 28, 30, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 3, 4, 6, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 7, 18, 25, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 5, 14, 17, 19, 20, 21, 24, 26, 27, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 3, 4, 6 /)

- INTEGER, dimension(48), parameter [LU_ICOL_1](#) = (/ 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 15, 20, 28, 30, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42 /)
- INTEGER, dimension(408), parameter [LU_ICOL](#) = (/ [LU_ICOL_0](#), [LU_ICOL_1](#) /)
- INTEGER, dimension(43), parameter [LU_CROW](#) = (/ 1, 4, 10, 12, 14, 17, 20, 23, 26, 34, 37, 41, 46, 51, 55, 59, 63, 68, 72, 78, 82, 86, 91, 98, 104, 112, 120, 130, 136, 148, 158, 169, 190, 207, 225, 239, 265, 282, 319, 337, 358, 395, 409 /)
- INTEGER, dimension(43), parameter [LU_DIAG](#) = (/ 1, 4, 10, 12, 14, 17, 20, 23, 26, 34, 37, 41, 47, 51, 55, 59, 63, 68, 72, 78, 82, 86, 92, 98, 104, 114, 123, 131, 139, 150, 160, 179, 197, 216, 231, 258, 276, 314, 333, 355, 393, 408, 409 /)

5.46.1 Member Data Documentation

- 5.46.1.1 INTEGER, dimension(43), parameter `messy_mecca_kpp_JacobianSP::LU_CROW` = (/ 1, 4, 10, 12, 14, 17, 20, 23, 26, 34, 37, 41, 46, 51, 55, 59, 63, 68, 72, 78, 82, 86, 91, 98, 104, 112, 120, 130, 136, 148, 158, 169, 190, 207, 225, 239, 265, 282, 319, 337, 358, 395, 409 /)
- 5.46.1.2 INTEGER, dimension(43), parameter `messy_mecca_kpp_JacobianSP::LU_DIAG` = (/ 1, 4, 10, 12, 14, 17, 20, 23, 26, 34, 37, 41, 47, 51, 55, 59, 63, 68, 72, 78, 82, 86, 92, 98, 104, 114, 123, 131, 139, 150, 160, 179, 197, 216, 231, 258, 276, 314, 333, 355, 393, 408, 409 /)
- 5.46.1.3 INTEGER, dimension(408), parameter `messy_mecca_kpp_JacobianSP::LU_ICOL` = (/ [LU_ICOL_0](#), [LU_ICOL_1](#) /)

- The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_jacobiansp.f90](#)

5.47 messy_mecca_kpp_LinearAlgebra Module Reference

Public Member Functions

- subroutine [KppDecomp](#) (JVS, IER)
- subroutine [KppDecompCmplx](#) (JVS, IER)
- subroutine [KppDecompCmplxR](#) (JVSR, JVSI, IER)
- subroutine [KppSolveIndirect](#) (JVS, X)
- subroutine [KppSolveTRIndirect](#) (JVS, X)
- subroutine [KppSolveCmplx](#) (JVS, X)
- subroutine [KppSolveCmplxR](#) (JVSR, JVSI, XR, XI)
- subroutine [KppSolveTRCmplx](#) (JVS, X)
- subroutine [KppSolveTRCmplxR](#) (JVSR, JVSI, XR, XI)
- subroutine [KppSolve](#) (JVS, X)
- subroutine [KppSolveTR](#) (JVS, X, XX)
- subroutine [WCOPY](#) (N, X, incX, Y, incY)
- subroutine [WAXPY](#) (N, Alpha, X, incX, Y, incY)
- subroutine [WSCAL](#) (N, Alpha, X, incX)
- REAL(kind=dp) function [WLAMCH](#) (C)
- subroutine [WLAMCH_ADD](#) (A, B, Suma)
- subroutine [SET2ZERO](#) (N, Y)
- REAL(kind=dp) function [WDOT](#) (N, DX, incX, DY, incY)
- subroutine [WADD](#) (N, X, Y, Z)
- subroutine [WGEFA](#) (N, A, lpvt, info)
- subroutine [WGESL](#) (Trans, N, A, lpvt, b)

5.47.1 Member Function/Subroutine Documentation

- 5.47.1.1 subroutine `messy_mecca_kpp_LinearAlgebra::KppDecomp` (REAL(kind=dp), dimension(lu_nonzero) *JVS*, INTEGER *IER*)
- 5.47.1.2 subroutine `messy_mecca_kpp_LinearAlgebra::KppDecompCmplx` (DOUBLE COMPLEX, dimension(lu_nonzero) *JVS*, INTEGER *IER*)
- 5.47.1.3 subroutine `messy_mecca_kpp_LinearAlgebra::KppDecompCmplxR` (REAL(kind=dp), dimension(lu_nonzero) *JVSR*, REAL(kind=dp), dimension(lu_nonzero) *JVSI*, INTEGER *IER*)
- 5.47.1.4 subroutine `messy_mecca_kpp_LinearAlgebra::KppSolve` (REAL(kind=dp), dimension(lu_nonzero) *JVS*, REAL(kind=dp), dimension(nvar) *X*)

- 5.47.1.5 subroutine messy_mecca_kpp_LinearAlgebra::KppSolveCmplx (DOUBLE COMPLEX, dimension(lu_nonzero) *JVS*, DOUBLE COMPLEX, dimension(nvar) *X*)
- 5.47.1.6 subroutine messy_mecca_kpp_LinearAlgebra::KppSolveCmplxR (REAL(kind=dp), dimension(lu_nonzero) *JVSR*, REAL(kind=dp), dimension(lu_nonzero) *JVSI*, REAL(kind=dp), dimension(nvar) *XR*, REAL(kind=dp), dimension(nvar) *XI*)
- 5.47.1.7 subroutine messy_mecca_kpp_LinearAlgebra::KppSolveIndirect (REAL(kind=dp), dimension(lu_nonzero) *JVS*, REAL(kind=dp), dimension(nvar) *X*)
- 5.47.1.8 subroutine messy_mecca_kpp_LinearAlgebra::KppSolveTR (REAL(kind=dp), dimension(lu_nonzero) *JVS*, REAL(kind=dp), dimension(nvar) *X*, REAL(kind=dp), dimension(nvar) *XX*)
- 5.47.1.9 subroutine messy_mecca_kpp_LinearAlgebra::KppSolveTRCmplx (DOUBLE COMPLEX, dimension(lu_nonzero) *JVS*, DOUBLE COMPLEX, dimension(nvar) *X*)
- 5.47.1.10 subroutine messy_mecca_kpp_LinearAlgebra::KppSolveTRCmplxR (REAL(kind=dp), dimension(lu_nonzero) *JVSR*, REAL(kind=dp), dimension(lu_nonzero) *JVSI*, REAL(kind=dp), dimension(nvar) *XR*, REAL(kind=dp), dimension(nvar) *XI*)
- 5.47.1.11 subroutine messy_mecca_kpp_LinearAlgebra::KppSolveTRIndirect (REAL(kind=dp), dimension(lu_nonzero) *JVS*, REAL(kind=dp), dimension(nvar) *X*)
- 5.47.1.12 subroutine messy_mecca_kpp_LinearAlgebra::SET2ZERO (INTEGER *N*, REAL(kind=dp), dimension(n) *Y*)
- 5.47.1.13 subroutine messy_mecca_kpp_LinearAlgebra::WADD (INTEGER *N*, REAL(kind=dp), dimension(n) *X*, REAL(kind=dp), dimension(n) *Y*, REAL(kind=dp), dimension(n) *Z*)
- 5.47.1.14 subroutine messy_mecca_kpp_LinearAlgebra::WAXPY (INTEGER *N*, REAL(kind=dp) *Alpha*, REAL(kind=dp), dimension(n) *X*, INTEGER *incX*, REAL(kind=dp), dimension(n) *Y*, INTEGER *incY*)
- 5.47.1.15 subroutine messy_mecca_kpp_LinearAlgebra::WCOPY (INTEGER *N*, REAL(kind=dp), dimension(n) *X*, INTEGER *incX*, REAL(kind=dp), dimension(n) *Y*, INTEGER *incY*)
- 5.47.1.16 REAL(kind=dp) function messy_mecca_kpp_LinearAlgebra::WDOT (INTEGER *N*, REAL(kind=dp), dimension(n) *DX*, INTEGER *incX*, REAL(kind=dp), dimension(n) *DY*, INTEGER *incY*)
- 5.47.1.17 subroutine messy_mecca_kpp_LinearAlgebra::WGEFA (INTEGER *N*, REAL(kind=dp), dimension(n,n) *A*, INTEGER, dimension(n) *lpvt*, INTEGER *info*)

- 5.47.1.18 subroutine `messy_mecca_kpp_LinearAlgebra::WGESL` (CHARACTER *Trans*, INTEGER *N*, REAL(kind=dp), dimension(n,n) *A*, INTEGER, dimension(n) *lpvt*, REAL(kind=dp), dimension(n) *b*)
- 5.47.1.19 REAL(kind=dp) function `messy_mecca_kpp_LinearAlgebra::WLAMCH` (CHARACTER *C*)
- 5.47.1.20 subroutine `messy_mecca_kpp_LinearAlgebra::WLAMCH_ADD` (REAL(kind=dp) *A*, REAL(kind=dp) *B*, REAL(kind=dp) *Suma*)
- 5.47.1.21 subroutine `messy_mecca_kpp_LinearAlgebra::WSCAL` (INTEGER *N*, REAL(kind=dp) *Alpha*, REAL(kind=dp), dimension(n) *X*, INTEGER *incX*)

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_linearalgebra.f90

5.48 messy_mecca_kpp_Monitor Module Reference

Public Attributes

- CHARACTER(LEN=32), dimension(45), parameter `SPC_NAMES` = (/ 'N2O ', 'LCARBON ', 'NH3 ', 'CH4 ', 'N2O5 ', 'H2O2 ', 'H2OH2O ', 'O1D ', 'H ', 'HOCH2OH ', 'NH2OH ', 'H2 ', 'NHOH ', 'HNO4 ', 'CH3OOH ', 'CH3ONO ', 'HNO3 ', 'CH3OH ', 'HONO ', 'CH3O2NO2 ', 'HOCH2O2NO2 ', 'NH2O ', 'HOCH2OOH ', 'CH3NO3 ', 'CO ', 'NH2 ', 'HNO ', 'CH3 ', 'HCOOH ', 'O3P ', 'HOCH2O2 ', 'HCHO ', 'NO3 ', 'NO ', 'O3 ', 'HO2 ', 'CH3O ', 'OH ', 'CH2OO ', 'NO2 ', 'H2O ', 'CH3O2 ', 'O2 ', 'N2 ', 'CO2 ' /)
- INTEGER, dimension(1) `LOOKAT`
- INTEGER, dimension(1) `MONITOR`
- CHARACTER(LEN=32), dimension(1) `SMASS`
- CHARACTER(LEN=100), dimension(30), parameter `EQN_NAMES_0` = (/ ' O1D + O2 --> O3P + O2 ', ' O3P + O2 --> O3 ', ' H + O2 --> HO2 ', ' O3 + OH --> HO2 + O2 ', ' H2 + OH --> H + H2O ', ' O3 + HO2 --> OH + 2 O2 ', ' HO2 + OH --> H2O + O2 ', ' 2 HO2 --> H2O2 + O2 ', ' O1D + H2O --> 2 OH ', ' H2O2 + OH --> HO2 + H2O ', ' 2 H2O --> H2OH2O ', ' H2OH2O --> 2 H2O ', ' O1D + N2 --> O3P + N2 ', ' NO + O3 --> NO2 + O2 ', ' O3 + NO2 --> NO3 + O2 ', ' NO3 + NO --> 2 NO2 ', ' NO3 + NO2 --> N2O5 ', ' N2O5 --> NO3 + NO2 ', ' NO + OH --> HONO ', ' NO + HO2 --> OH + NO2 ', ' OH + NO2 --> HNO3 ', ' HO2 + NO2 --> HNO4 ', ' NO3 + HO2 --> OH + NO2 + O2 ', ' HONO + OH --> NO2 + H2O ', ' HNO3 + OH --> NO3 + H2O ', ' HNO4 --> HO2 + NO2 ', ' HNO4 + OH --> NO2 + H2O ', ' NH3 + OH --> NH2 + H2O ', ' NH2 + O3 --> NH2O + O2 ', ' NH2 + HO2 --> NH2O + OH ' /)
- CHARACTER(LEN=100), dimension(30), parameter `EQN_NAMES_1` = (/ ' NH2 + HO2 --> HNO + H2O ', ' NH2 + NO --> HO2 + OH + N2 ', ' NH2 + NO --> H2O + N2 ', ' NH2 + NO2 --> N2O + H2O ', ' NH2 + NO2 --> NH2O + NO ', ' NH2O + O3 --> NH2 + O2 ', ' NH2O --> NHOH ', ' HNO + OH --> NO + H2O ',

- ' NHOH + HNO --> NH2OH + NO ', ' HNO + NO2 --> HONO + NO ', ' NHOH + OH --> HNO + H2O ', ' NH2OH + OH --> NHOH + H2O ', ' HNO + O2 --> NO + HO2 ', ' CH4 + OH --> CH3 + H2O ', ' CH3OH + OH --> 0.85 HCHO + 0.85 HO2 + 0.15 CH3O + H2O ', ' HO2 + CH3O2 --> CH3OOH + O2 ', ' HO2 + CH3O2 --> HCHO + H2O + O2 ', ' NO + CH3O2 --> CH3O + NO2 ', ' NO + CH3O2 --> CH3NO3 ', ' NO3 + CH3O2 --> CH3O + NO2 + O2 ', ' CH3O2 --> CH3O + 0.5 O2 ', ' CH3O2 --> 0.5 CH3OH + 0.5 HCHO + 0.5 O2 ', ' CH3OOH + OH --> 0.4 HCHO + 0.4 OH + H2O + 0.6 CH3O2 ', ' HCHO + OH --> CO + HO2 + H2O ', ' HCHO + NO3 --> HNO3 + CO + HO2 ', ' CO + OH --> H + CO2 ', ' HCOOH + OH --> HO2 + H2O + CO2 ', ' NO2 + CH3O2 --> CH3O2NO2 ', ' CH3O2NO2 --> NO2 + CH3O2 ', ' CH3O2NO2 + OH --> HCHO + NO3 + H2O ' /)
- CHARACTER(LEN=100), dimension(30), parameter [EQN_NAMES_2](#) = (/ ' C-H3NO3 + OH --> HCHO + NO2 + H2O ', ' CH3O --> HCHO + HO2 ', ' CH3O + NO2 --> CH3NO3 ', ' CH3O + NO2 --> HONO + HCHO ', ' NO + CH3O --> CH3ONO ', ' NO + CH3O --> HNO + HCHO ', ' O3 + CH3O2 --> CH3O + 2 O2 ', ' CH3ONO + OH --> HCHO + NO + H2O ', ' HCHO + HO2 --> HOCH2O2 ', ' HOCH2O2 --> HCHO + HO2 ', ' HOCH2O2 + HO2 --> 0.5 HOCH2OOH + 0.5 HCOOH + 0.2 HO2 + 0.2 OH + 0.3 H2O ... etc. ', ' HOCH2O2 + NO --> HCOOH + HO2 + NO2 ', ' HOCH2O2 + NO3 --> HCOOH + HO2 + NO2 ', ' HOCH2O2 --> HCOOH + HO2 ', ' HOCH2O2 --> 0.5 HOCH2OH + 0.5 HCOOH + 0.5 O2 ', ' HOCH2OOH + OH --> HOCH2O2 + H2O ', ' HOCH2OOH + OH --> HCOOH + OH + H2O ', ' HOCH2OH + OH --> HCOOH + HO2 + H2O ', ' OH + CH3O2 --> 0.2 HO2 + 0.2 CH3O + 0.8 CH2OO + 0.8 H2O ', ' CH2OO --> CO + HO2 + OH ', ' CH2OO + H2O --> HOCH2OOH ', ' H2OH2O + CH2OO --> HOCH2OOH + H2O ', ' NO + CH2OO --> HCHO + NO2 ', ' CH2OO + NO2 --> HCHO + NO3 ', ' CO + CH2OO --> HCHO + CO2 ', ' HCOOH + CH2OO --> 2 HCOOH ', ' HCHO + CH2OO --> 2 LCARBON ', ' CH3OH + CH2OO --> 2 LCARBON ', ' CH2OO + CH3O2 --> 2 LCARBON ', ' HO2 + CH2OO --> LCARBON ' /)
 - CHARACTER(LEN=100), dimension(30), parameter [EQN_NAMES_3](#) = (/ ' O3 + CH2OO --> HCHO + 2 O2 ', ' 2 CH2OO --> 2 HCHO + O2 ', ' HOCH2O2 + NO2 --> HOCH2O2NO2 ', ' HOCH2O2NO2 --> HOCH2O2 + NO2 ', ' HOCH2O2NO2 + OH --> HCOOH + NO3 + H2O ', ' CH3 + O2 --> CH3O2 ', ' CH3 + O3 --> 0.954 H + 0.954 HCHO + 0.044 CH3O + O2 ', ' CH3 + O3P --> H + 0.17 H2 + 0.17 CO + 0.83 HCHO ', ' O3 + CH3O --> CH3O2 + O2 ', ' O3P + CH3O --> 0.75 CH3 + 0.25 HCHO + 0.25 OH + 0.75 O2 ', ' O3P + CH3O2 --> CH3O + O2 ', ' O2 --> 2 O3P ', ' O3 --> O1D + O2 ', ' O3 --> O3P + O2 ', ' H2O2 --> 2 OH ', ' NO2 --> O3P + NO ', ' NO3 --> O3P + NO2 ', ' NO3 --> NO + O2 ', ' N2O5 --> NO3 + NO2 ', ' HONO --> NO + OH ', ' HNO3 --> OH + NO2 ', ' HNO4 --> 0.333 NO3 + 0.667 HO2 + 0.333 OH + 0.667 NO2 ', ' CH3OOH --> CH3O + OH ', ' HCHO --> H2 + CO ', ' HCHO --> H + CO + HO2 ', ' CH3ONO --> NO + CH3O ', ' CH3NO3 --> CH3O + NO2 ', ' CH3O2NO2 --> 0.333 NO3 + 0.333 CH3O + 0.667 NO2 + 0.667 CH3O2 ', ' HOCH2OOH --> HCOOH + HO2 + OH ', ' CH3O2 --> HCHO + OH ' /)
 - CHARACTER(LEN=100), dimension(2), parameter [EQN_NAMES_4](#) = (/ ' HCOOH --> CO + HO2 + OH ', ' HOCH2O2NO2 --> 0.333 HCOOH + 0.667 HOCH2O2 + 0.333 NO3 + 0.333 HO2 ... etc. ' /)
 - CHARACTER(LEN=100), dimension(122), parameter [EQN_NAMES](#) = (/ [EQN_NAMES_0](#), [EQN_NAMES_1](#), [EQN_NAMES_2](#), [EQN_NAMES_3](#), [EQN_NAMES_4](#) /)

- CHARACTER(LEN=32), dimension(90), parameter [EQN_TAGS_0](#) = (/ 'G1000', 'G1001', 'G2100', 'G2104', 'G2105', 'G2107', 'G2109', 'G2110', 'G2111', 'G2112', 'G2117', 'G2118', 'G3101', 'G3103', 'G3106', 'G3108', 'G3109', 'G3110', 'G3200', 'G3201', 'G3202', 'G3203', 'G3204', 'G3205', 'G3206', 'G3207', 'G3208', 'G3209', 'G3210', 'G3211', 'G3212', 'G3213', 'G3214', 'G3215', 'G3216', 'G3217', 'G3218', 'G3219', 'G3220', 'G3221', 'G3222', 'G3223', 'G3224', 'G4101', 'G4102', 'G4103a', 'G4103b', 'G4104a', 'G4104b', 'G4105', 'G4106a', 'G4106b', 'G4107', 'G4108', 'G4109', 'G4110', 'G4111', 'G4114', 'G4115', 'G4116', 'G4117', 'G4118', 'G4119a', 'G4119b', 'G4120a', 'G4120b', 'G4121', 'G4122', 'G4123', 'G4124', 'G4125', 'G4126', 'G4127', 'G4129a', 'G4129b', 'G4130', 'G4131', 'G4132', 'G4133', 'G4134', 'G4135', 'G4136', 'G4137', 'G4138', 'G4140', 'G4141', 'G4142', 'G4143', 'G4144', 'G4145' /)
- CHARACTER(LEN=32), dimension(32), parameter [EQN_TAGS_1](#) = (/ 'G4146', 'G4147', 'G4148', 'G4149', 'G4150', 'G4151', 'G4152', 'G4153', 'G4154', 'G4155', 'G4156', 'J1000a', 'J1001a', 'J1001b', 'J2101', 'J3101', 'J3103a', 'J3103b', 'J3104', 'J3200', 'J3201', 'J3202', 'J4100', 'J4101a', 'J4101b', 'J4104', 'J4105', 'J4106', 'J4107', 'J4108', 'J4109', 'J4110' /)
- CHARACTER(LEN=32), dimension(122), parameter [EQN_TAGS](#) = (/ [EQN_TAGS_0](#), [EQN_TAGS_1](#) /)

5.48.1 Member Data Documentation

- 5.48.1.1 CHARACTER(LEN=100), dimension(122), parameter messy_mecca_kpp_Monitor::EQN_NAMES = (/ EQN_NAMES_0, EQN_NAMES_1, EQN_NAMES_2, EQN_NAMES_3, EQN_NAMES_4 /)
- 5.48.1.2 CHARACTER(LEN=100), dimension(30), parameter messy_mecca_kpp_Monitor::EQN_NAMES_0 = (/ 'O1D + O2 --> O3P + O2', 'O3P + O2 --> O3', 'H + O2 --> HO2', 'O3 + OH --> HO2 + O2', 'H2 + OH --> H + H2O', 'O3 + HO2 --> OH + 2 O2', 'HO2 + OH --> H2O + O2', '2 HO2 --> H2O2 + O2', 'O1D + H2O --> 2 OH', 'H2O2 + OH --> HO2 + H2O', '2 H2O --> H2OH2O', 'H2OH2O --> 2 H2O', 'O1D + N2 --> O3P + N2', 'NO + O3 --> NO2 + O2', 'O3 + NO2 --> NO3 + O2', 'NO3 + NO --> 2 NO2', 'NO3 + NO2 --> N2O5', 'N2O5 --> NO3 + NO2', 'NO + OH --> HONO', 'NO + HO2 --> OH + NO2', 'OH + NO2 --> HNO3', 'HO2 + NO2 --> HNO4', 'NO3 + HO2 --> OH + NO2 + O2', 'HONO + OH --> NO2 + H2O', 'HNO3 + OH --> NO3 + H2O', 'HNO4 --> HO2 + NO2', 'HNO4 + OH --> NO2 + H2O', 'NH3 + OH --> NH2 + H2O', 'NH2 + O3 --> NH2O + O2', 'NH2 + HO2 --> NH2O + OH' /)

- 5.48.1.3 CHARACTER(LEN=100), dimension(30), parameter messy_mecca_kpp_Monitor::
 EQN_NAMES_1 = (/ ' NH2 + HO2 --> HNO + H2O ', ' NH2 + NO --> HO2 + OH + N2 ',
 ' NH2 + NO --> H2O + N2 ', ' NH2 + NO2 --> N2O + H2O ', ' NH2 + NO2 --> NH2O + NO ',
 ' NH2O + O3 --> NH2 + O2 ', ' NH2O --> NHOH ', ' HNO + OH --> NO + H2O ', ' NHOH +
 ' HNO --> NH2OH + NO ', ' HNO + NO2 --> HONO + NO ', ' NHOH + OH --> HNO + H2O ',
 ' NH2OH + OH --> NHOH + H2O ', ' HNO + O2 --> NO + HO2 ', ' CH4 + OH --> CH3 + H2O
 ', ' CH3OH + OH --> 0.85 HCHO + 0.85 HO2 + 0.15 CH3O + H2O ', ' HO2 + CH3O2 -->
 ' CH3OOH + O2 ', ' HO2 + CH3O2 --> HCHO + H2O + O2 ', ' NO + CH3O2 --> CH3O + NO2
 ', ' NO + CH3O2 --> CH3NO3 ', ' NO3 + CH3O2 --> CH3O + NO2 + O2 ', ' CH3O2 -->
 ' CH3O + 0.5 O2 ', ' CH3O2 --> 0.5 CH3OH + 0.5 HCHO + 0.5 O2 ', ' CH3OOH + OH --> 0.4
 ' HCHO + 0.4 OH + H2O + 0.6 CH3O2 ', ' HCHO + OH --> CO + HO2 + H2O ', ' HCHO + NO3
 --> HNO3 + CO + HO2 ', ' CO + OH --> H + CO2 ', ' HCOOH + OH --> HO2 + H2O + CO2
 ', ' NO2 + CH3O2 --> CH3O2NO2 ', ' CH3O2NO2 --> NO2 + CH3O2 ', ' CH3O2NO2 + OH
 --> HCHO + NO3 + H2O ' /)
- 5.48.1.4 CHARACTER(LEN=100), dimension(30), parameter messy_mecca_kpp_Monitor::
 EQN_NAMES_2 = (/ ' CH3NO3 + OH --> HCHO + NO2 + H2O ', ' CH3O --> HCHO +
 ' HO2 ', ' CH3O + NO2 --> CH3NO3 ', ' CH3O + NO2 --> HONO + HCHO ', ' NO + CH3O -->
 ' CH3ONO ', ' NO + CH3O --> HNO + HCHO ', ' O3 + CH3O2 --> CH3O + 2 O2 ', ' CH3ONO
 + OH --> HCHO + NO + H2O ', ' HCHO + HO2 --> HOCH2O2 ', ' HOCH2O2 --> HCHO +
 ' HO2 ', ' HOCH2O2 + HO2 --> 0.5 HOCH2OOH + 0.5 HCOOH + 0.2 HO2 + 0.2 OH + 0.3 H2O
 ... etc. ', ' HOCH2O2 + NO --> HCOOH + HO2 + NO2 ', ' HOCH2O2 + NO3 --> HCOOH +
 ' HO2 + NO2 ', ' HOCH2O2 --> HCOOH + HO2 ', ' HOCH2O2 --> 0.5 HOCH2OH + 0.5
 ' HCOOH + 0.5 O2 ', ' HOCH2OOH + OH --> HOCH2O2 + H2O ', ' HOCH2OOH + OH -->
 ' HCOOH + OH + H2O ', ' HOCH2OH + OH --> HCOOH + HO2 + H2O ', ' OH + CH3O2 -->
 ' 0.2 HO2 + 0.2 CH3O + 0.8 CH2OO + 0.8 H2O ', ' CH2OO --> CO + HO2 + OH ', ' CH2OO +
 ' H2O --> HOCH2OOH ', ' H2OH2O + CH2OO --> HOCH2OOH + H2O ', ' NO + CH2OO -->
 ' HCHO + NO2 ', ' CH2OO + NO2 --> HCHO + NO3 ', ' CO + CH2OO --> HCHO + CO2 ',
 ' HCOOH + CH2OO --> 2 HCOOH ', ' HCHO + CH2OO --> 2 LCARBON ', ' CH3OH +
 ' CH2OO --> 2 LCARBON ', ' CH2OO + CH3O2 --> 2 LCARBON ', ' HO2 + CH2OO -->
 ' LCARBON ' /)
- 5.48.1.5 CHARACTER(LEN=100), dimension(30), parameter messy_mecca_kpp_Monitor::
 EQN_NAMES_3 = (/ ' O3 + CH2OO --> HCHO + 2 O2 ', ' 2 CH2OO --> 2 HCHO + O2
 ', ' HOCH2O2 + NO2 --> HOCH2O2NO2 ', ' HOCH2O2NO2 --> HOCH2O2 + NO2 ',
 ' HOCH2O2NO2 + OH --> HCOOH + NO3 + H2O ', ' CH3 + O2 --> CH3O2 ', ' CH3 + O3 -->
 ' 0.954 H + 0.954 HCHO + 0.044 CH3O + O2 ', ' CH3 + O3P --> H + 0.17 H2 + 0.17 CO + 0.83
 ' HCHO ', ' O3 + CH3O --> CH3O2 + O2 ', ' O3P + CH3O --> 0.75 CH3 + 0.25 HCHO + 0.25
 ' OH + 0.75 O2 ', ' O3P + CH3O2 --> CH3O + O2 ', ' O2 --> 2 O3P ', ' O3 --> O1D + O2 ',
 ' O3 --> O3P + O2 ', ' H2O2 --> 2 OH ', ' NO2 --> O3P + NO ', ' NO3 --> O3P + NO2 ',
 ' NO3 --> NO + O2 ', ' N2O5 --> NO3 + NO2 ', ' HONO --> NO + OH ', ' HNO3 --> OH +
 ' NO2 ', ' HNO4 --> 0.333 NO3 + 0.667 HO2 + 0.333 OH + 0.667 NO2 ', ' CH3OOH --> CH3O
 + OH ', ' HCHO --> H2 + CO ', ' HCHO --> H + CO + HO2 ', ' CH3ONO --> NO + CH3O ',
 ' CH3NO3 --> CH3O + NO2 ', ' CH3O2NO2 --> 0.333 NO3 + 0.333 CH3O + 0.667 NO2 +
 ' 0.667 CH3O2 ', ' HOCH2OOH --> HCOOH + HO2 + OH ', ' CH3O2 --> HCHO + OH ' /)
- 5.48.1.6 CHARACTER(LEN=100), dimension(2), parameter messy_mecca_kpp_Monitor::
 EQN_NAMES_4 = (/ ' HCOOH --> CO + HO2 + OH ', ' HOCH2O2NO2 --> 0.333
 ' HCOOH + 0.667 HOCH2O2 + 0.333 NO3 + 0.333 HO2 ... etc. ' /)

- 5.48.1.7 CHARACTER(LEN=32), dimension(122), parameter messy_mecca_kpp_Monitor::EQN_TAGS = (/ EQN_TAGS_0, EQN_TAGS_1 /)
- 5.48.1.8 CHARACTER(LEN=32), dimension(90), parameter messy_mecca_kpp_Monitor::EQN_TAGS_0 = (/ 'G1000','G1001','G2100','G2104','G2105','G2107','G2109','G2110','G2111','G2112','G2117','G2118','G3101','G3103','G3106','G3108','G3109','G3110','G3200','G3201','G3202','G3203','G3204','G3205','G3206','G3207','G3208','G3209','G3210','G3211','G3212','G3213','G3214','G3215','G3216','G3217','G3218','G3219','G3220','G3221','G3222','G3223','G3224','G4101','G4102','G4103a','G4103b','G4104a','G4104b','G4105','G4106a','G4106b','G4107','G4108','G4109','G4110','G4111','G4114','G4115','G4116','G4117','G4118','G4119a','G4119b','G4120a','G4120b','G4121','G4122','G4123','G4124','G4125','G4126','G4127','G4129a','G4129b','G4130','G4131','G4132','G4133','G4134','G4135','G4136','G4137','G4138','G4140','G4141','G4142','G4143','G4144','G4145' /)
- 5.48.1.9 CHARACTER(LEN=32), dimension(32), parameter messy_mecca_kpp_Monitor::EQN_TAGS_1 = (/ 'G4146','G4147','G4148','G4149','G4150','G4151','G4152','G4153','G4154','G4155','G4156','J1000a','J1001a','J1001b','J2101','J3101','J3103a','J3103b','J3104','J3200','J3201','J3202','J4100','J4101a','J4101b','J4104','J4105','J4106','J4107','J4108','J4109','J4110' /)
- 5.48.1.10 INTEGER, dimension(1) messy_mecca_kpp_Monitor::LOOKAT
- 5.48.1.11 INTEGER, dimension(1) messy_mecca_kpp_Monitor::MONITOR
- 5.48.1.12 CHARACTER(LEN=32), dimension(1) messy_mecca_kpp_Monitor::SMASS
- 5.48.1.13 CHARACTER(LEN=32), dimension(45), parameter messy_mecca_kpp_Monitor::SPC_NAMES = (/ 'N2O','LCARBON','NH3','CH4','N2O5','H2O2','H2OH2O','O1D','H','HOCH2OH','NH2OH','H2','NHOH','HNO4','CH3OOH','CH3ONO','HNO3','CH3OH','HONO','CH3O2NO2','HOCH2O2NO2','NH2O','HOCH2OOH','CH3NO3','CO','NH2','HNO','CH3','HCOOH','O3P','HOCH2O2','HCHO','NO3','NO','O3','HO2','CH3O','OH','CH2OO','NO2','H2O','CH3O2','O2','N2','CO2' /)

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_monitor.f90](#)

5.49 messy_mecca_kpp_Parameters Module Reference

Public Attributes

- INTEGER, parameter [NSPEC](#) = 45
- INTEGER, parameter [NVAR](#) = 42
- INTEGER, parameter [NVARACT](#) = 40

- INTEGER, parameter `NFIX` = 3
- INTEGER, parameter `NREACT` = 122
- INTEGER, parameter `NVARST` = 1
- INTEGER, parameter `NFIXST` = 43
- INTEGER, parameter `NONZERO` = 367
- INTEGER, parameter `LU_NONZERO` = 408
- INTEGER, parameter `CNVAR` = 43
- INTEGER, parameter `NLOOKAT` = 0
- INTEGER, parameter `NMONITOR` = 0
- INTEGER, parameter `NMASS` = 1
- INTEGER, parameter `ind_N2O` = 1
- INTEGER, parameter `ind_LCARBON` = 2
- INTEGER, parameter `ind_NH3` = 3
- INTEGER, parameter `ind_CH4` = 4
- INTEGER, parameter `ind_N2O5` = 5
- INTEGER, parameter `ind_H2O2` = 6
- INTEGER, parameter `ind_H2OH2O` = 7
- INTEGER, parameter `ind_O1D` = 8
- INTEGER, parameter `ind_H` = 9
- INTEGER, parameter `ind_HOCH2OH` = 10
- INTEGER, parameter `ind_NH2OH` = 11
- INTEGER, parameter `ind_H2` = 12
- INTEGER, parameter `ind_NHOH` = 13
- INTEGER, parameter `ind_HNO4` = 14
- INTEGER, parameter `ind_CH3OOH` = 15
- INTEGER, parameter `ind_CH3ONO` = 16
- INTEGER, parameter `ind_HNO3` = 17
- INTEGER, parameter `ind_CH3OH` = 18
- INTEGER, parameter `ind_HONO` = 19
- INTEGER, parameter `ind_CH3O2NO2` = 20
- INTEGER, parameter `ind_HOCH2O2NO2` = 21
- INTEGER, parameter `ind_NH2O` = 22
- INTEGER, parameter `ind_HOCH2OOH` = 23
- INTEGER, parameter `ind_CH3NO3` = 24
- INTEGER, parameter `ind_CO` = 25
- INTEGER, parameter `ind_NH2` = 26
- INTEGER, parameter `ind_HNO` = 27
- INTEGER, parameter `ind_CH3` = 28
- INTEGER, parameter `ind_HCOOH` = 29
- INTEGER, parameter `ind_O3P` = 30
- INTEGER, parameter `ind_HOCH2O2` = 31
- INTEGER, parameter `ind_HCHO` = 32
- INTEGER, parameter `ind_NO3` = 33
- INTEGER, parameter `ind_NO` = 34
- INTEGER, parameter `ind_O3` = 35
- INTEGER, parameter `ind_HO2` = 36

- INTEGER, parameter [ind_CH3O](#) = 37
- INTEGER, parameter [ind_OH](#) = 38
- INTEGER, parameter [ind_CH2OO](#) = 39
- INTEGER, parameter [ind_NO2](#) = 40
- INTEGER, parameter [ind_H2O](#) = 41
- INTEGER, parameter [ind_CH3O2](#) = 42
- INTEGER, parameter [ind_O2](#) = 43
- INTEGER, parameter [ind_N2](#) = 44
- INTEGER, parameter [ind_CO2](#) = 45
- INTEGER, parameter [ind_N](#) = 0
- INTEGER, parameter [ind_N2D](#) = 0
- INTEGER, parameter [ind_HOONO](#) = 0
- INTEGER, parameter [ind_HCOCO3](#) = 0
- INTEGER, parameter [ind_HCOCO3A](#) = 0
- INTEGER, parameter [ind_C2H2](#) = 0
- INTEGER, parameter [ind_GLYOX](#) = 0
- INTEGER, parameter [ind_HCOCO2H](#) = 0
- INTEGER, parameter [ind_CHOOCHO](#) = 0
- INTEGER, parameter [ind_HCOCO3H](#) = 0
- INTEGER, parameter [ind_HCOCH2O2](#) = 0
- INTEGER, parameter [ind_CH3CO3](#) = 0
- INTEGER, parameter [ind_HOCH2CO3](#) = 0
- INTEGER, parameter [ind_HOOCH2CO3](#) = 0
- INTEGER, parameter [ind_C2H4](#) = 0
- INTEGER, parameter [ind_CH3CHO](#) = 0
- INTEGER, parameter [ind_CH3CO2H](#) = 0
- INTEGER, parameter [ind_HOCH2CHO](#) = 0
- INTEGER, parameter [ind_CH3CO3H](#) = 0
- INTEGER, parameter [ind_HOCH2CO2H](#) = 0
- INTEGER, parameter [ind_HOCH2CO3H](#) = 0
- INTEGER, parameter [ind_C2H5O2](#) = 0
- INTEGER, parameter [ind_HOCH2CH2O](#) = 0
- INTEGER, parameter [ind_HOCH2CH2O2](#) = 0
- INTEGER, parameter [ind_C2H6](#) = 0
- INTEGER, parameter [ind_C2H5OOH](#) = 0
- INTEGER, parameter [ind_ETHGLY](#) = 0
- INTEGER, parameter [ind_HYETHO2H](#) = 0
- INTEGER, parameter [ind_PAN](#) = 0
- INTEGER, parameter [ind_PHAN](#) = 0
- INTEGER, parameter [ind_ETHOHNO3](#) = 0
- INTEGER, parameter [ind_C33CO](#) = 0
- INTEGER, parameter [ind_CHOCOCH2O2](#) = 0
- INTEGER, parameter [ind_HCOCH2CO3](#) = 0
- INTEGER, parameter [ind_ALCOCH2OOH](#) = 0
- INTEGER, parameter [ind_MGLYOX](#) = 0
- INTEGER, parameter [ind_HOCH2COCHO](#) = 0

- INTEGER, parameter [ind_HCOCH2CHO](#) = 0
- INTEGER, parameter [ind_HOCH2COCO2H](#) = 0
- INTEGER, parameter [ind_HCOCH2CO2H](#) = 0
- INTEGER, parameter [ind_HCOCH2CO3H](#) = 0
- INTEGER, parameter [ind_CH3COCH2O2](#) = 0
- INTEGER, parameter [ind_HOC2H4CO3](#) = 0
- INTEGER, parameter [ind_C3H6](#) = 0
- INTEGER, parameter [ind_CH3COCH3](#) = 0
- INTEGER, parameter [ind_ACETOL](#) = 0
- INTEGER, parameter [ind_HYPERACET](#) = 0
- INTEGER, parameter [ind_HOC2H4CO2H](#) = 0
- INTEGER, parameter [ind_HOC2H4CO3H](#) = 0
- INTEGER, parameter [ind_IC3H7O2](#) = 0
- INTEGER, parameter [ind_HYPROPO2](#) = 0
- INTEGER, parameter [ind_C3H8](#) = 0
- INTEGER, parameter [ind_IC3H7OOH](#) = 0
- INTEGER, parameter [ind_HYPROPO2H](#) = 0
- INTEGER, parameter [ind_C3PAN2](#) = 0
- INTEGER, parameter [ind_NOA](#) = 0
- INTEGER, parameter [ind_C3PAN1](#) = 0
- INTEGER, parameter [ind_PRONO3BO2](#) = 0
- INTEGER, parameter [ind_IC3H7NO3](#) = 0
- INTEGER, parameter [ind_PR2O2HNO3](#) = 0
- INTEGER, parameter [ind_C312COCO3](#) = 0
- INTEGER, parameter [ind_C4CODIAL](#) = 0
- INTEGER, parameter [ind_CO23C3CHO](#) = 0
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- INTEGER, parameter [ind_C2H5O2_a01](#) = 0
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- INTEGER, parameter [ind_HOBr_a01](#) = 0
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- INTEGER, parameter `ind_BrOm_a01` = 0
- INTEGER, parameter `ind_BrOHm_a01` = 0
- INTEGER, parameter `ind_BrCl2m_a01` = 0
- INTEGER, parameter `ind_Br2Clm_a01` = 0
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- INTEGER, parameter [ind_Hgpp_a01](#) = 0
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- INTEGER, parameter [ind_HgCl3m_a01](#) = 0
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- INTEGER, parameter [ind_HgBr4mm_a01](#) = 0
- INTEGER, parameter [ind_HgSO32mm_a01](#) = 0
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- INTEGER, parameter [indf_CO2](#) = 3

5.49.1 Member Data Documentation

- 5.49.1.1 INTEGER, parameter [messy_mecca_kpp_Parameters::CNVAR](#) = 43
- 5.49.1.2 INTEGER, parameter [messy_mecca_kpp_Parameters::ind_ACETOL](#) = 0
- 5.49.1.3 INTEGER, parameter [messy_mecca_kpp_Parameters::ind_ALCOCH2OOH](#) = 0
- 5.49.1.4 INTEGER, parameter [messy_mecca_kpp_Parameters::ind_APINAOO](#) = 0
- 5.49.1.5 INTEGER, parameter [messy_mecca_kpp_Parameters::ind_APINBOO](#) = 0
- 5.49.1.6 INTEGER, parameter [messy_mecca_kpp_Parameters::ind_APINENE](#) = 0
- 5.49.1.7 INTEGER, parameter [messy_mecca_kpp_Parameters::ind_BIACET](#) = 0
- 5.49.1.8 INTEGER, parameter [messy_mecca_kpp_Parameters::ind_BIACETO2](#) = 0

- 5.49.1.9 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BIACETOH = 0
- 5.49.1.10 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BIACETOOH = 0
- 5.49.1.11 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BPINANO3 = 0
- 5.49.1.12 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BPINAO2 = 0
- 5.49.1.13 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BPINAOOH = 0
- 5.49.1.14 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BPINENE = 0
- 5.49.1.15 INTEGER, parameter messy_mecca_kpp_Parameters::ind_Br = 0
- 5.49.1.16 INTEGER, parameter messy_mecca_kpp_Parameters::ind_Br2 = 0
- 5.49.1.17 INTEGER, parameter messy_mecca_kpp_Parameters::ind_Br2_a01 = 0
- 5.49.1.18 INTEGER, parameter messy_mecca_kpp_Parameters::ind_Br2Clm_a01 = 0
- 5.49.1.19 INTEGER, parameter messy_mecca_kpp_Parameters::ind_Br2m_a01 = 0
- 5.49.1.20 INTEGER, parameter messy_mecca_kpp_Parameters::ind_Br_a01 = 0
- 5.49.1.21 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BrCl = 0
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- 5.49.1.23 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BrCl_a01 = 0
- 5.49.1.24 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BrHgOBr = 0
- 5.49.1.25 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BrHgOBr_a01 = 0
- 5.49.1.26 INTEGER, parameter messy_mecca_kpp_Parameters::ind_Brm_a01 = 0
- 5.49.1.27 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BrNO2 = 0
- 5.49.1.28 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BrNO3 = 0
- 5.49.1.29 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BrO = 0
- 5.49.1.30 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BrOHm_a01 = 0
- 5.49.1.31 INTEGER, parameter messy_mecca_kpp_Parameters::ind_BrOm_a01 = 0

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- 5.49.1.38 INTEGER, parameter messy_mecca_kpp_Parameters::ind_C10PAN2 = 0
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- 5.49.1.146 INTEGER, parameter messy_mecca_kpp_Parameters::ind_CH3CCI3_c = 0
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- 5.49.1.252 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HCOCH2CO3H = 0
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- 5.49.1.284 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HgSO₃_a01 = 0
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- 5.49.1.286 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HI_a01 = 0
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- 5.49.1.288 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HIO₃_a01 = 0
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- 5.49.1.293 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HNO₄_a01 = 0
- 5.49.1.294 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HO₁₂CO₃C₄ = 0
- 5.49.1.295 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HO₂ = 36
- 5.49.1.296 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HO₂_a01 = 0
- 5.49.1.297 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOBr = 0
- 5.49.1.298 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOBr_a01 = 0
- 5.49.1.299 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOC₂H₄CO₂H = 0
- 5.49.1.300 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOC₂H₄CO₃ = 0

- 5.49.1.301 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOC2H4CO3H = 0
- 5.49.1.302 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOCH2CH2O = 0
- 5.49.1.303 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOCH2CH2O2 = 0
- 5.49.1.304 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOCH2CHO = 0
- 5.49.1.305 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOCH2CO2H = 0
- 5.49.1.306 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOCH2CO3 = 0
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- 5.49.1.309 INTEGER, parameter messy_mecca_kpp_Parameters::ind_HOCH2COC-O2H = 0
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- 5.49.1.351 INTEGER, parameter messy_mecca_kpp_Parameters::ind_IO3m_a01 = 0
- 5.49.1.352 INTEGER, parameter messy_mecca_kpp_Parameters::ind_IO_a01 = 0
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- 5.49.1.363 INTEGER, parameter messy_mecca_kpp_Parameters::ind_ISOPDO2 = 0
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- 5.49.1.365 INTEGER, parameter messy_mecca_kpp_Parameters::ind_ISOPDOOH = 0

- 5.49.1.366 INTEGER, parameter messy_mecca_kpp_Parameters::ind_kJmol = 0
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- 5.49.1.374 INTEGER, parameter messy_mecca_kpp_Parameters::ind_LC578OOH = 0
- 5.49.1.375 INTEGER, parameter messy_mecca_kpp_Parameters::ind_LC5PAN1719 = 0
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- 5.49.1.377 INTEGER, parameter messy_mecca_kpp_Parameters::ind_LHC4ACCHO = 0
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- 5.49.1.379 INTEGER, parameter messy_mecca_kpp_Parameters::ind_LHC4ACCO3 = 0
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- 5.49.1.383 INTEGER, parameter messy_mecca_kpp_Parameters::ind_LHOC3H6O2 = 0
- 5.49.1.384 INTEGER, parameter messy_mecca_kpp_Parameters::ind_LHOC3H6OOH = 0

- 5.49.1.385 INTEGER, parameter messy_mecca_kpp_Parameters::ind_LISOPACNO3 = 0
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- 5.49.1.391 INTEGER, parameter messy_mecca_kpp_Parameters::ind_LMVKOHABO-OH = 0
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- 5.49.1.398 INTEGER, parameter messy_mecca_kpp_Parameters::ind_LO3s = 0
- 5.49.1.399 INTEGER, parameter messy_mecca_kpp_Parameters::ind_MACO2H = 0
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- 5.49.1.418 INTEGER, parameter messy_mecca_kpp_Parameters::ind_N2O5 = 5
- 5.49.1.419 INTEGER, parameter messy_mecca_kpp_Parameters::ind_N2O5_a01 = 0
- 5.49.1.420 INTEGER, parameter messy_mecca_kpp_Parameters::ind_N2O_c = 0
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- 5.49.1.435 INTEGER, parameter messy_mecca_kpp_Parameters::ind_NO = 34
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- 5.49.1.437 INTEGER, parameter messy_mecca_kpp_Parameters::ind_NO2_a01 = 0
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- 5.49.1.458 INTEGER, parameter messy_mecca_kpp_Parameters::ind_O2m_a01 = 0
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- 5.49.1.468 INTEGER, parameter messy_mecca_kpp_Parameters::ind_OH_a01 = 0
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- 5.49.1.470 INTEGER, parameter messy_mecca_kpp_Parameters::ind_OHMENTHEN6-
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- 5.49.1.471 INTEGER, parameter messy_mecca_kpp_Parameters::ind_OIO = 0
- 5.49.1.472 INTEGER, parameter messy_mecca_kpp_Parameters::ind_Op = 0
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- 5.49.1.474 INTEGER, parameter messy_mecca_kpp_Parameters::ind_PAN_a01 = 0
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- 5.49.1.492 INTEGER, parameter messy_mecca_kpp_Parameters::ind_RO6R1NO3 = 0
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- 5.49.1.496 INTEGER, parameter messy_mecca_kpp_Parameters::ind_RO6R3O2 = 0
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- 5.49.1.500 INTEGER, parameter messy_mecca_kpp_Parameters::ind_ROO6R1O2 = 0
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- 5.49.1.515 INTEGER, parameter messy_mecca_kpp_Parameters::ind_SO3 = 0
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- 5.49.1.518 INTEGER, parameter messy_mecca_kpp_Parameters::ind_SO4m_a01 = 0
- 5.49.1.519 INTEGER, parameter messy_mecca_kpp_Parameters::ind_SO4mm_a01 = 0
- 5.49.1.520 INTEGER, parameter messy_mecca_kpp_Parameters::ind_SO5m_a01 = 0
- 5.49.1.521 INTEGER, parameter messy_mecca_kpp_Parameters::indf_CO2 = 3
- 5.49.1.522 INTEGER, parameter messy_mecca_kpp_Parameters::indf_N2 = 2
- 5.49.1.523 INTEGER, parameter messy_mecca_kpp_Parameters::indf_O2 = 1
- 5.49.1.524 INTEGER, parameter messy_mecca_kpp_Parameters::LU_NONZERO = 408
- 5.49.1.525 INTEGER, parameter messy_mecca_kpp_Parameters::NFIX = 3
- 5.49.1.526 INTEGER, parameter messy_mecca_kpp_Parameters::NFIXST = 43
- 5.49.1.527 INTEGER, parameter messy_mecca_kpp_Parameters::NLOOKAT = 0
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- 5.49.1.533 INTEGER, parameter messy_mecca_kpp_Parameters::NVAR = 42
- 5.49.1.534 INTEGER, parameter messy_mecca_kpp_Parameters::NVARACT = 40
- 5.49.1.535 INTEGER, parameter messy_mecca_kpp_Parameters::NVARST = 1

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_parameters.f90](#)

5.50 messy_mecca_kpp_Precision Module Reference

Public Attributes

- INTEGER, parameter [sp](#) = SELECTED_REAL_KIND(6, 30)
- INTEGER, parameter [dp](#) = SELECTED_REAL_KIND(12, 307)

- INTEGER, parameter [qp](#) = SELECTED_REAL_KIND(18, 400)

5.50.1 Member Data Documentation

5.50.1.1 INTEGER, parameter [messy_mecca_kpp_Precision::dp](#) = SELECTED_REAL_KIND(12, 307)

5.50.1.2 INTEGER, parameter [messy_mecca_kpp_Precision::qp](#) = SELECTED_REAL_KIND(18, 400)

5.50.1.3 INTEGER, parameter [messy_mecca_kpp_Precision::sp](#) = SELECTED_REAL_KIND(6, 30)

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_precision.f90](#)

5.51 messy_mecca_kpp_Rates Module Reference

Public Member Functions

- REAL(kind=dp) function [ARR](#) (A0, B0, C0)
- REAL(kind=dp) function [ARR2](#) (A0, B0)
- REAL(kind=dp) function [EP2](#) (A0, C0, A2, C2, A3, C3)
- REAL(kind=dp) function [EP3](#) (A1, C1, A2, C2)
- REAL(kind=dp) function [FALL](#) (A0, B0, C0, A1, B1, C1, CF)
- ELEMENTAL REAL(kind=dp) function [k_3rd](#) (temp, cair, k0_300K, n, kinf_300K, m, fc)
- ELEMENTAL REAL(kind=dp) function [k_arr](#) (k_298, tdep, temp)
- ELEMENTAL REAL(dp) function [k_SIV_H2O2](#) (k_298, tdep, cHp, temp)
- ELEMENTAL REAL(dp) function [k_3rd_iupac](#) (temp, cair, k0_300K, n, kinf_300K, m, fc)
- ELEMENTAL REAL(dp) function [alpha_AN](#) (n, ro2type, temp, cair)
- ELEMENTAL REAL(dp) function [k_limited](#) (k3rd, cHp)
- ELEMENTAL REAL(dp) function [k_N2_O](#) (temp, temp_ion)
- ELEMENTAL REAL(dp) function [k_Op_O2](#) (temp, temp_ion)
- ELEMENTAL REAL(dp) function [k_Op_N2](#) (temp, temp_ion)
- subroutine [Update_SUN](#) ()
- subroutine [Update_RCONST](#) ()
- subroutine [Update_PHOTO](#) ()

5.51.1 Member Function/Subroutine Documentation

- 5.51.1.1 ELEMENTAL REAL(dp) function `messy_mecca_kpp_Rates::alpha_AN`
(INTEGER, intent(in) *n*, INTEGER, intent(in) *ro2type*, REAL(dp), intent(in) *temp*,
REAL(dp), intent(in) *cair*)
- 5.51.1.2 REAL(kind=dp) function `messy_mecca_kpp_Rates::ARR` (REAL *A0*, REAL *B0*,
REAL *C0*)
- 5.51.1.3 REAL(kind=dp) function `messy_mecca_kpp_Rates::ARR2` (REAL *A0*, REAL *B0*
)
- 5.51.1.4 REAL(kind=dp) function `messy_mecca_kpp_Rates::EP2` (REAL *A0*, REAL *C0*,
REAL *A2*, REAL *C2*, REAL *A3*, REAL *C3*)
- 5.51.1.5 REAL(kind=dp) function `messy_mecca_kpp_Rates::EP3` (REAL *A1*, REAL *C1*,
REAL *A2*, REAL *C2*)
- 5.51.1.6 REAL(kind=dp) function `messy_mecca_kpp_Rates::FALL` (REAL *A0*, REAL *B0*,
REAL *C0*, REAL *A1*, REAL *B1*, REAL *C1*, REAL *CF*)
- 5.51.1.7 ELEMENTAL REAL(kind=dp) function `messy_mecca_kpp_Rates::k_3rd`
(REAL(kind=dp), intent(in) *temp*, REAL(kind=dp), intent(in) *cair*, REAL, intent(in)
k0_300K, REAL, intent(in) *n*, REAL, intent(in) *kinf_300K*, REAL, intent(in) *m*, REAL,
intent(in) *fc*)
- 5.51.1.8 ELEMENTAL REAL(dp) function `messy_mecca_kpp_Rates::k_3rd_iupac` (REAL(dp), intent(in) *temp*, REAL(dp), intent(in) *cair*, REAL, intent(in) *k0_300K*, REAL,
intent(in) *n*, REAL, intent(in) *kinf_300K*, REAL, intent(in) *m*, REAL, intent(in) *fc*)
- 5.51.1.9 ELEMENTAL REAL(kind=dp) function `messy_mecca_kpp_Rates::k_arr` (REAL,
intent(in) *k_298*, REAL, intent(in) *tdep*, REAL(kind=dp), intent(in) *temp*)
- 5.51.1.10 ELEMENTAL REAL(dp) function `messy_mecca_kpp_Rates::k_limited` (REAL(dp), intent(in) *k3rd*, REAL(dp), intent(in) *cHp*)
- 5.51.1.11 ELEMENTAL REAL(dp) function `messy_mecca_kpp_Rates::k_N2_O` (REAL(dp), intent(in) *temp*, REAL(dp), intent(in) *temp_ion*)
- 5.51.1.12 ELEMENTAL REAL(dp) function `messy_mecca_kpp_Rates::k_Op_N2` (REAL(dp), intent(in) *temp*, REAL(dp), intent(in) *temp_ion*)
- 5.51.1.13 ELEMENTAL REAL(dp) function `messy_mecca_kpp_Rates::k_Op_O2` (REAL(dp), intent(in) *temp*, REAL(dp), intent(in) *temp_ion*)
- 5.51.1.14 ELEMENTAL REAL(dp) function `messy_mecca_kpp_Rates::k_SIV_H2O2` (REAL, intent(in) *k_298*, REAL, intent(in) *tdep*, REAL(dp), intent(in) *cHp*, REAL(dp),
intent(in) *temp*)

5.51.1.15 subroutine messy_mecca_kpp_Rates::Update_PHOTO ()

5.51.1.16 subroutine messy_mecca_kpp_Rates::Update_RCONST ()

5.51.1.17 subroutine messy_mecca_kpp_Rates::Update_SUN ()

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_rates.f90](#)

5.52 messy_mecca_kpp_Util Module Reference

Public Member Functions

- subroutine [initialize_indexarrays](#)
- subroutine [InitSaveData](#) ()
- subroutine [SaveData](#) ()
- subroutine [CloseSaveData](#) ()
- subroutine [GenerateMatlab](#) (PREFIX)
- ELEMENTAL INTEGER function [tag2num](#) (id)
- subroutine [Shuffle_user2kpp](#) (V_USER, V)
- subroutine [Shuffle_kpp2user](#) (V, V_USER)
- subroutine [GetMass](#) (CL, Mass)

5.52.1 Member Function/Subroutine Documentation

5.52.1.1 subroutine messy_mecca_kpp_Util::CloseSaveData ()

5.52.1.2 subroutine messy_mecca_kpp_Util::GenerateMatlab (CHARACTER(LEN=8)
PREFIX)

5.52.1.3 subroutine messy_mecca_kpp_Util::GetMass (REAL(kind=dp),
dimension(nspec) *CL*, REAL(kind=dp), dimension(1) *Mass*)

5.52.1.4 subroutine messy_mecca_kpp_Util::initialize_indexarrays ()

5.52.1.5 subroutine messy_mecca_kpp_Util::InitSaveData ()

5.52.1.6 subroutine messy_mecca_kpp_Util::SaveData ()

5.52.1.7 subroutine messy_mecca_kpp_Util::Shuffle_kpp2user (REAL(kind=dp),
dimension(nvar) *V*, REAL(kind=dp), dimension(nvar) *V_USER*)

5.52.1.8 subroutine `messy_mecca_kpp_Util::Shuffle_user2kpp` (`REAL(kind=dp)`,
dimension(nvar) *V_USER*, `REAL(kind=dp)`, dimension(nvar) *V*)

5.52.1.9 ELEMENTAL INTEGER function `messy_mecca_kpp_Util::tag2num` (
`CHARACTER(LEN=*)`, intent(in) *id*)

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_util.f90](#)

5.53 messy_mecca_tag_box Module Reference

Public Member Functions

- subroutine, public [mecca_tag_emis](#)
- subroutine, public [mecca_tag_prepare](#) (C)
- subroutine, public [mecca_tag_process](#) (TSL, C, press, cair, temp)
- subroutine, public [mecca_tag_resetPTs](#)
- subroutine, public [mecca_tag_init](#)
- subroutine, public [mecca_tag_result](#) (model_time)
- subroutine, public [mecca_tag_finish](#)

5.53.1 Member Function/Subroutine Documentation

5.53.1.1 subroutine, public `messy_mecca_tag_box::mecca_tag_emis` ()

5.53.1.2 subroutine, public `messy_mecca_tag_box::mecca_tag_finish` ()

5.53.1.3 subroutine, public `messy_mecca_tag_box::mecca_tag_init` ()

5.53.1.4 subroutine, public `messy_mecca_tag_box::mecca_tag_prepare` (`REAL(dp)`,
dimension(:), intent(in) *C*)

5.53.1.5 subroutine, public `messy_mecca_tag_box::mecca_tag_process` (`REAL(dp)`,
intent(in) *TSL*, `REAL(dp)`, dimension(:), intent(in) *C*, `REAL(dp)`, intent(in) *press*,
`REAL(dp)`, intent(in) *cair*, `REAL(dp)`, intent(in) *temp*)

5.53.1.6 subroutine, public `messy_mecca_tag_box::mecca_tag_resetPTs` ()

5.53.1.7 subroutine, public `messy_mecca_tag_box::mecca_tag_result` (`REAL(dp)`,
intent(in) *model_time*)

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_tag_box.f90](#)

5.54 messy_radjimt Module Reference

Public Member Functions

- subroutine, public [radjimt_read_nml_ctrl](#) (status, iou)
- subroutine, public [radjimt_readfluxes](#) (s2k_h2o2_fluxes_f, O3_Xsections_f)
- subroutine, public [MesoSol](#) (m, l, ht_dim, heatrates, gas1_1d, gas2_1d, gas3_1d, gas_O3_1d, gas_H2O_1d, gas_H2O2_1d, nden1d, csza, r0_eff, scht1d, temp1d, ht1d, cp1d, den1d, eccentric, f107, pres, mmw_gas1, mmw_gas2, GRAV0, l_reduceO3heating)
- subroutine, public [ThermoSol](#) (m, l, ht_dim, gas1_1d, gas2_1d, gas3_1d, gas_O3_1d, F107, csza, ht1d, heatrates, temp1d, eccentric, cp1d, scht1d, pres, den1d, R0_eff, nden1d, GRAV0, iou1, iou2)
- subroutine, public [CO2ChapManHeating](#) (m, l, den1d, cp1d, ht1d, ht_dim, csza, co2_chap_heat)
- subroutine, public [BranchingRatios](#) (ht_dim, pres, htav)

Public Attributes

- CHARACTER(LEN=*), parameter, public [modstr](#) = 'radjimt'
- CHARACTER(LEN=*), parameter, public [modver](#) = '1.0'
- INTEGER, parameter, public [heatcool_rates](#) = 9
- INTEGER, parameter, public [ht_branches](#) = 17
- REAL(dp), dimension(:,:), allocatable, public [branch](#)
- INTEGER, public [chem_heat_on](#) = 0
- INTEGER, public [chem_heat_on_last](#) = 0
- REAL(dp), dimension(:,:,:), pointer, public [jx](#)
- REAL(dp), dimension(:), allocatable, public [O2eff_bulk](#)
- REAL(dp), dimension(:), allocatable, public [O3eff_bulk](#)
- REAL(dp), dimension(:), allocatable, public [htlyeff](#)
- REAL(dp), dimension(:), allocatable, public [euveff](#)
- REAL(dp), dimension(:), allocatable, public [src1eff](#)
- REAL(dp), dimension(:), allocatable, public [PEOP](#)
- REAL(dp), dimension(:), allocatable, public [PEN2](#)
- REAL(dp), dimension(:), allocatable, public [PEO2](#)
- REAL(dp), dimension(:,:), allocatable, public [CSH2O2](#)
- CHARACTER(LEN=STRLEN_ULONG), public [file_sk2_h2o2_fluxes](#) = "
- CHARACTER(LEN=STRLEN_ULONG), public [file_O3_Xsections](#) = "
- CHARACTER(LEN=STRLEN_ULONG), public [file_s2k_fluxes](#) = "
- CHARACTER(LEN=STRLEN_ULONG), public [file_all_Xsections](#) = "

Private Member Functions

- subroutine [H2O2_photorate](#) (n, m, l, ht_dim, temp1d, eccentric, gas2_1d, nden1d, R0_eff, csza, ht1d, gas_O3_1d, gas_H2O2_1d, GRAV0)
- subroutine [H2O2_cross_section](#) (n, NWAVES_fuv, WAVELENGTHS_fuv, temp1d, [CS-H2O2](#))
- subroutine [S2K_FLUXES](#) (f107, eccentric, CSAO, CSIO, CSAO2, CSIO2, CSAN2, CSIN2, FLUX, WAVELENGTHS, lyman_a_flux, NWAVES_XRAY_OUT, NWAVES_SRC_OUT, NWAVES_EUV_OUT, lyman_a_num, s2k_fluxes_f, all_Xsections_f)
- subroutine [CMAT1_FLUXES](#) (f107, eccentric, CSAO, CSIO, CSAO2, CSIO2, CSAN2, CSIN2, FLUX, WAVELENGTHS, lyman_a_flux, NWAVES_XRAY_OUT, NWAVES_SRC_OUT, NWAVES_EUV_OUT, lyman_a_num)
- subroutine [S2K_INTERP](#) (S2K_ALLFLUXES, F107_in, S2K_FLUX)
- subroutine [H2O_IR](#) (T, HT, Z)
- subroutine [Secondaries](#) (m, l, ht_dim, ht1d, pres)
- REAL(dp) function [Chapmann](#) (coszen, scht, ht)

Private Attributes

- INTEGER, parameter [total_heat_l](#) = 1
- INTEGER, parameter [o3_chap_heat_l](#) = 2
- INTEGER, parameter [o3_hart_heat_l](#) = 3
- INTEGER, parameter [o3_hugg_heat_l](#) = 4
- INTEGER, parameter [o3_herz_heat_l](#) = 5
- INTEGER, parameter [o2_meso_heat_l](#) = 6
- INTEGER, parameter [euv_heat_l](#) = 7
- INTEGER, parameter [uv_heat_l](#) = 8
- INTEGER, parameter [total_cool_l](#) = 1
- INTEGER, parameter [co2_cool_l](#) = 2
- INTEGER, parameter [o3_cool_l](#) = 3
- INTEGER, parameter [o_cool_l](#) = 4
- INTEGER, parameter [no_cool_l](#) = 5
- INTEGER [b_aurqo2_b1](#) = 1
- INTEGER [b_aurqo2_b2](#) = 2
- INTEGER [b_aurqn2_b1](#) = 3
- INTEGER [b_aurqn2_b2](#) = 4
- INTEGER [b_aurqn2_b3](#) = 5
- INTEGER [b_aurqn2_b4](#) = 6
- INTEGER [b_jio2_b1](#) = 7
- INTEGER [b_jio2_b2](#) = 8
- INTEGER [b_jin2_b1](#) = 9
- INTEGER [b_jin2_b2](#) = 10
- INTEGER [b_jin2_b3](#) = 11
- INTEGER [b_sen2_b1](#) = 12
- INTEGER [b_sen2_b2](#) = 13
- INTEGER [b_sen2_b3](#) = 14

- INTEGER `b_sen2_b4` = 15
- INTEGER `b_seo2_b1` = 16
- INTEGER `b_seo2_b2` = 17
- INTEGER `maxn` = -1
- INTEGER `minn` = 1000
- INTEGER, parameter `NWAVES_FUV` = 92
- REAL(dp) `S2K_h2o2_ALLFLUXES`
- REAL(dp) `S2K_FLUX_FUV`
- REAL(dp) `WAVELS_FUV`
- REAL(dp) `CSAO3`
- REAL(dp), parameter `GSCON` = $R_{\text{gas}} \times 1.e3_dp$

5.54.1 Member Function/Subroutine Documentation

- 5.54.1.1 subroutine, public `messy_radjimt::BranchingRatios` (INTEGER, intent(in) *ht_dim*, REAL(dp), dimension(ht_dim) *pres*, REAL(dp), dimension(ht_dim) *htav*)
- 5.54.1.2 REAL(dp) function `messy_radjimt::Chapmann` (REAL(dp), intent(in) *coszen*, REAL(dp), intent(in) *scht*, REAL(dp), intent(in) *ht*) [private]
- 5.54.1.3 subroutine `messy_radjimt::CMAT1_FLUXES` (REAL(dp) *f107*, REAL(dp) *eccentric*, REAL(dp), dimension(nwaves) *CSAO*, REAL(dp), dimension(nwaves) *CSIO*, REAL(dp), dimension(nwaves) *CSAO2*, REAL(dp), dimension(nwaves) *CSIO2*, REAL(dp), dimension(nwaves) *CSAN2*, REAL(dp), dimension(nwaves) *CSIN2*, REAL(dp), dimension(nwaves) *FLUX*, REAL(dp), dimension(nwaves) *WAVELS*, REAL(dp) *lyman_a_flux*, INTEGER *NWAVES_XRAY_OUT*, INTEGER *NWAVES_SRC_OUT*, INTEGER *NWAVES_EUV_OUT*, INTEGER *lyman_a_num*) [private]
- 5.54.1.4 subroutine, public `messy_radjimt::CO2ChapManHeating` (INTEGER, intent(in) *m*, INTEGER, intent(in) *I*, REAL(dp), dimension(ht_dim), intent(in) *den1d*, REAL(dp), dimension(ht_dim), intent(in) *cp1d*, REAL(dp), dimension(ht_dim), intent(in) *ht1d*, INTEGER, intent(in) *ht_dim*, REAL(dp), intent(in) *csza*, REAL(dp), dimension(ht_dim), intent(out) *co2_chap_heat*)
- 5.54.1.5 subroutine `messy_radjimt::H2O2_cross_section` (INTEGER, intent(in) *n*, INTEGER, intent(in) *NWAVES_fuv*, REAL(dp), dimension(:), intent(in) *WAVELS_fuv*, REAL(dp), dimension(:), intent(in) *temp1d*, REAL(dp), dimension(:,:), intent(inout) *CSH2O2*) [private]
- 5.54.1.6 subroutine `messy_radjimt::H2O2_photorate` (INTEGER, intent(in) *n*, INTEGER, intent(in) *m*, INTEGER, intent(in) *I*, INTEGER, intent(in) *ht_dim*, REAL(dp), dimension(ht_dim), intent(in) *temp1d*, REAL(dp), intent(in) *eccentric*, REAL(dp), dimension(ht_dim), intent(in) *gas2_1d*, REAL(dp), dimension(ht_dim), intent(in) *nden1d*, REAL(dp), dimension(ht_dim), intent(in) *R0_eff*, REAL(dp), intent(in) *csza*, REAL(dp), dimension(ht_dim), intent(in) *ht1d*, REAL(dp), dimension(ht_dim), intent(in) *gas_O3_1d*, REAL(dp), dimension(ht_dim), intent(in) *gas_H2O2_1d*, REAL(dp), intent(in) *GRAV0*) [private]

- 5.54.1.7 subroutine `messy_radjimt::H2O_IR` (`REAL`, `dimension(nlong,nlat,nhght)` *T*, `REAL`, `dimension(nlong,nlat,nhght)` *HT*, `REAL`, `dimension(nhght)` *Z*) `[private]`
- 5.54.1.8 subroutine, public `messy_radjimt::MesoSol` (`INTEGER`, `intent(in)` *m*, `INTEGER`, `intent(in)` *l*, `INTEGER`, `intent(in)` *ht_dim*, `REAL(dp)`, `dimension(:, :, :)`, pointer *heatrates*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *gas1_1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *gas2_1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *gas3_1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *gas_O3_1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *gas_H2O_1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *gas_H2O2_1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *nden1d*, `REAL(dp)`, `intent(in)` *csza*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *r0_eff*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *scht1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *temp1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *ht1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *cp1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *den1d*, `REAL(dp)`, `intent(in)` *eccentric*, `REAL(dp)`, `intent(in)` *f107*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *pres*, `REAL(dp)`, `intent(in)` *mmw_gas1*, `REAL(dp)`, `intent(in)` *mmw_gas2*, `REAL(dp)`, `intent(in)` *GRAV0*, `LOGICAL`, `intent(in)` *l_reduceO3heating*)
- 5.54.1.9 subroutine, public `messy_radjimt::radjimt_read_nml_ctrl` (`INTEGER`, `intent(out)` *status*, `INTEGER`, `intent(in)` *iou*)
- 5.54.1.10 subroutine, public `messy_radjimt::radjimt_readfluxes` (`INTEGER`, `intent(in)` *s2k_h2o2_fluxes_f*, `INTEGER`, `intent(in)` *O3_Xsections_f*)
- 5.54.1.11 subroutine `messy_radjimt::S2K_FLUXES` (`REAL(dp)` *f107*, `REAL(dp)` *eccentric*, `REAL(dp)`, `dimension(nwaves)` *CSAO*, `REAL(dp)`, `dimension(nwaves)` *CSIO*, `REAL(dp)`, `dimension(nwaves)` *CSAO2*, `REAL(dp)`, `dimension(nwaves)` *CSIO2*, `REAL(dp)`, `dimension(nwaves)` *CSAN2*, `REAL(dp)`, `dimension(nwaves)` *CSIN2*, `REAL(dp)`, `dimension(nwaves)` *FLUX*, `REAL(dp)`, `dimension(nwaves)` *WAVELS*, `REAL(dp)` *lyman_a_flux*, `INTEGER` *NWAVES_XRAY_OUT*, `INTEGER` *NWAVES_SRC_OUT*, `INTEGER` *NWAVES_EUV_OUT*, `INTEGER` *lyman_a_num*, `INTEGER`, `intent(in)` *s2k_fluxes_f*, `INTEGER`, `intent(in)` *all_Xsections_f*) `[private]`
- 5.54.1.12 subroutine `messy_radjimt::S2K_INTERP` (`REAL(dp)`, `dimension(nwaves,nf107s+1)` *S2K_ALLFLUXES*, `REAL(dp)` *F107_in*, `REAL(dp)`, `dimension(nwaves)` *S2K_FLUX*) `[private]`
- 5.54.1.13 subroutine `messy_radjimt::Secondaries` (`INTEGER`, `intent(in)` *m*, `INTEGER`, `intent(in)` *l*, `INTEGER`, `intent(in)` *ht_dim*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *ht1d*, `REAL(dp)`, `dimension(ht_dim)`, `intent(in)` *pres*) `[private]`

5.54.1.14 subroutine, public messy_radjimt::ThermoSol (INTEGER, intent(in) *m*,
 INTEGER, intent(in) *l*, INTEGER, intent(in) *ht_dim*, REAL(dp), dimension(ht_dim),
 intent(in) *gas1_1d*, REAL(dp), dimension(ht_dim), intent(in) *gas2_1d*, REAL(dp),
 dimension(ht_dim), intent(in) *gas3_1d*, REAL(dp), dimension(ht_dim), intent(in)
gas_O3_1d, REAL(dp), intent(in) *F107*, REAL(dp), intent(in) *csza*, REAL(dp),
 dimension(ht_dim), intent(in) *ht1d*, REAL(dp), dimension(:,:,:), pointer *heatrates*,
 REAL(dp), dimension(ht_dim), intent(in) *temp1d*, REAL(dp), intent(in) *eccentric*,
 REAL(dp), dimension(ht_dim), intent(in) *cp1d*, REAL(dp), dimension(ht_dim), intent(in)
scht1d, REAL(dp), dimension(ht_dim), intent(in) *pres*, REAL(dp), dimension(ht_dim),
 intent(in) *den1d*, REAL(dp), dimension(ht_dim), intent(in) *R0_eff*, REAL(dp),
 dimension(ht_dim), intent(in) *nden1d*, REAL(dp), intent(in) *GRAV0*, INTEGER,
 intent(in) *iou1*, INTEGER, intent(in) *iou2*)

5.54.2 Member Data Documentation

5.54.2.1 INTEGER messy_radjimt::b_aurqn2_b1 = 3 [private]

5.54.2.2 INTEGER messy_radjimt::b_aurqn2_b2 = 4 [private]

5.54.2.3 INTEGER messy_radjimt::b_aurqn2_b3 = 5 [private]

5.54.2.4 INTEGER messy_radjimt::b_aurqn2_b4 = 6 [private]

5.54.2.5 INTEGER messy_radjimt::b_aurqo2_b1 = 1 [private]

5.54.2.6 INTEGER messy_radjimt::b_aurqo2_b2 = 2 [private]

5.54.2.7 INTEGER messy_radjimt::b_jin2_b1 = 9 [private]

5.54.2.8 INTEGER messy_radjimt::b_jin2_b2 = 10 [private]

5.54.2.9 INTEGER messy_radjimt::b_jin2_b3 = 11 [private]

5.54.2.10 INTEGER messy_radjimt::b_jio2_b1 = 7 [private]

5.54.2.11 INTEGER messy_radjimt::b_jio2_b2 = 8 [private]

5.54.2.12 INTEGER messy_radjimt::b_sen2_b1 = 12 [private]

5.54.2.13 INTEGER messy_radjimt::b_sen2_b2 = 13 [private]

5.54.2.14 INTEGER messy_radjimt::b_sen2_b3 = 14 [private]

5.54.2.15 INTEGER messy_radjimt::b_sen2_b4 = 15 [private]

5.54.2.16 INTEGER messy_radjimt::b_seo2_b1 = 16 [private]

- 5.54.2.17 INTEGER messy_radjimt::b_seo2_b2 = 17 [private]
- 5.54.2.18 REAL(dp), dimension(:,:), allocatable, public messy_radjimt::branch
- 5.54.2.19 INTEGER, public messy_radjimt::chem_heat_on = 0
- 5.54.2.20 INTEGER, public messy_radjimt::chem_heat_on_last = 0
- 5.54.2.21 INTEGER, parameter messy_radjimt::co2_cool_l = 2 [private]
- 5.54.2.22 REAL(dp) messy_radjimt::CSAO3 [private]
- 5.54.2.23 REAL(dp), dimension(:,:), allocatable, public messy_radjimt::CSH2O2
- 5.54.2.24 INTEGER, parameter messy_radjimt::euv_heat_l = 7 [private]
- 5.54.2.25 REAL(dp), dimension(:), allocatable, public messy_radjimt::euveff
- 5.54.2.26 CHARACTER(LEN=STRLEN_ULONG), public messy_radjimt::file_all_Xsections = "
- 5.54.2.27 CHARACTER(LEN=STRLEN_ULONG), public messy_radjimt::file_O3_Xsections = "
- 5.54.2.28 CHARACTER(LEN=STRLEN_ULONG), public messy_radjimt::file_s2k_fluxes = "
- 5.54.2.29 CHARACTER(LEN=STRLEN_ULONG), public messy_radjimt::file_sk2_h2o2_fluxes = "
- 5.54.2.30 REAL(dp), parameter messy_radjimt::GSCON = R_gas*1.e3_dp [private]
- 5.54.2.31 INTEGER, parameter, public messy_radjimt::heatcool_rates = 9
- 5.54.2.32 INTEGER, parameter, public messy_radjimt::ht_branches = 17
- 5.54.2.33 REAL(dp), dimension(:), allocatable, public messy_radjimt::htlyeff
- 5.54.2.34 REAL(dp), dimension(:,:,:), pointer, public messy_radjimt::jx
- 5.54.2.35 INTEGER messy_radjimt::maxn = -1 [private]
- 5.54.2.36 INTEGER messy_radjimt::minn = 1000 [private]
- 5.54.2.37 CHARACTER(LEN=*), parameter, public messy_radjimt::modstr = 'radjimt'
- 5.54.2.38 CHARACTER(LEN=*), parameter, public messy_radjimt::modver = '1.0'

- 5.54.2.39 INTEGER, parameter messy_radjimt::no_cool_l = 5 [private]
- 5.54.2.40 INTEGER, parameter messy_radjimt::NWAVES_FUV = 92 [private]
- 5.54.2.41 INTEGER, parameter messy_radjimt::o2_meso_heat_l = 6 [private]
- 5.54.2.42 REAL(dp), dimension(:), allocatable, public messy_radjimt::O2eff_bulk
- 5.54.2.43 INTEGER, parameter messy_radjimt::o3_chap_heat_l = 2 [private]
- 5.54.2.44 INTEGER, parameter messy_radjimt::o3_cool_l = 3 [private]
- 5.54.2.45 INTEGER, parameter messy_radjimt::o3_hart_heat_l = 3 [private]
- 5.54.2.46 INTEGER, parameter messy_radjimt::o3_hertz_heat_l = 5 [private]
- 5.54.2.47 INTEGER, parameter messy_radjimt::o3_hugg_heat_l = 4 [private]
- 5.54.2.48 REAL(dp), dimension(:), allocatable, public messy_radjimt::O3eff_bulk
- 5.54.2.49 INTEGER, parameter messy_radjimt::o_cool_l = 4 [private]
- 5.54.2.50 REAL(dp), dimension(:), allocatable, public messy_radjimt::PEN2
- 5.54.2.51 REAL(dp), dimension(:), allocatable, public messy_radjimt::PEO2
- 5.54.2.52 REAL(dp), dimension(:), allocatable, public messy_radjimt::PEOP
- 5.54.2.53 REAL(dp) messy_radjimt::S2K_FLUX_FUV [private]
- 5.54.2.54 REAL(dp) messy_radjimt::S2K_h2o2_ALLFLUXES [private]
- 5.54.2.55 REAL(dp), dimension(:), allocatable, public messy_radjimt::src1eff
- 5.54.2.56 INTEGER, parameter messy_radjimt::total_cool_l = 1 [private]
- 5.54.2.57 INTEGER, parameter messy_radjimt::total_heat_l = 1 [private]
- 5.54.2.58 INTEGER, parameter messy_radjimt::uv_heat_l = 8 [private]
- 5.54.2.59 REAL(dp) messy_radjimt::WAVELS_FUV [private]

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_radjimt.f90](#)

5.55 messy_radjimt_box Module Reference

Public Member Functions

- subroutine, public [radjimt_init](#)
- subroutine, public [radjimt_physc](#)
- subroutine, public [radjimt_finish](#)
- subroutine, public [radjimt_result](#)

Private Attributes

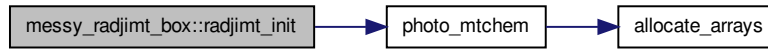
- INTEGER [ncid_radjimt](#)
- INTEGER [nlev](#)
- INTEGER, parameter [jrow](#) = 1
- REAL(DP), dimension(:, :, :), pointer [heatrates](#)
- REAL(dp), dimension(:), allocatable [jpress](#)
- REAL(dp), dimension(:), allocatable [nd_gas1_1d](#)
- REAL(dp), dimension(:), allocatable [nd_gas2_1d](#)
- REAL(dp), dimension(:), allocatable [nd_gas3_1d](#)
- REAL(dp), dimension(:), allocatable [gas_O3_1d](#)
- REAL(dp), dimension(:), allocatable [gas_H2O_1d](#)
- REAL(dp), dimension(:), allocatable [gas_H2O2_1d](#)
- REAL(dp), dimension(:), allocatable [nden1d](#)
- REAL(dp), dimension(:), allocatable [r0_eff](#)
- REAL(dp), dimension(:), allocatable [scht1d](#)
- REAL(dp), dimension(:), allocatable [temp1d](#)
- REAL(dp), dimension(:), allocatable [ht1d](#)
- REAL(dp), dimension(:), allocatable [cp1d](#)
- REAL(dp), dimension(:), allocatable [den1d](#)
- REAL(dp) [eccentric](#)
- REAL(dp) [f107](#)
- REAL(dp) [mmw_gas1](#) = 16.
- REAL(dp) [mmw_gas2](#) = 32.
- REAL(dp) [GRAV0](#) = 9.5
- LOGICAL [I_heating](#)
- LOGICAL [I_reduceO3heating](#)

5.55.1 Member Function/Subroutine Documentation

5.55.1.1 subroutine, public messy_radjimt_box::radjimt_finish ()

5.55.1.2 subroutine, public messy_radjimt_box::radjimt_init ()

Here is the call graph for this function:



5.55.1.3 subroutine, public messy_radjimt_box::radjimt_physc ()

5.55.1.4 subroutine, public messy_radjimt_box::radjimt_result ()

5.55.2 Member Data Documentation

5.55.2.1 REAL(dp), dimension(:), allocatable messy_radjimt_box::cp1d [private]

5.55.2.2 REAL(dp), dimension(:), allocatable messy_radjimt_box::den1d [private]

5.55.2.3 REAL(dp) messy_radjimt_box::eccentric [private]

5.55.2.4 REAL(dp) messy_radjimt_box::f107 [private]

5.55.2.5 REAL(dp), dimension(:), allocatable messy_radjimt_box::gas_H2O2_1d [private]

5.55.2.6 REAL(dp), dimension(:), allocatable messy_radjimt_box::gas_H2O_1d [private]

5.55.2.7 REAL(dp), dimension(:), allocatable messy_radjimt_box::gas_O3_1d [private]

5.55.2.8 REAL(dp) messy_radjimt_box::GRAV0 = 9.5 [private]

5.55.2.9 REAL(DP), dimension(:, :, :), pointer messy_radjimt_box::heatrates [private]

5.55.2.10 REAL(dp), dimension(:), allocatable messy_radjimt_box::ht1d [private]

5.55.2.11 REAL(dp), dimension(:), allocatable messy_radjimt_box::jpress [private]

5.55.2.12 INTEGER, parameter messy_radjimt_box::jrow = 1 [private]

- 5.55.2.13 LOGICAL messy_radjimt_box::l_heating [private]
- 5.55.2.14 LOGICAL messy_radjimt_box::l_reduceO3heating [private]
- 5.55.2.15 REAL(dp) messy_radjimt_box::mmw_gas1 = 16. [private]
- 5.55.2.16 REAL(dp) messy_radjimt_box::mmw_gas2 = 32. [private]
- 5.55.2.17 INTEGER messy_radjimt_box::ncid_radjimt [private]
- 5.55.2.18 REAL(dp), dimension(:), allocatable messy_radjimt_box::nd_gas1_1d
[private]
- 5.55.2.19 REAL(dp), dimension(:), allocatable messy_radjimt_box::nd_gas2_1d
[private]
- 5.55.2.20 REAL(dp), dimension(:), allocatable messy_radjimt_box::nd_gas3_1d
[private]
- 5.55.2.21 REAL(dp), dimension(:), allocatable messy_radjimt_box::nden1d
[private]
- 5.55.2.22 INTEGER messy_radjimt_box::nlev [private]
- 5.55.2.23 REAL(dp), dimension(:), allocatable messy_radjimt_box::r0_eff [private]
- 5.55.2.24 REAL(dp), dimension(:), allocatable messy_radjimt_box::scht1d
[private]
- 5.55.2.25 REAL(dp), dimension(:), allocatable messy_radjimt_box::temp1d
[private]

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_radjimt_box.f90](#)

5.56 messy_readj Module Reference

Public Attributes

- REAL(DP), dimension(ip_max), save, public [jx](#)

5.56.1 Member Data Documentation

5.56.1.1 REAL(DP), dimension(ip_max), save, public messy_readj::jx

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_readj.f90](#)

5.57 messy_readj_box Module Reference

Public Member Functions

- subroutine, public [readj_init](#)

5.57.1 Member Function/Subroutine Documentation

5.57.1.1 subroutine, public messy_readj_box::readj_init ()

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_readj_box.f90](#)

5.58 messy_sappho Module Reference

Public Member Functions

- subroutine, public [jvalues](#) (cossza, photo_scenario, rad_lat, photon)

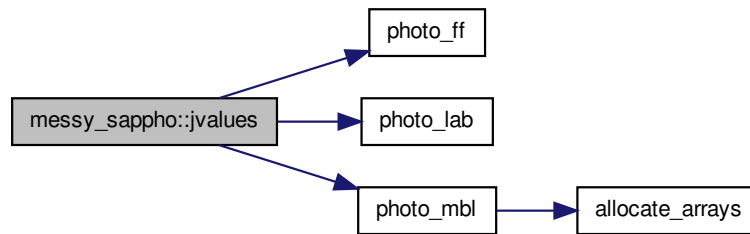
Public Attributes

- CHARACTER(LEN=*), parameter, public [modstr](#) = 'sappho'
- REAL(DP), dimension(ip_max), save, public [jx](#)

5.58.1 Member Function/Subroutine Documentation

5.58.1.1 subroutine, public `messy_sappho::jvalues` (`REAL(DP)`, intent(in) *cosssa*,
`CHARACTER(LEN=12)`, intent(in) *photo_scenario*, `REAL(DP)`, intent(in) *rad_lat*,
`REAL(DP)`, intent(out) *photon*)

Here is the call graph for this function:



5.58.2 Member Data Documentation

5.58.2.1 `REAL(DP)`, dimension(ip_max), save, public `messy_sappho::jx`

5.58.2.2 `CHARACTER(LEN=*)`, parameter, public `messy_sappho::modstr` = 'sappho'

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_sappho.f90](#)

5.59 messy_sappho_box Module Reference

Public Member Functions

- subroutine, public [sappho_init](#)
- subroutine, public [sappho_physc](#)
- subroutine, public [sappho_finish](#)
- subroutine, public [sappho_result](#)

Public Attributes

- INTEGER [ncid_sappho](#)
- `REAL(DP)` [photon](#)

5.59.1 Member Function/Subroutine Documentation

5.59.1.1 subroutine, public messy_sappho_box::sappho_finish ()

5.59.1.2 subroutine, public messy_sappho_box::sappho_init ()

5.59.1.3 subroutine, public messy_sappho_box::sappho_physc ()

5.59.1.4 subroutine, public messy_sappho_box::sappho_result ()

5.59.2 Member Data Documentation

5.59.2.1 INTEGER messy_sappho_box::ncid_sappho

5.59.2.2 REAL(DP) messy_sappho_box::photon

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_sappho_box.f90](#)

5.60 messy_semidep_box Module Reference

Public Member Functions

- subroutine, public [semidep_physc](#)

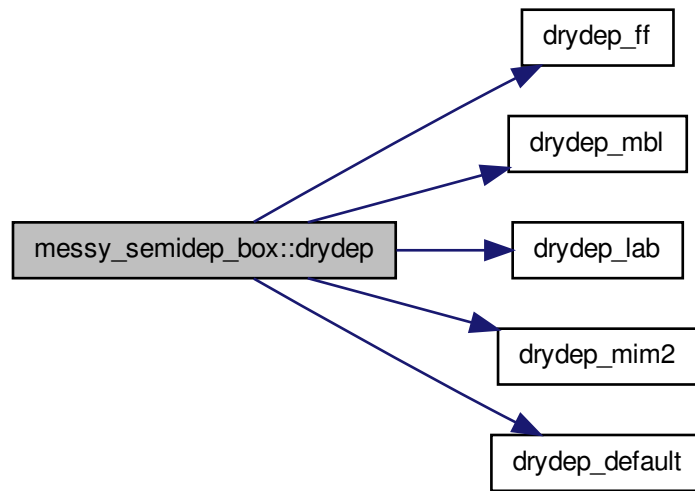
Private Member Functions

- subroutine [emission](#)
- subroutine [drydep](#)

5.60.1 Member Function/Subroutine Documentation

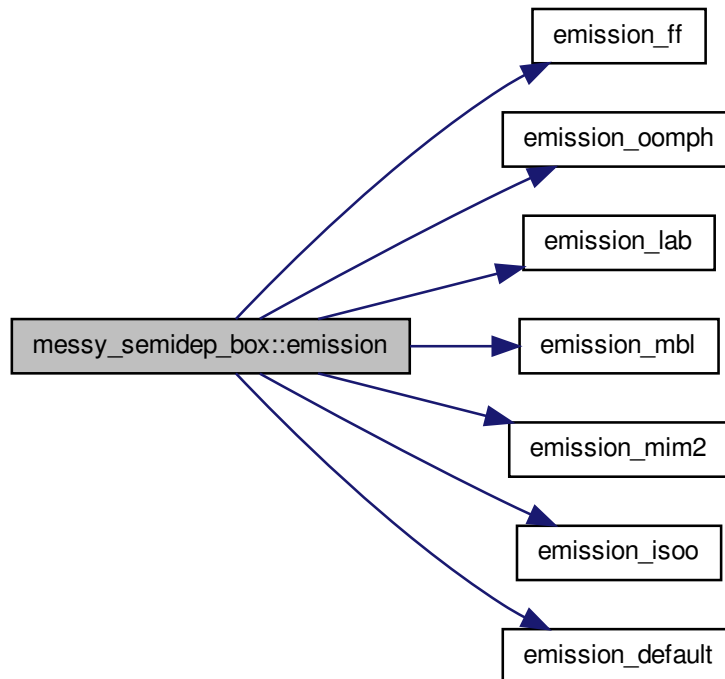
5.60.1.1 subroutine `messy_semidep_box::drydep()` [private]

Here is the call graph for this function:



5.60.1.2 subroutine messy_semidep_box::emission () [private]

Here is the call graph for this function:



5.60.1.3 subroutine, public messy_semidep_box::semidep_physc ()

The documentation for this module was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_semidep_box.-f90](#)

5.61 messy_traject_box Module Reference

Public Member Functions

- subroutine [get_model_start_end](#)

- subroutine [get_physc_data](#)
- subroutine [traject_init](#)
- subroutine [traject_result](#)
- subroutine [traject_finish](#)
- subroutine [traject_physc](#)

Public Attributes

- INTEGER [dimid_time](#)
- INTEGER [len_time](#)
- INTEGER [varid_time](#)
- INTEGER [varid_press](#)
- INTEGER [varid_relhum](#)
- INTEGER [varid_temp](#)
- INTEGER [varid_lat](#)
- INTEGER [varid_lon](#)
- INTEGER [varid_jno2](#)
- INTEGER [ncid_physc](#)
- INTEGER [ncid_traj](#)
- INTEGER [ncid_jval](#)
- INTEGER [trajpct](#)
- INTEGER [intpct](#) = 1
- REAL(dp) [timesteplen_orig](#)
- LOGICAL [l_next_trajp](#)
- REAL(dp) [ratio1](#)
- REAL(dp) [ratio2](#)
- REAL(dp) [lontmp](#)
- REAL(dp) [time1](#)
- REAL(dp) [time2](#)
- REAL(dp) [relhum1](#)
- REAL(dp) [relhum2](#)
- REAL(dp) [temp1](#)
- REAL(dp) [temp2](#)
- REAL(dp) [press1](#)
- REAL(dp) [press2](#)
- REAL(dp) [lat1](#)
- REAL(dp) [lat2](#)
- REAL(dp) [lon1](#)
- REAL(dp) [lon2](#)
- REAL(dp) [cair_old](#)
- REAL(dp) [jno21](#)
- REAL(dp) [jno22](#)

5.61.1 Member Function/Subroutine Documentation

5.61.1.1 subroutine messy_traject_box::get_model_start_end ()

5.61.1.2 subroutine messy_traject_box::get_physc_data ()

5.61.1.3 subroutine messy_traject_box::traject_finish ()

5.61.1.4 subroutine messy_traject_box::traject_init ()

5.61.1.5 subroutine messy_traject_box::traject_physc ()

5.61.1.6 subroutine messy_traject_box::traject_result ()

5.61.2 Member Data Documentation

5.61.2.1 REAL(dp) messy_traject_box::cair_old

5.61.2.2 INTEGER messy_traject_box::dimid_time

5.61.2.3 INTEGER messy_traject_box::intpct = 1

5.61.2.4 REAL(dp) messy_traject_box::jno21

5.61.2.5 REAL(dp) messy_traject_box::jno22

5.61.2.6 LOGICAL messy_traject_box::l_next_trajp

5.61.2.7 REAL(dp) messy_traject_box::lat1

5.61.2.8 REAL(dp) messy_traject_box::lat2

5.61.2.9 INTEGER messy_traject_box::len_time

5.61.2.10 REAL(dp) messy_traject_box::lon1

5.61.2.11 REAL(dp) messy_traject_box::lon2

5.61.2.12 REAL(dp) messy_traject_box::lontmp

5.61.2.13 INTEGER messy_traject_box::ncid_jval

5.61.2.14 INTEGER messy_traject_box::ncid_physc

5.61.2.15 INTEGER messy_traject_box::ncid_traj

5.61.2.16 REAL(dp) messy_traject_box::press1

- 5.61.2.17 REAL(dp) messy_traject_box::press2
- 5.61.2.18 REAL(dp) messy_traject_box::ratio1
- 5.61.2.19 REAL(dp) messy_traject_box::ratio2
- 5.61.2.20 REAL(dp) messy_traject_box::relhum1
- 5.61.2.21 REAL(dp) messy_traject_box::relhum2
- 5.61.2.22 REAL(dp) messy_traject_box::temp1
- 5.61.2.23 REAL(dp) messy_traject_box::temp2
- 5.61.2.24 REAL(dp) messy_traject_box::time1
- 5.61.2.25 REAL(dp) messy_traject_box::time2
- 5.61.2.26 REAL(dp) messy_traject_box::timesteplen_orig
- 5.61.2.27 INTEGER messy_traject_box::trajpct
- 5.61.2.28 INTEGER messy_traject_box::varid_jno2
- 5.61.2.29 INTEGER messy_traject_box::varid_lat
- 5.61.2.30 INTEGER messy_traject_box::varid_lon
- 5.61.2.31 INTEGER messy_traject_box::varid_press
- 5.61.2.32 INTEGER messy_traject_box::varid_relhum
- 5.61.2.33 INTEGER messy_traject_box::varid_temp
- 5.61.2.34 INTEGER messy_traject_box::varid_time

The documentation for this module was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_traject_box.f90](#)

5.62 messy_main_rnd_mtw_ja::mod_by_x Interface Reference

Private Member Functions

- subroutine [gf2x_mod_by_x](#) (c, a, i)

5.62.1 Member Function/Subroutine Documentation

5.62.1.1 subroutine messy_main_rnd_mtw_ja::mod_by_x::gf2x_mod_by_x (
 type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a, integer(INT32),
 intent(in) i) [private]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90

5.63 messy_main_rnd_mtw_ja::mult Interface Reference

Private Member Functions

- recursive subroutine [gf2x_mult_kara](#) (c, a, b)

5.63.1 Member Function/Subroutine Documentation

5.63.1.1 recursive subroutine messy_main_rnd_mtw_ja::mult::gf2x_mult_kara (
 type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a, type(gf2x_obj),
 intent(in) b) [private]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90

5.64 messy_main_rnd_mtw_ja::mult_assign Interface Reference

Private Member Functions

- subroutine [gf2x_mult_assign_kara](#) (a, b)

5.64.1 Member Function/Subroutine Documentation

5.64.1.1 subroutine messy_main_rnd_mtw_ja::mult_assign::gf2x_mult_assign_kara (
 type(gf2x_obj), intent(inout) a, type(gf2x_obj), intent(in) b)
 [private]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90

5.65 messy_main_rnd_mtw_ja::mult_by_x Interface Reference

Private Member Functions

- subroutine [gf2x_mult_by_x](#) (c, a, i)

5.65.1 Member Function/Subroutine Documentation

5.65.1.1 subroutine messy_main_rnd_mtw_ja::mult_by_x::gf2x_mult_by_x (type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a, integer(INT32), intent(in) i) [private]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_main_rnd_mtw_ja.f90](#)

5.66 messy_main_rnd_mtw_ja::new Interface Reference

Private Member Functions

- subroutine [gf2x_new](#) (this, deg)
- subroutine [gf2x_delete_prime](#) (mp)

5.66.1 Member Function/Subroutine Documentation

5.66.1.1 subroutine messy_main_rnd_mtw_ja::new::gf2x_delete_prime (type(gf2x_prime_obj), intent(inout) mp) [private]

5.66.1.2 subroutine messy_main_rnd_mtw_ja::new::gf2x_new (type(gf2x_obj), intent(inout) this, integer(INT32), intent(in) deg) [private]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_main_rnd_mtw_ja.f90](#)

5.67 messy_main_rnd_mtw_ja::pow Interface Reference

Private Member Functions

- subroutine [gf2x_pow](#) (c, a, e)
- subroutine [gf2x_pow_mod](#) (c, a, e, m)

5.67.1 Member Function/Subroutine Documentation

5.67.1.1 subroutine messy_main_rnd_mtw_ja::pow::gf2x_pow (type(gf2x_obj),
intent(inout) c, type(gf2x_obj), intent(in) a, integer(INT32), intent(in) e)
[private]

5.67.1.2 subroutine messy_main_rnd_mtw_ja::pow::gf2x_pow_mod (
type(gf2x_obj), intent(inout) c, type(gf2x_obj), intent(in) a, integer(INT32),
intent(in) e, type(gf2x_prime_obj), intent(in) m) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.68 messy_main_rnd_mtw_ja::print_bit Interface Reference

Private Member Functions

- subroutine [gf2x_print_bit](#) (this)

5.68.1 Member Function/Subroutine Documentation

5.68.1.1 subroutine messy_main_rnd_mtw_ja::print_bit::gf2x_print_bit (
type(gf2x_obj), intent(in) this) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.69 messy_main_rnd_mtw_ja::print_hex Interface Reference

Private Member Functions

- subroutine [gf2x_print_hex](#) (this)

5.69.1 Member Function/Subroutine Documentation

5.69.1.1 subroutine messy_main_rnd_mtw_ja::print_hex::gf2x_print_hex (
type(gf2x_obj), intent(in) this) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_-ja.f90](#)

5.70 messy_main_tools::PTR_0D_ARRAY Type Reference

Private Attributes

- REAL(DP), pointer [PTR](#)

5.70.1 Member Data Documentation

5.70.1.1 REAL(DP), pointer messy_main_tools::PTR_0D_ARRAY::PTR [private]

The documentation for this type was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90](#)

5.71 messy_main_tools::PTR_1D_ARRAY Type Reference

Private Attributes

- REAL(DP), dimension(:), pointer [PTR](#)

5.71.1 Member Data Documentation

5.71.1.1 REAL(DP), dimension(:), pointer messy_main_tools::PTR_1D_ARRAY::PTR [private]

The documentation for this type was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90](#)

5.72 messy_main_tools::PTR_1D_ARRAY_INT Type Reference

Private Attributes

- INTEGER, dimension(:), pointer [PTR](#)

5.72.1 Member Data Documentation

5.72.1.1 INTEGER, dimension(:), pointer messy_main_tools::PTR_1D_ARRAY_INT::PTR [private]

The documentation for this type was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90

5.73 messy_main_tools::PTR_2D_ARRAY Type Reference

Private Attributes

- REAL(DP), dimension(:, :), pointer PTR

5.73.1 Member Data Documentation

5.73.1.1 REAL(DP), dimension(:, :), pointer messy_main_tools::PTR_2D_ARRAY::PTR [private]

The documentation for this type was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90

5.74 messy_main_tools::PTR_3D_ARRAY Type Reference

Private Attributes

- REAL(DP), dimension(:, :, :), pointer PTR

5.74.1 Member Data Documentation

5.74.1.1 REAL(DP), dimension(:, :, :), pointer messy_main_tools::PTR_3D_ARRAY::PTR [private]

The documentation for this type was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90

5.75 messy_main_tools::PTR_4D_ARRAY Type Reference

Private Attributes

- REAL(DP), dimension(:,:,:), pointer [PTR](#)

5.75.1 Member Data Documentation

5.75.1.1 REAL(DP), dimension(:,:,:), pointer messy_main_tools::PTR_4D_ARRAY::PTR
[private]

The documentation for this type was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_main_tools.f90](#)

5.76 messy_main_tools::PTR_5D_ARRAY Type Reference

Private Attributes

- REAL(DP), dimension(:,:,:), pointer [PTR](#)

5.76.1 Member Data Documentation

5.76.1.1 REAL(DP), dimension(:,:,:), pointer messy_main_tools::PTR_5D_ARRAY::PTR
[private]

The documentation for this type was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_main_tools.f90](#)

5.77 messy_main_rnd_mtw_ja::rem Interface Reference

Private Member Functions

- subroutine [gf2x_rem](#) (r, a, b)
- subroutine [gf2x_rem_barrett](#) (r, a, m)

5.77.1 Member Function/Subroutine Documentation

5.77.1.1 subroutine messy_main_rnd_mtw_ja::rem::gf2x_rem (type(gf2x_obj),
intent(inout) r, type(gf2x_obj), intent(in) a, type(gf2x_obj), intent(in) b)
[private]

5.77.1.2 subroutine messy_main_rnd_mtw_ja::rem::gf2x_rem_barrett (
 type(gf2x_obj), intent(inout) *r*, type(gf2x_obj), intent(in) *a*, type(gf2x_prime_obj),
 intent(in) *m*) [private]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90

5.78 messy_main_tools::remap_bounds Interface Reference

Private Member Functions

- REAL(dp) function, dimension(:), pointer [remap_bounds1](#) (*lb1*, array)
- REAL(dp) function, dimension(:, :), pointer [remap_bounds2](#) (*lb1*, *lb2*, array)
- REAL(dp) function, dimension(:, :, :), pointer [remap_bounds3](#) (*lb1*, *lb2*, *lb3*, array)
- REAL(dp) function, dimension(:, :, :, :), pointer [remap_bounds4](#) (*lb1*, *lb2*, *lb3*, *lb4*, array)

5.78.1 Member Function/Subroutine Documentation

5.78.1.1 REAL(dp) function, dimension(:), pointer messy_main_tools::remap_bounds::remap_bounds1 (INTEGER, intent(in) *lb1*, REAL(dp), dimension(*lb1*:), intent(in), target *array*) [private]

5.78.1.2 REAL(dp) function, dimension(:, :), pointer messy_main_tools::remap_bounds::remap_bounds2 (INTEGER, intent(in) *lb1*, INTEGER, intent(in) *lb2*, REAL(dp), dimension(*lb1*:, *lb2*:), intent(in), target *array*) [private]

5.78.1.3 REAL(dp) function, dimension(:, :, :), pointer messy_main_tools::remap_bounds::remap_bounds3 (INTEGER, intent(in) *lb1*, INTEGER, intent(in) *lb2*, INTEGER, intent(in) *lb3*, REAL(dp), dimension(*lb1*:, *lb2*:, *lb3*:), intent(in), target *array*) [private]

5.78.1.4 REAL(dp) function, dimension(:, :, :, :), pointer messy_main_tools::remap_bounds::remap_bounds4 (INTEGER, intent(in) *lb1*, INTEGER, intent(in) *lb2*, INTEGER, intent(in) *lb3*, INTEGER, intent(in) *lb4*, REAL(dp), dimension(*lb1*:, *lb2*:, *lb3*:, *lb4*:), intent(in), target *array*) [private]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90

5.79 messy_main_rnd::rnd_jump Interface Reference

Private Member Functions

- subroutine [rnd_jump_n](#) (status, id, n, get)
- subroutine [rnd_jump_2](#) (status, id, n, p, get)

5.79.1 Member Function/Subroutine Documentation

5.79.1.1 subroutine `messy_main_rnd::rnd_jump::rnd_jump_2` (`INTEGER`, intent(out) *status*, `INTEGER`, intent(in) *id*, `INTEGER`, intent(in) *n*, `INTEGER`, intent(in) *p*, `INTEGER`, dimension(:), intent(out), optional *get*) [private]

5.79.1.2 subroutine `messy_main_rnd::rnd_jump::rnd_jump_n` (`INTEGER`, intent(out) *status*, `INTEGER`, intent(in) *id*, `INTEGER`, intent(in) *n*, `INTEGER`, dimension(:), intent(out), optional *get*) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd.f90](#)

5.80 messy_main_rnd_mtw_ja::set_coef Interface Reference

Private Member Functions

- subroutine [gf2x_set_coef](#) (a, i)

5.80.1 Member Function/Subroutine Documentation

5.80.1.1 subroutine `messy_main_rnd_mtw_ja::set_coef::gf2x_set_coef` (`type(gf2x_obj)`, intent(inout) *a*, `integer(INT32)`, intent(in) *i*) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.81 messy_main_rnd_mtw_ja::set_prime Interface Reference

Private Member Functions

- subroutine [gf2x_set_prime](#) (mp, m)

5.81.1 Member Function/Subroutine Documentation

5.81.1.1 subroutine messy_main_rnd_mtw_ja::set_prime::gf2x_set_prime
(type(gf2x_prime_obj), intent(inout) *mp*, type(gf2x_obj), intent(in) *m*)
[private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.82 messy_main_rnd_mtw_ja::shift Interface Reference

Private Member Functions

- subroutine [gf2x_shift](#) (c, a, i)

5.82.1 Member Function/Subroutine Documentation

5.82.1.1 subroutine messy_main_rnd_mtw_ja::shift::gf2x_shift (type(gf2x_obj),
intent(inout) *c*, type(gf2x_obj), intent(in) *a*, integer(INT32), intent(in) *i*)
[private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.83 messy_main_rnd_mtw_ja::square Interface Reference

Private Member Functions

- subroutine [gf2x_square](#) (c, a)

5.83.1 Member Function/Subroutine Documentation

5.83.1.1 subroutine messy_main_rnd_mtw_ja::square::gf2x_square (
type(gf2x_obj), intent(inout) *c*, type(gf2x_obj), intent(in) *a*) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_mtw_ja.f90](#)

5.84 messy_main_tools::str Interface Reference

Private Member Functions

- CHARACTER(LEN=5) function [str_logical](#) (zlogical, fmt)
- CHARACTER(LEN=STRLEN_LONG) function [str_integer](#) (zinteger, fmt)
- CHARACTER(LEN=STRLEN_LONG) function [str_real_sp](#) (zreal_sp, fmt)
- CHARACTER(LEN=STRLEN_LONG) function [str_real_dp](#) (zreal_dp, fmt)

5.84.1 Member Function/Subroutine Documentation

5.84.1.1 CHARACTER(LEN=STRLEN_LONG) function messy_main_tools::str::str_integer (INTEGER, intent(in) *zinteger*, CHARACTER(LEN=*), intent(in), optional *fmt*)
[private]

5.84.1.2 CHARACTER(LEN=5) function messy_main_tools::str::str_logical (LOGICAL, intent(in) *zlogical*, CHARACTER(LEN=*), intent(in), optional *fmt*) [private]

5.84.1.3 CHARACTER(LEN=STRLEN_LONG) function messy_main_tools::str::str_real_dp (REAL(dp), intent(in) *zreal_dp*, CHARACTER(LEN=*), intent(in), optional *fmt*)
[private]

5.84.1.4 CHARACTER(LEN=STRLEN_LONG) function messy_main_tools::str::str_real_sp (REAL(sp), intent(in) *zreal_sp*, CHARACTER(LEN=*), intent(in), optional *fmt*)
[private]

The documentation for this interface was generated from the following file:

- /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/[messy_main_tools.f90](#)

5.85 messy_main_tools::str2num Interface Reference

Private Member Functions

- subroutine [str2num_real_dp](#) (str, out, err)
- subroutine [str2num_real_sp](#) (str, out, err)
- subroutine [str2num_integer](#) (str, out, err)

5.85.1 Member Function/Subroutine Documentation

5.85.1.1 subroutine messy_main_tools::str2num::str2num_integer (CHARACTER(LEN=*), intent(in) *str*, INTEGER, intent(out) *out*, INTEGER, intent(out), optional *err*) [private]

5.85.1.2 subroutine messy_main_tools::str2num::str2num_real_dp (
CHARACTER(LEN=*), intent(in) *str*, REAL(dp), intent(out) *out*, INTEGER, intent(out),
optional *err*) [private]

5.85.1.3 subroutine messy_main_tools::str2num::str2num_real_sp (
CHARACTER(LEN=*), intent(in) *str*, REAL(sp), intent(out) *out*, INTEGER, intent(out),
optional *err*) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90](#)

5.86 messy_main_tools::t_reset_par Type Reference

Private Attributes

- LOGICAL *l* = .FALSE.
- REAL(dp) *v* = 0.0_dp

5.86.1 Member Data Documentation

5.86.1.1 LOGICAL messy_main_tools::t_reset_par::*l* = .FALSE. [private]

5.86.1.2 REAL(dp) messy_main_tools::t_reset_par::*v* = 0.0_dp [private]

The documentation for this type was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90](#)

5.87 messy_main_timer::time_days Type Reference

Public Attributes

- LOGICAL *init* = .FALSE.
- INTEGER *day* = 0
- INTEGER *second* = 0

5.87.1 Member Data Documentation

5.87.1.1 INTEGER messy_main_timer::time_days::*day* = 0

5.87.1.2 LOGICAL messy_main_timer::time_days::*init* = .FALSE.

5.87.1.3 INTEGER messy_main_timer::time_days::second = 0

The documentation for this type was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_timer.f90](#)

5.88 messy_main_timer::timer_get_date Interface Reference

Private Member Functions

- subroutine [timer_get_date_str](#) (status, strflag, yr, mo, dy, hr, mi, se)
- subroutine [timer_get_date_myd](#) (status, my_date, yr, mo, dy, hr, mi, se)

5.88.1 Member Function/Subroutine Documentation

5.88.1.1 subroutine messy_main_timer::timer_get_date::timer_get_date_myd (INTEGER, intent(out) *status*, TYPE(time_days), intent(in) *my_date*, INTEGER, intent(out) *yr*, INTEGER, intent(out) *mo*, INTEGER, intent(out) *dy*, INTEGER, intent(out) *hr*, INTEGER, intent(out) *mi*, INTEGER, intent(out) *se*) [private]

5.88.1.2 subroutine messy_main_timer::timer_get_date::timer_get_date_str (INTEGER, intent(out) *status*, CHARACTER(LEN=*), intent(in) *strflag*, INTEGER, intent(out) *yr*, INTEGER, intent(out) *mo*, INTEGER, intent(out) *dy*, INTEGER, intent(out) *hr*, INTEGER, intent(out) *mi*, INTEGER, intent(out) *se*) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_timer.f90](#)

5.89 messy_main_timer::timer_set_date Interface Reference

Private Member Functions

- subroutine [timer_set_date_str](#) (status, strflag, yr, mo, dy, hr, mi, se)
- subroutine [timer_set_date_myd](#) (status, my_date, yr, mo, dy, hr, mi, se)
- subroutine [timer_set_date_str_ds](#) (status, strflag, day, second)
- subroutine [timer_set_date_myd_ds](#) (status, my_date, day, second)

5.89.1 Member Function/Subroutine Documentation

5.89.1.1 subroutine messy_main_timer::timer_set_date::timer_set_date_myd (INTEGER, intent(out) *status*, TYPE(time_days), intent(out) *my_date*, INTEGER, intent(in) *yr*, INTEGER, intent(in) *mo*, INTEGER, intent(in) *dy*, INTEGER, intent(in) *hr*, INTEGER, intent(in) *mi*, INTEGER, intent(in) *se*) [private]

- 5.89.1.2 subroutine messy_main_timer::timer_set_date::timer_set_date_myd_ds (
INTEGER, intent(out) *status*, TYPE(time_days), intent(out) *my_date*, INTEGER,
intent(in) *day*, INTEGER, intent(in) *second*) [private]
- 5.89.1.3 subroutine messy_main_timer::timer_set_date::timer_set_date_str
(INTEGER, intent(out) *status*, CHARACTER(LEN=*), intent(in) *strflag*, INTEGER,
intent(in) *yr*, INTEGER, intent(in) *mo*, INTEGER, intent(in) *dy*, INTEGER, intent(in) *hr*,
INTEGER, intent(in) *mi*, INTEGER, intent(in) *se*) [private]
- 5.89.1.4 subroutine messy_main_timer::timer_set_date::timer_set_date_str_ds
(INTEGER, intent(out) *status*, CHARACTER(LEN=*), intent(in) *strflag*, INTEGER,
intent(in) *day*, INTEGER, intent(in) *second*) [private]

The documentation for this interface was generated from the following file:

- [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_timer.f90](#)

Chapter 6

File Documentation

6.1 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/caaba.f90 File Reference

Data Types

- module [caaba_module](#)
CAABA = Chemistry As A Boxmodel Application.

Functions/Subroutines

- subroutine [dilute](#)
- subroutine [dilute_once](#)
- program [caaba](#)

6.1.1 Function/Subroutine Documentation

6.1.1.1 program [caaba](#) ()

6.1.1.2 subroutine [caaba_physc::dilute](#) ()

6.1.1.3 subroutine [caaba_physc::dilute_once](#) ()

6.2 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/caaba.nml File Reference

6.3 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/caaba_- io.f90 File Reference

Data Types

- module [caaba_io](#)

6.4 [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/caaba_io_ascii.inc](#) File Reference

6.5 [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/caaba_io_netcdf.inc](#) File Reference

6.6 [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/caaba_mem.f90](#) File Reference

Data Types

- module [caaba_mem](#)

6.7 [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/e4chem.nml](#) File Reference

6.8 [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/jval.nml](#) File Reference

6.9 [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/mecca.nml](#) File Reference

6.10 [/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_cm_n_gasaq.f90](#) File Reference

Data Types

- module [messy_cm_n_gasaq](#)
- type [messy_cm_n_gasaq::GASQA_TYPE](#)

Functions/Subroutines

- subroutine [add_species](#) (name, M)

6.11 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_cmn_photol_mem.f90 File

Reference

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- subroutine [add_henry](#) (name, Henry_T0, Henry_Tdep)
- subroutine [add_alpha](#) (name, alpha_T0, alpha_Tdep)
- subroutine [add_dryreac](#) (name, dryreac, pss)

6.10.1 Function/Subroutine Documentation

6.10.1.1 subroutine [add_all_alpha::add_alpha](#) (CHARACTER(LEN=*) , intent(in) *name*, REAL(DP), intent(in) *alpha_T0*, REAL(DP), intent(in) *alpha_Tdep*) [private]

6.10.1.2 subroutine [add_all_dryreac::add_dryreac](#) (CHARACTER(LEN=*) , intent(in) *name*, REAL(DP), intent(in) *dryreac*, REAL(DP), intent(in) *pss*)

6.10.1.3 subroutine [add_all_henry::add_henry](#) (CHARACTER(LEN=*) , intent(in) *name*, REAL(DP), intent(in) *Henry_T0*, REAL(DP), intent(in) *Henry_Tdep*)

6.10.1.4 subroutine [def_all_species::add_species](#) (CHARACTER(LEN=*) , intent(in) *name*, REAL(DP), intent(in) *M*) [private]

6.11 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_cmn_photol_mem.f90 File Reference

Data Types

- module [messy_cmn_photol_mem](#)

6.12 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_e4chem.f90 File Reference

Data Types

- module [messy_e4chem](#)

Functions/Subroutines

- REAL(dp) function [ZFUNCRATNONO2](#) (ZDNO2, ZCN13, ZMOLECO, ZCN8, ZMOLECO3, ZCN9, ZMOLECCLO, ZCN10, ZMOLECHO2, ZCN11, ZMOLECC-H3O2)
- REAL(dp) function [ZFUNCRATNNO](#) (ZDNO, ZCN1, ZMOLECO2, ZSCNNO2, ZMOLECNO2, ZSCN3, ZMOLECOH, ZSCN4, ZMOLECHO2, ZSCN2, ZMOLEC-NO)
- REAL(dp) function [ZFUNCPRDH2OLONG](#) (ZCN19, ZMOLECHNO3, ZCC2, ZMOLECHCL, ZCC14, ZMOLECCH3CL, ZCC15, ZMOLECCH3CCL3, ZCH6, ZMOLECH2, ZCH15, ZMOLECH2O2, ZCH19, ZMOLECCH4)

- REAL(dp) function [ZFUNCPROD H2 OSHORT](#) (ZCN6, ZMOLECHNO4, ZCC11, ZMOLECCLOH, ZSCH16, ZMOLECCH2O, ZSCH20, ZSCH21, ZMOLECCH3O2H)
- REAL(dp) function [ZFUNCPROD H2 OHOX](#) (ZSCH18, ZMOLECH, ZMOLECHO2, ZCH1, ZMOLECOH)
- REAL(dp) function [ZFUNC3BODY](#) (ZK1, ZK2)

6.12.1 Function/Subroutine Documentation

- 6.12.1.1 REAL(dp) function **CHEMICS::ZFUNC3BODY** (REAL(dp), intent(in) ZK1, REAL(dp), intent(in) ZK2) [private]
- 6.12.1.2 REAL(dp) function **CHEMICS::ZFUNCPROD H2 OHOX** (REAL(dp), intent(in) ZSCH18, REAL(dp), intent(in) ZMOLECH, REAL(dp), intent(in) ZMOLECHO2, REAL(dp), intent(in) ZCH1, REAL(dp), intent(in) ZMOLECOH) [private]
- 6.12.1.3 REAL(dp) function **CHEMICS::ZFUNCPROD H2 OLONG** (REAL(dp), intent(in) ZCN19, REAL(dp), intent(in) ZMOLECHNO3, REAL(dp), intent(in) ZCC2, REAL(dp), intent(in) ZMOLECHCL, REAL(dp), intent(in) ZCC14, REAL(dp), intent(in) ZMOLECCH3CL, REAL(dp), intent(in) ZCC15, REAL(dp), intent(in) ZMOLECCH3CCL3, REAL(dp), intent(in) ZCH6, REAL(dp), intent(in) ZMOLECH2, REAL(dp), intent(in) ZCH15, REAL(dp), intent(in) ZMOLECH2O2, REAL(dp), intent(in) ZCH19, REAL(dp), intent(in) ZMOLECCH4) [private]
- 6.12.1.4 REAL(dp) function **CHEMICS::ZFUNCPROD H2 OSHORT** (REAL(dp), intent(in) ZCN6, REAL(dp), intent(in) ZMOLECHNO4, REAL(dp), intent(in) ZCC11, REAL(dp), intent(in) ZMOLECCLOH, REAL(dp), intent(in) ZSCH16, REAL(dp), intent(in) ZMOLECCH2O, REAL(dp), intent(in) ZSCH20, REAL(dp), intent(in) ZSCH21, REAL(dp), intent(in) ZMOLECCH3O2H) [private]
- 6.12.1.5 REAL(dp) function **CHEMICS::ZFUNCRATNNO** (REAL(dp), intent(in) ZDNO, REAL(dp), intent(in) ZCN1, REAL(dp), intent(in) ZMOLECO2, REAL(dp), intent(in) ZSCNNO2, REAL(dp), intent(in) ZMOLECO2, REAL(dp), intent(in) ZSCN3, REAL(dp), intent(in) ZMOLECOH, REAL(dp), intent(in) ZSCN4, REAL(dp), intent(in) ZMOLECHO2, REAL(dp), intent(in) ZSCN2, REAL(dp), intent(in) ZMOLECO) [private]
- 6.12.1.6 REAL(dp) function **CHEMICS::ZFUNCRATNONO2** (REAL(dp), intent(in) ZDNO2, REAL(dp), intent(in) ZCN13, REAL(dp), intent(in) ZMOLECO, REAL(dp), intent(in) ZCN8, REAL(dp), intent(in) ZMOLECO3, REAL(dp), intent(in) ZCN9, REAL(dp), intent(in) ZMOLECCLO, REAL(dp), intent(in) ZCN10, REAL(dp), intent(in) ZMOLECHO2, REAL(dp), intent(in) ZCN11, REAL(dp), intent(in) ZMOLECCH3O2)

6.13 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-e4chem_box.f90 File Reference

Data Types

- module [messy_e4chem_box](#)

Functions/Subroutines

- subroutine [x0_strato](#)
- subroutine [x0_mtchem](#)
- subroutine [check_range](#) (infostring, conc)

6.13.1 Function/Subroutine Documentation

6.13.1.1 subroutine [e4chem_physc::check_range](#) (CHARACTER(LEN=*), intent(in) *infostring*, REAL(DP), dimension(:), intent(in) *conc*)

6.13.1.2 subroutine [x0::x0_mtchem](#) () [private]

6.13.1.3 subroutine [x0::x0_strato](#) ()

6.14 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_jval.f90 File Reference

Data Types

- module [messy_jval](#)

Functions/Subroutines

- subroutine [column_cal](#)
- subroutine [flux_cal](#)
- subroutine [slingo](#)
- subroutine [aero_2d](#)
- subroutine [pifm](#)
- subroutine [pifmini](#)

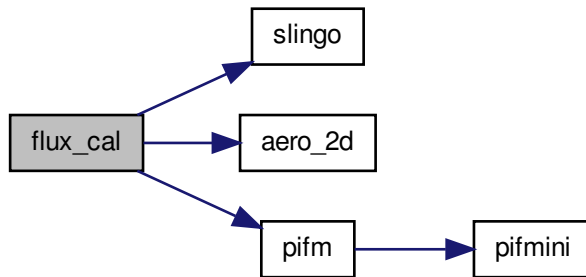
6.14.1 Function/Subroutine Documentation

6.14.1.1 subroutine [jvalues::aero_2d](#) () [private]

6.14.1.2 subroutine [jvalues::column_cal](#) ()

6.14.1.3 subroutine jvalues::flux_cal () [private]

Here is the call graph for this function:



6.14.1.4 subroutine jvalues::pifm () [private]

Here is the call graph for this function:



6.14.1.5 subroutine jvalues::pifmini () [private]

6.14.1.6 subroutine jvalues::slingo () [private]

6.15 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-jval_box.f90 File Reference

Data Types

- module [messy_jval_box](#)

Functions/Subroutines

- subroutine [allocate_arrays](#)
- subroutine [photo_mbl](#)
- subroutine [photo_strato](#)

6.15.1 Function/Subroutine Documentation

6.15.1.1 subroutine `jval_init::allocate_arrays ()`

6.15.1.2 subroutine `jval_init::photo_mbl ()` [private]

Here is the call graph for this function:



6.15.1.3 subroutine `jval_init::photo_strato ()` [private]

Here is the call graph for this function:



6.16 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-jval_jvpp.inc File Reference

Functions/Subroutines

- subroutine [jval_cal](#)
- subroutine [jval_cal_O2](#)
- subroutine [jval_cal_O3P](#)
- subroutine [jval_cal_O1D](#)
- subroutine [jval_cal_H2O2](#)
- subroutine [jval_cal_NO2](#)
- subroutine [jval_cal_NO2O](#)
- subroutine [jval_cal_NOO2](#)
- subroutine [jval_cal_N2O5](#)
- subroutine [jval_cal_HNO3](#)
- subroutine [jval_cal_HNO4](#)
- subroutine [jval_cal_PAN](#)
- subroutine [jval_cal_HONO](#)
- subroutine [jval_cal_CH3OOH](#)
- subroutine [jval_cal_COH2](#)
- subroutine [jval_cal_CHOH](#)
- subroutine [jval_cal_CH3CO3H](#)
- subroutine [jval_cal_CH3CHO](#)
- subroutine [jval_cal_CH3COCH3](#)
- subroutine [jval_cal_MGLYOX](#)
- subroutine [jval_cal_HOCl](#)
- subroutine [jval_cal_OCIO](#)
- subroutine [jval_cal_Cl2O2](#)
- subroutine [jval_cal_ClNO3](#)
- subroutine [jval_cal_ClNO2](#)
- subroutine [jval_cal_Cl2](#)
- subroutine [jval_cal_BrO](#)
- subroutine [jval_cal_HOBr](#)
- subroutine [jval_cal_BrCl](#)
- subroutine [jval_cal_BrNO3](#)
- subroutine [jval_cal_BrNO2](#)
- subroutine [jval_cal_Br2](#)
- subroutine [jval_cal_CCl4](#)
- subroutine [jval_cal_CH3Cl](#)
- subroutine [jval_cal_CH3CCl3](#)
- subroutine [jval_cal_CFCI3](#)
- subroutine [jval_cal_CF2Cl2](#)
- subroutine [jval_cal_CH3Br](#)
- subroutine [jval_cal_CF2ClBr](#)
- subroutine [jval_cal_CF3Br](#)
- subroutine [jval_cal_CH3I](#)

- subroutine [jval_cal_C3H7I](#)
- subroutine [jval_cal_CH2CII](#)
- subroutine [jval_cal_CH2I2](#)
- subroutine [jval_cal_IO](#)
- subroutine [jval_cal_HOI](#)
- subroutine [jval_cal_I2](#)
- subroutine [jval_cal_ICI](#)
- subroutine [jval_cal_IBr](#)
- subroutine [jval_cal_INO2](#)
- subroutine [jval_cal_INO3](#)
- subroutine [jval_cal_SO2](#)
- subroutine [jval_cal_SO3](#)
- subroutine [jval_cal_OCS](#)
- subroutine [jval_cal_H2O](#)
- subroutine [jval_cal_N2O](#)
- subroutine [jval_cal_NO](#)
- subroutine [jval_cal_CO2](#)
- subroutine [jval_cal_HCl](#)
- subroutine [jval_cal_CHCl2Br](#)
- subroutine [jval_cal_CHClBr2](#)
- subroutine [jval_cal_CH2ClBr](#)
- subroutine [jval_cal_CH2Br2](#)
- subroutine [jval_cal_CHBr3](#)
- subroutine [jval_cal_SF6](#)
- subroutine [jval_cal_ClONO2](#)
- subroutine [jval_cal_MACR](#)
- subroutine [jval_cal_MVK](#)
- subroutine [jval_cal_GLYOX](#)
- subroutine [jval_cal_HOCH2CHO](#)
- subroutine [jval_cal_CH4](#)
- subroutine [jval_cal_H2SO4](#)
- subroutine [jval_cal_CH3NO3](#)
- subroutine [jval_cal_CH3O2NO2](#)
- subroutine [jval_cal_CH3ONO](#)
- subroutine [jval_cal_CH3O2](#)
- subroutine [jval_cal_HCOOH](#)

6.16.1 Function/Subroutine Documentation

6.16.1.1 subroutine [jval_cal](#) ()

6.16.1.2 subroutine [jval_cal_Br2](#) ()

6.16.1.3 subroutine [jval_cal_BrCl](#) ()

6.16.1.4 subroutine jval_cal_BrNO2 ()
6.16.1.5 subroutine jval_cal_BrNO3 ()
6.16.1.6 subroutine jval_cal_BrO ()
6.16.1.7 subroutine jval_cal_C3H7I ()
6.16.1.8 subroutine jval_cal_CCl4 ()
6.16.1.9 subroutine jval_cal_CF2Cl2 ()
6.16.1.10 subroutine jval_cal_CF2ClBr ()
6.16.1.11 subroutine jval_cal_CF3Br ()
6.16.1.12 subroutine jval_cal_CFCI3 ()
6.16.1.13 subroutine jval_cal_CH2Br2 ()
6.16.1.14 subroutine jval_cal_CH2ClBr ()
6.16.1.15 subroutine jval_cal_CH2ClI ()
6.16.1.16 subroutine jval_cal_CH2I2 ()
6.16.1.17 subroutine jval_cal_CH3Br ()
6.16.1.18 subroutine jval_cal_CH3CCl3 ()
6.16.1.19 subroutine jval_cal_CH3CHO ()
6.16.1.20 subroutine jval_cal_CH3Cl ()
6.16.1.21 subroutine jval_cal_CH3CO3H ()
6.16.1.22 subroutine jval_cal_CH3COCH3 ()
6.16.1.23 subroutine jval_cal_CH3I ()
6.16.1.24 subroutine jval_cal_CH3NO3 ()
6.16.1.25 subroutine jval_cal_CH3O2 ()
6.16.1.26 subroutine jval_cal_CH3O2NO2 ()
6.16.1.27 subroutine jval_cal_CH3ONO ()

6.16.1.28 subroutine jval_cal_CH3OOH ()
6.16.1.29 subroutine jval_cal_CH4 ()
6.16.1.30 subroutine jval_cal_CHBr3 ()
6.16.1.31 subroutine jval_cal_CHCl2Br ()
6.16.1.32 subroutine jval_cal_CHClBr2 ()
6.16.1.33 subroutine jval_cal_CHOH ()
6.16.1.34 subroutine jval_cal_Cl2 ()
6.16.1.35 subroutine jval_cal_Cl2O2 ()
6.16.1.36 subroutine jval_cal_CINO2 ()
6.16.1.37 subroutine jval_cal_CINO3 ()
6.16.1.38 subroutine jval_cal_ClONO2 ()
6.16.1.39 subroutine jval_cal_CO2 ()
6.16.1.40 subroutine jval_cal_COH2 ()
6.16.1.41 subroutine jval_cal_GLYOX ()
6.16.1.42 subroutine jval_cal_H2O ()
6.16.1.43 subroutine jval_cal_H2O2 ()
6.16.1.44 subroutine jval_cal_H2SO4 ()
6.16.1.45 subroutine jval_cal_HCl ()
6.16.1.46 subroutine jval_cal_HCOOH ()
6.16.1.47 subroutine jval_cal_HNO3 ()
6.16.1.48 subroutine jval_cal_HNO4 ()
6.16.1.49 subroutine jval_cal_HOBr ()
6.16.1.50 subroutine jval_cal_HOCH2CHO ()
6.16.1.51 subroutine jval_cal_HOCl ()

6.16.1.52 subroutine jval_cal_HOI ()
6.16.1.53 subroutine jval_cal_HONO ()
6.16.1.54 subroutine jval_cal_I2 ()
6.16.1.55 subroutine jval_cal_IBr ()
6.16.1.56 subroutine jval_cal_ICI ()
6.16.1.57 subroutine jval_cal_INO2 ()
6.16.1.58 subroutine jval_cal_INO3 ()
6.16.1.59 subroutine jval_cal_IO ()
6.16.1.60 subroutine jval_cal_MACR ()
6.16.1.61 subroutine jval_cal_MGLYOX ()
6.16.1.62 subroutine jval_cal_MVK ()
6.16.1.63 subroutine jval_cal_N2O ()
6.16.1.64 subroutine jval_cal_N2O5 ()
6.16.1.65 subroutine jval_cal_NO ()
6.16.1.66 subroutine jval_cal_NO2 ()
6.16.1.67 subroutine jval_cal_NO2O ()
6.16.1.68 subroutine jval_cal_NOO2 ()
6.16.1.69 subroutine jval_cal_O1D ()
6.16.1.70 subroutine jval_cal_O2 ()
6.16.1.71 subroutine jval_cal_O3P ()
6.16.1.72 subroutine jval_cal_OCIO ()
6.16.1.73 subroutine jval_cal_OCS ()
6.16.1.74 subroutine jval_cal_PAN ()
6.16.1.75 subroutine jval_cal_SF6 ()

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/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_blather.f90

File Reference

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6.16.1.76 subroutine jval_cal_SO2 ()

6.16.1.77 subroutine jval_cal_SO3 ()

6.17 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_blather.f90 File Reference

Data Types

- module [messy_main_blather](#)

6.18 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_constants_mem.f90 File Reference

Data Types

- module [messy_main_constants_mem](#)

6.19 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_control_cb.f90 File Reference

Data Types

- module [messy_main_control_cb](#)

6.20 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd.f90 File Reference

Data Types

- module [messy_main_rnd](#)
- interface [messy_main_rnd::rnd_jump](#)

6.21 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_rnd_lux.f90 File Reference

Data Types

- module [messy_main_rnd_lux](#)

6.22 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-main_rnd_mtw.f90` File Reference

Data Types

- module [messy_main_rnd_mtw](#)

6.23 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-main_rnd_mtw_ja.f90` File Reference

Data Types

- module [messy_main_rnd_mtw_ja](#)
- type [messy_main_rnd_mtw_ja::gf2x_obj](#)
- type [messy_main_rnd_mtw_ja::gf2x_prime_obj](#)
- interface [messy_main_rnd_mtw_ja::new](#)
- interface [messy_main_rnd_mtw_ja::delete](#)
- interface [messy_main_rnd_mtw_ja::print_bit](#)
- interface [messy_main_rnd_mtw_ja::print_hex](#)
- interface [messy_main_rnd_mtw_ja::set_coef](#)
- interface [messy_main_rnd_mtw_ja::set_prime](#)
- interface [messy_main_rnd_mtw_ja::assign](#)
- interface [messy_main_rnd_mtw_ja::add](#)
- interface [messy_main_rnd_mtw_ja::add_assign](#)
- interface [messy_main_rnd_mtw_ja::mult](#)
- interface [messy_main_rnd_mtw_ja::mult_assign](#)
- interface [messy_main_rnd_mtw_ja::pow](#)
- interface [messy_main_rnd_mtw_ja::square](#)
- interface [messy_main_rnd_mtw_ja::mult_by_x](#)
- interface [messy_main_rnd_mtw_ja::mod_by_x](#)
- interface [messy_main_rnd_mtw_ja::div_by_x](#)
- interface [messy_main_rnd_mtw_ja::div](#)
- interface [messy_main_rnd_mtw_ja::rem](#)
- interface [messy_main_rnd_mtw_ja::divrem](#)
- interface [messy_main_rnd_mtw_ja::shift](#)

6.24 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-main_timer.f90` File Reference

Data Types

- module [messy_main_timer](#)

6.25

/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_main_tools.f90

File Reference

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- type [messy_main_timer::time_days](#)
- interface [messy_main_timer::timer_set_date](#)
- interface [messy_main_timer::timer_get_date](#)

6.25 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-main_tools.f90 File Reference

Data Types

- module [messy_main_tools](#)
- type [messy_main_tools::PTR_1D_ARRAY_INT](#)
- type [messy_main_tools::PTR_0D_ARRAY](#)
- type [messy_main_tools::PTR_1D_ARRAY](#)
- type [messy_main_tools::PTR_2D_ARRAY](#)
- type [messy_main_tools::PTR_3D_ARRAY](#)
- type [messy_main_tools::PTR_4D_ARRAY](#)
- type [messy_main_tools::PTR_5D_ARRAY](#)
- type [messy_main_tools::t_reset_par](#)
- interface [messy_main_tools::str](#)
- interface [messy_main_tools::iso2ind](#)
- interface [messy_main_tools::ind2val](#)
- interface [messy_main_tools::remap_bounds](#)
- interface [messy_main_tools::str2num](#)

6.26 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-main_tools_kp4_compress.f90 File Reference

Data Types

- module [messy_main_tools_kp4_compress](#)
- interface [messy_main_tools_kp4_compress::kco_initialize](#)
- interface [messy_main_tools_kp4_compress::kco_compress](#)
- interface [messy_main_tools_kp4_compress::kco_finalize](#)

6.27 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-mecca.f90 File Reference

Data Types

- module [messy_mecca](#)

6.28 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_aero.f90 File Reference

Data Types

- module [messy_mecca_aero](#)

Functions/Subroutines

- subroutine [mecca_aero_K_tot](#) (K_tot)

6.28.1 Function/Subroutine Documentation

6.28.1.1 subroutine [mecca_aero_calc_k_ex_ocean::mecca_aero_K_tot](#) (REAL(dp), dimension(0:nspec), intent(out) *K_tot*) [*private*]

6.29 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_box.f90 File Reference

Data Types

- module [messy_mecca_box](#)

Functions/Subroutines

- subroutine [x0_simple](#)
- subroutine [x0_ff_antarctic](#)
- subroutine [x0_ff_arctic](#)
- subroutine [x0_hoover](#)
- subroutine [x0_free_trop](#)
- subroutine [x0_lab](#)
- subroutine [x0_mbl](#)
- subroutine [x0_mim2](#)
- subroutine [x0_oomph](#)
- subroutine [x0_isoo](#)
- subroutine [x0_strato20](#)
- subroutine [x0_strato10](#)
- subroutine [x0_mtchem](#)
- subroutine [aerosol_exchng](#)
- subroutine [check_range](#) (infostring, conc)

6.30 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_dbl_box.f90 File Reference

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6.29.1 Function/Subroutine Documentation

6.29.1.1 subroutine `mecca_physc::aerosol_exchng` ()

6.29.1.2 subroutine `mecca_physc::check_range` (CHARACTER(LEN=*), intent(in) *infostring*, REAL(DP), dimension(:), intent(in) *conc*)

6.29.1.3 subroutine `x0::x0_ff_antarctic` () [private]

6.29.1.4 subroutine `x0::x0_ff_arctic` () [private]

6.29.1.5 subroutine `x0::x0_free_trop` () [private]

6.29.1.6 subroutine `x0::x0_hoover` () [private]

6.29.1.7 subroutine `x0::x0_isoo` () [private]

6.29.1.8 subroutine `x0::x0_lab` () [private]

6.29.1.9 subroutine `x0::x0_mbl` () [private]

6.29.1.10 subroutine `x0::x0_mim2` () [private]

6.29.1.11 subroutine `x0::x0_mtchem` () [private]

6.29.1.12 subroutine `x0::x0_oomph` () [private]

6.29.1.13 subroutine `x0::x0_simple` ()

6.29.1.14 subroutine `x0::x0_strato10` () [private]

6.29.1.15 subroutine `x0::x0_strato20` () [private]

6.30 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_dbl_box.f90 File Reference

Data Types

- module [messy_mecca_dbl_box](#)

6.31 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_dbl_parameters.inc File Reference

6.32 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_khet.f90` File Reference

Data Types

- module [messy_mecca_khet](#)

6.33 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_kpp.f90` File Reference

Data Types

- module [messy_mecca_kpp](#)

Functions/Subroutines

- subroutine [kpp_read_nml_ctrl](#) (status, iou)
- subroutine [montecarlo_check](#)

6.33.1 Function/Subroutine Documentation

6.33.1.1 subroutine `initialize_kpp_ctrl::kpp_read_nml_ctrl` (`INTEGER`, intent(out) *status*, `INTEGER`, intent(in) *iou*)

6.33.1.2 subroutine `kpp_integrate::montecarlo_check` ()

6.34 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_kpp_function.f90` File Reference

Data Types

- module [messy_mecca_kpp_Function](#)

6.35 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_kpp_global.f90` File Reference

Data Types

- module [messy_mecca_kpp_Global](#)

6.36 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_initialize.f90` File

Reference

6.36 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_initialize.f90` File Reference 233

Data Types

- module [messy_mecca_kpp_Initialize](#)

6.37 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_integrator.f90` File Reference

Data Types

- module [messy_mecca_kpp_Integrator](#)

Functions/Subroutines

- subroutine [ros_ErrorMsg](#) (Code, T, H, IERR)
- subroutine [ros_Integrator](#) (Y, Tstart, Tend, T, AbsTol, RelTol, REAL(kind=dp) function [ros_ErrorNorm](#) (Y, Ynew, Yerr, AbsTol, RelTol, VectorTol)
- subroutine [ros_FunTimeDerivative](#) (T, Roundoff, Y, Fcn0, dFdT)
- subroutine [ros_PrepareMatrix](#) (H, Direction, gam, Jac0, Ghimj, Pivot, Singular)
- subroutine [ros-Decomp](#) (A, Pivot, ising)
- subroutine [ros-Solve](#) (A, Pivot, b)
- subroutine [Ros2](#)
- subroutine [Ros3](#)
- subroutine [Ros4](#)
- subroutine [Rodas3](#)
- subroutine [Rodas4](#)

6.37.1 Function/Subroutine Documentation

6.37.1.1 subroutine `Rosenbrock::Rodas3` ()

6.37.1.2 subroutine `Rosenbrock::Rodas4` ()

6.37.1.3 subroutine `Rosenbrock::Ros2` ()

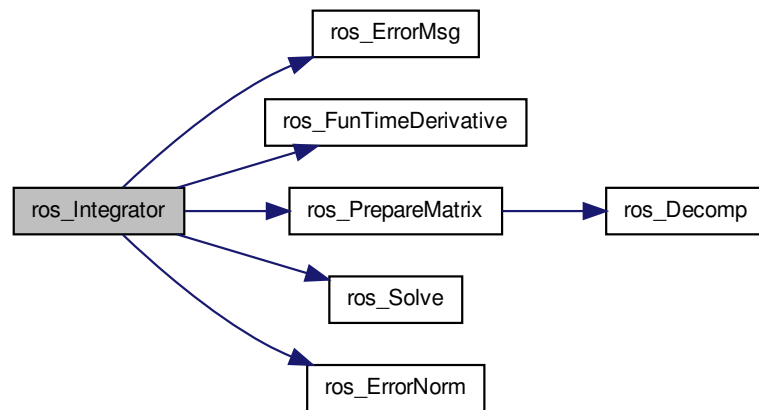
6.37.1.4 subroutine `Rosenbrock::Ros3` ()

6.37.1.5 subroutine `Rosenbrock::Ros4` ()

6.37.1.6 subroutine `Rosenbrock::ros-Decomp` (REAL(kind=dp), dimension(lu_nonzero), intent(inout) *A*, INTEGER, dimension(n), intent(out) *Pivot*, INTEGER, intent(out) *ising*)

- 6.37.1.7 subroutine **Rosenbrock::ros_ErrorMsg** (**INTEGER**, intent(in) *Code*,
REAL(kind=dp), intent(in) *T*, **REAL**(kind=dp), intent(in) *H*, **INTEGER**, intent(out) *IERR*)
- 6.37.1.8 **REAL**(kind=dp) function **Rosenbrock::ros_ErrorNorm** (**REAL**(kind=dp),
dimension(n), intent(in) *Y*, **REAL**(kind=dp), dimension(n), intent(in) *Ynew*,
REAL(kind=dp), dimension(n), intent(in) *Yerr*, **REAL**(kind=dp), dimension(n), intent(in)
AbsTol, **REAL**(kind=dp), dimension(n), intent(in) *RelTol*, **LOGICAL**, intent(in) *VectorTol*)
- 6.37.1.9 subroutine **Rosenbrock::ros_FunTimeDerivative** (**REAL**(kind=dp), intent(in)
T, **REAL**(kind=dp), intent(in) *Roundoff*, **REAL**(kind=dp), dimension(n), intent(in) *Y*,
REAL(kind=dp), dimension(n), intent(in) *Fcn0*, **REAL**(kind=dp), dimension(n), intent(out)
dFdT)
- 6.37.1.10 subroutine **Rosenbrock::ros_Integrator** (**REAL**(kind=dp), dimension(n),
intent(inout) *Y*, **REAL**(kind=dp), intent(in) *Tstart*, **REAL**(kind=dp), intent(in) *Tend*,
REAL(kind=dp), intent(out) *T*, **REAL**(kind=dp), dimension(n), intent(in) *AbsTol*,
REAL(kind=dp), dimension(n), intent(in) *RelTol*)

Here is the call graph for this function:



6.38 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_jacobian.f90 File

Reference

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6.37.1.11 subroutine **Rosenbrock::ros_PrepMatrix** (*REAL*(kind=dp), intent(inout)
H, *INTEGER*, intent(in) *Direction*, *REAL*(kind=dp), intent(in) *gam*, *REAL*(kind=dp),
dimension(lu_nonzero), intent(in) *Jac0*, *REAL*(kind=dp), dimension(lu_nonzero),
intent(out) *Ghimj*, *INTEGER*, dimension(n), intent(out) *Pivot*, *LOGICAL*, intent(out)
Singular)

Here is the call graph for this function:



6.37.1.12 subroutine **Rosenbrock::ros_Solve** (*REAL*(kind=dp), dimension(lu_nonzero),
intent(in) *A*, *INTEGER*, dimension(n), intent(in) *Pivot*, *REAL*(kind=dp), dimension(n),
intent(inout) *b*)

6.38 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_jacobian.f90 File Reference

Data Types

- module [messy_mecca_kpp_Jacobian](#)

6.39 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_jacobiansp.f90 File Reference

Data Types

- module [messy_mecca_kpp_JacobianSP](#)

6.40 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_kpp_linearalgebra.f90 File Reference

Data Types

- module [messy_mecca_kpp_LinearAlgebra](#)

6.41 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_kpp_monitor.f90` File Reference

Data Types

- module [messy_mecca_kpp_Monitor](#)

6.42 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_kpp_parameters.f90` File Reference

Data Types

- module [messy_mecca_kpp_Parameters](#)

6.43 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_kpp_precision.f90` File Reference

Data Types

- module [messy_mecca_kpp_Precision](#)

6.44 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_kpp_rates.f90` File Reference

Data Types

- module [messy_mecca_kpp_Rates](#)

6.45 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_kpp_util.f90` File Reference

Data Types

- module [messy_mecca_kpp_Util](#)

6.46 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_mecca_tag_box.f90` File Reference

- module [messy_mecca_tag_box](#)

6.47 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_mecca_tag_parameters.inc File Reference

6.48 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_radjimt.f90 File Reference

Data Types

- module [messy_radjimt](#)

6.49 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_radjimt_box.f90 File Reference

Data Types

- module [messy_radjimt_box](#)

Functions/Subroutines

- subroutine [allocate_arrays](#)
- subroutine [photo_mtchem](#)

6.49.1 Function/Subroutine Documentation

6.49.1.1 subroutine `radjimt_init::allocate_arrays` ()

6.49.1.2 subroutine `radjimt_init::photo_mtchem ()` [`private`]

Here is the call graph for this function:



6.50 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_readj.f90` File Reference

Data Types

- module [messy_readj](#)

6.51 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_readj_box.f90` File Reference

Data Types

- module [messy_readj_box](#)

6.52 `/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_sappho.f90` File Reference

Data Types

- module [messy_sappho](#)

Functions/Subroutines

- subroutine [photo_ff](#)
- subroutine [photo_lab](#)
- subroutine [photo_mbl](#)

6.53

/home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy_sappho_box.f90

File Reference

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6.52.1 Function/Subroutine Documentation

6.52.1.1 subroutine [jvalues::photo_ff](#)() [private]

6.52.1.2 subroutine [jvalues::photo_lab](#)() [private]

6.52.1.3 subroutine [jvalues::photo_mbl](#)() [private]

6.53 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_sappho_box.f90 File Reference

Data Types

- module [messy_sappho_box](#)

6.54 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_semidep_box.f90 File Reference

Data Types

- module [messy_semidep_box](#)

Functions/Subroutines

- subroutine [emission_default](#)
- subroutine [emission_mbl](#)
- subroutine [emission_lab](#)
- subroutine [emission_mim2](#)
- subroutine [emission_isoo](#)
- subroutine [emission_ff](#)
- subroutine [emission_oomph](#)
- subroutine [drydep_ff](#)
- subroutine [drydep_mbl](#)
- subroutine [drydep_lab](#)
- subroutine [drydep_mim2](#)
- subroutine [drydep_default](#)

6.54.1 Function/Subroutine Documentation

6.54.1.1 subroutine [drydep::drydep_default](#)() [private]

6.54.1.2 subroutine [drydep::drydep_ff](#)()

- 6.54.1.3 subroutine drydep::drydep_lab () [private]
- 6.54.1.4 subroutine drydep::drydep_mbl () [private]
- 6.54.1.5 subroutine drydep::drydep_mim2 () [private]
- 6.54.1.6 subroutine emission::emission_default ()
- 6.54.1.7 subroutine emission::emission_ff () [private]
- 6.54.1.8 subroutine emission::emission_isoo () [private]
- 6.54.1.9 subroutine emission::emission_lab () [private]
- 6.54.1.10 subroutine emission::emission_mbl () [private]
- 6.54.1.11 subroutine emission::emission_mim2 () [private]
- 6.54.1.12 subroutine emission::emission_oomph () [private]

6.55 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/messy-_traject_box.f90 File Reference

Data Types

- module [messy_traject_box](#)

6.56 /home/sander/e2/messy_d2.50s_rs/messy/mbm/caaba/radjimt.nml File Reference

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