



Supplement of

Sensitivity of cirrus and contrail radiative effect on cloud microphysical and environmental parameters

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1 Example libRadtran input-file

Below, we provide two exemplary libRadtran input files that were used to simulate the upward and downward solar or thermal-infrared irradiances. The two codes differ in the parameters: source, wavelength, and albedo. The code is annotated and the comments are marked with "`#- -#`".

```
#--SOALR--##
#--Radiative transfer equation solver--#
rte_solver disort
#--Number of streams--#
number_of_streams 16
#--Location of the extraterrestrial spectrum--#
source solar ../data/solar_flux/kurudz_1.0nm.dat
#--Solar zenith angle--#
sza 70.0
#--Simulated wavelength range [nm]--#
wavelength 300.0 3500.0
#--location of selected atmosphere file--#
atmosphere_file ../data/atmmod/afglus.dat
#--molecular absorption and resolution--#
mol_abs_param reptran coarse
#--Surface albedo--#
albedo 0.66
#--Specification of ice cloud (file)--#
ic_file 1D ../lib_input/ice_cloud_13.0alt_0.1000iwc_50.0mum.dat
ic_properties yang2013 interpolate
ic_habit_yang2013 column_8elements moderate
#--Specification of liquid cloud (file)--#
wc_file 1D ../lib_input/wc_cloud.dat
#--scaling liquid water cloud optical thickness--##
wc_modify tau550 set 20.0
#--selection of output altitudes in km--#
zout 0 120
#--user defined output wavelength sza altitude direct_down diffuse_down diffuse_up irradiance
↔ --##
output_user lambda sza zout edir edn eup
#--integration over all wavelength--#
output_process integrate
```

```

#--THERMAL-INFRARED--##
#--Radiative transfer equation solver--#
rte_solver disort
#--Number of streams--#
number_of_streams 16
#--Location of the extraterrestrial spectrum--#
source thermal
#--Simulated wavelength range [nm]--#
wavelength 3500.0 75000.0
#--location of selected atmosphere file--#
atmosphere_file ../data/atmmod/afglus.dat
#--molecular absorption and resolution--#
mol_abs_param reptran coarse
#--Surface albedo--#
albedo 0
#--Specification of ice cloud (file)--#
ic_file 1D ../lib_input/ice_cloud_13.0alt_0.1000iwc_50.0mum.dat
ic_properties yang2013 interpolate
ic_habit_yang2013 column_8elements moderate
#--Specification of liquid cloud (file)--#
wc_file 1D ../lib_input/wc_cloud.dat
#--scaling liquid water cloud optical thickness--##
wc_modify tau550 set 20.0
#--selection of output altitudes in km--#
zout 0 120
#--user defined output wavelength sza altitude direct_down diffuse_down diffuse_up irradiance
↔ --##
output_user lambda sza zout edir edn eup
#--integration over all wavelength--#
output_process integrate

```