Supplement of Atmos. Chem. Phys., 21, 10825–10849, 2021
https://doi.org/10.5194/acp-21-10825-2021-supplement

Atmospheric Chemistry and Physics
Open Access
EGU

Supplement of

Measured and modelled air quality trends in Italy over the period 2003–2010

Ilaria D'Elia et al.

Correspondence to: Ilaria D'Elia (ilaria.delia@enea.it)

SUPPLEMENTARY MATERIAL

Supplementary S1

Figure S1 – Map of the Italian administrative Regions.

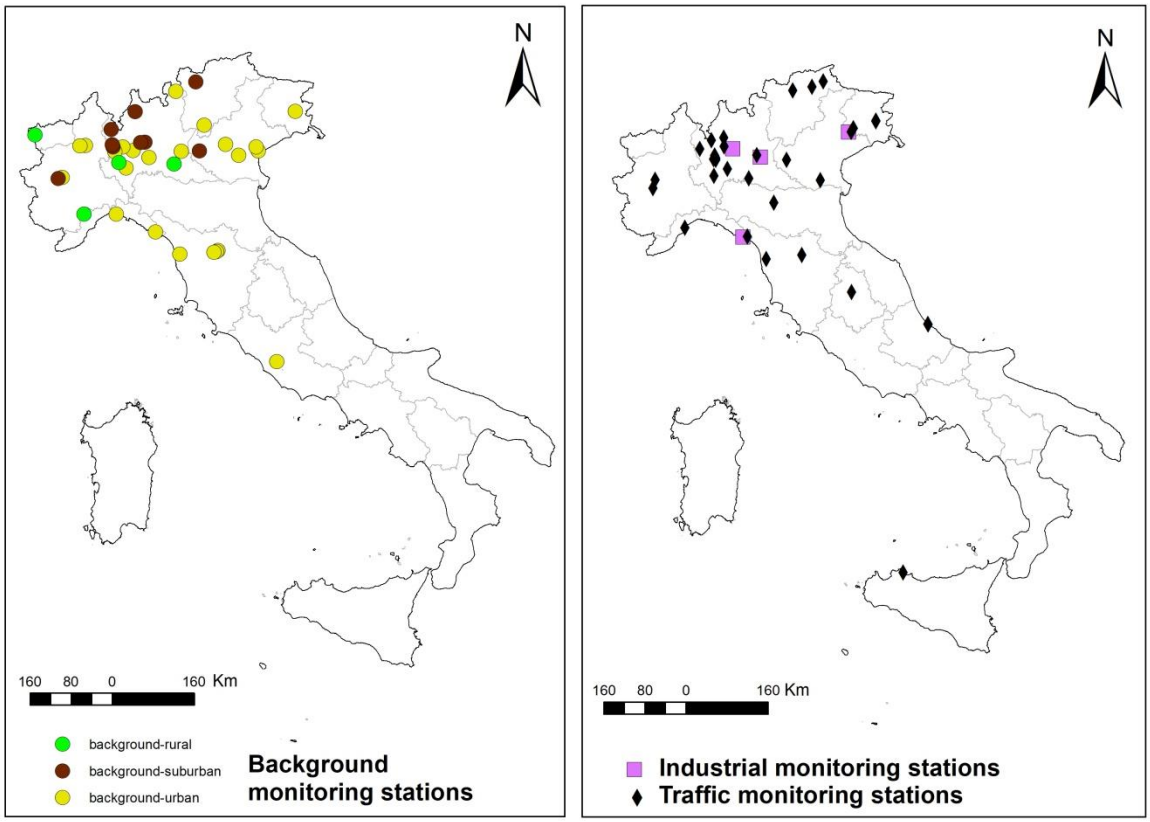

Figure S2 – Map of the Italian sites monitoring NO_2 concentrations considered for the study.

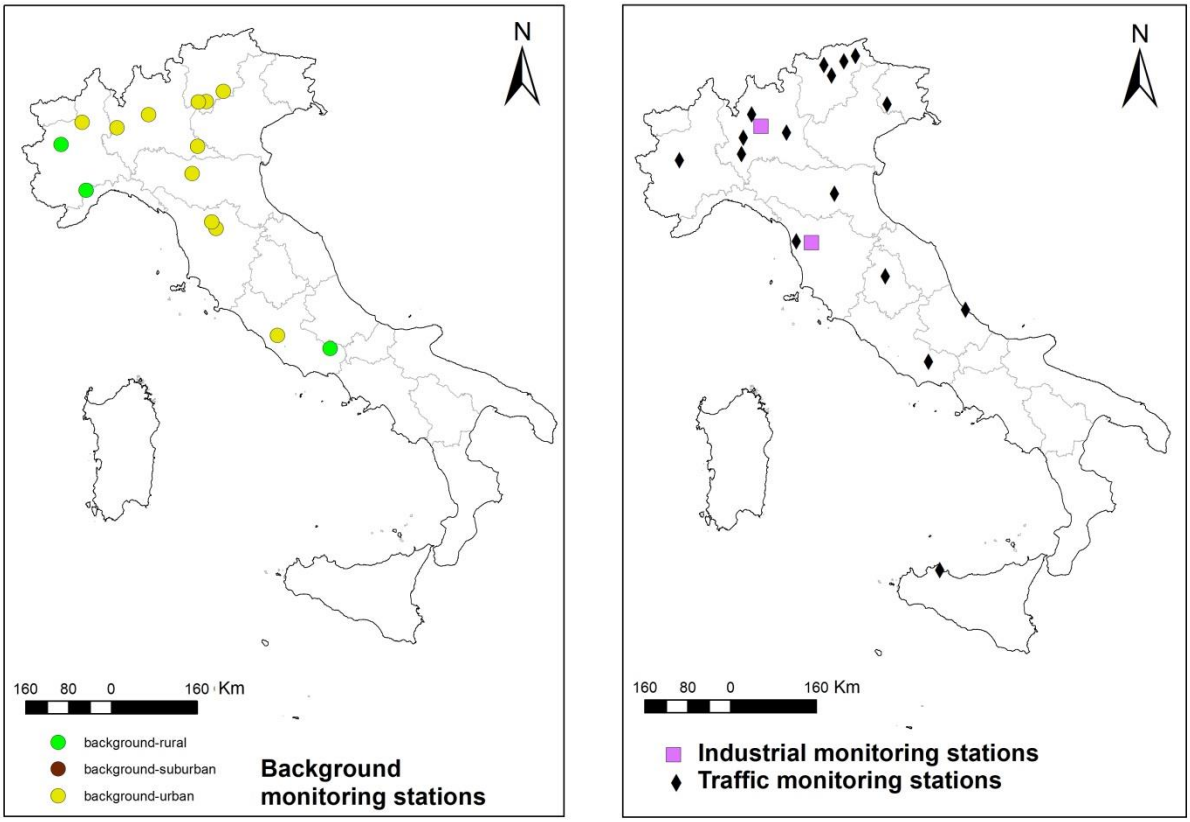

Figure S3 – Map of the Italian sites monitoring PM10 concentrations considered for the study.

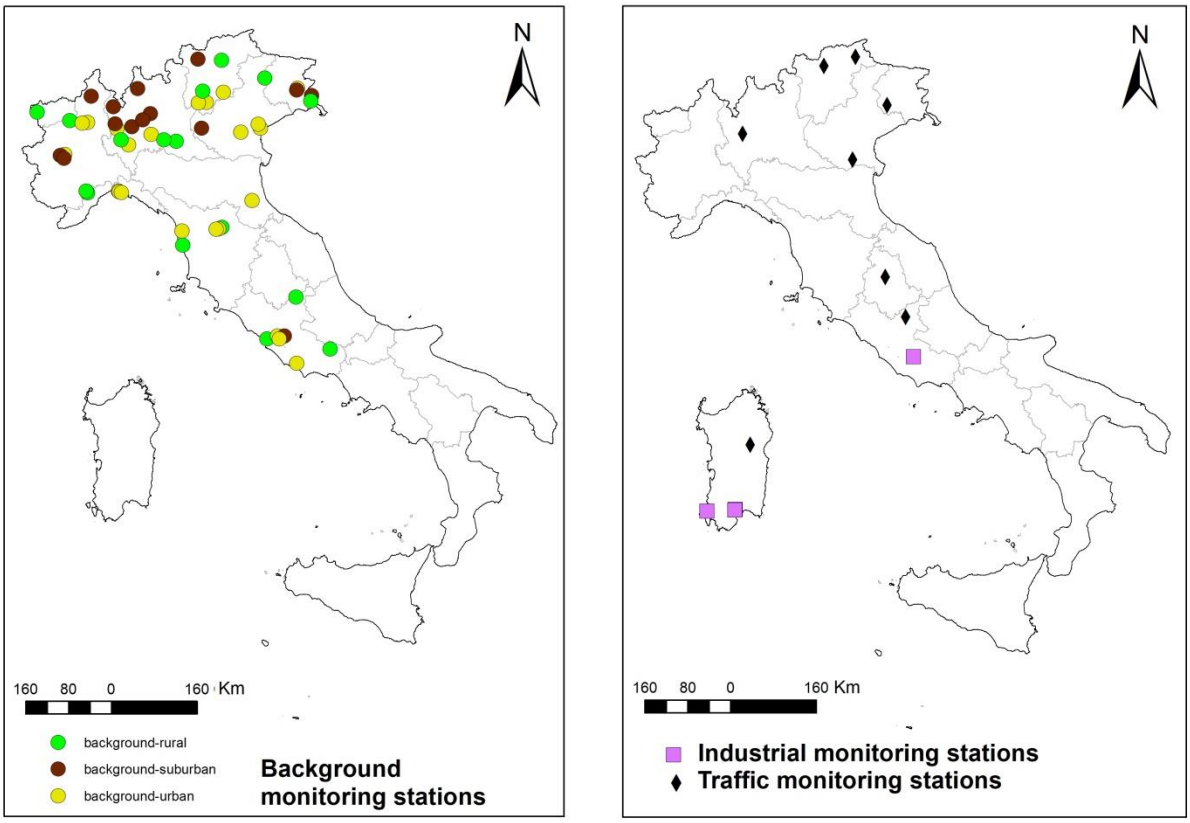

Figure S4 – Map of the Italian sites monitoring O_3 concentrations considered for the study.

Supplementary S2 – Emissions Time Series

Table S1 – SNAP Classification

SNAP - macrosector	
SNAP code	**Description**
01	Combustion in energy and transformation industries
02	Non-industrial combustion plants
03	Combustion in manufacturing industry
04	Production processes
05	Extraction and distribution of fossil fuels and geothermal energy
06	Solvent use and other product use
07	Road transport
08	Other mobile sources and machinery
09	Waste treatment and disposal
10	Agriculture

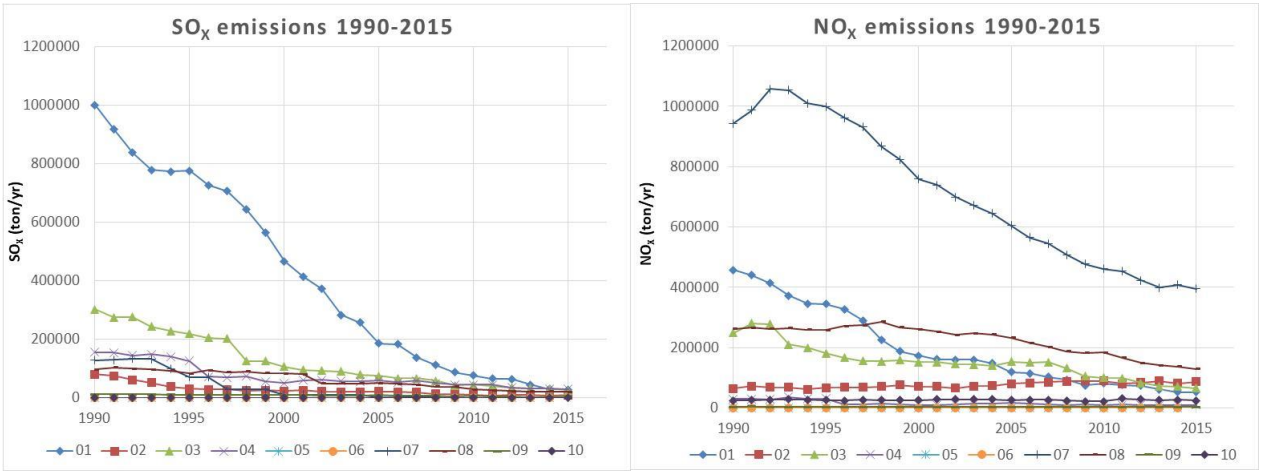

Figure S5 – Emission time series for SO_X (on the left) and NO_X (on the right) by SNAP sector for the period 1990-2015 elaborated for the national official submission 2017 used for the simulations of the MINNI model.

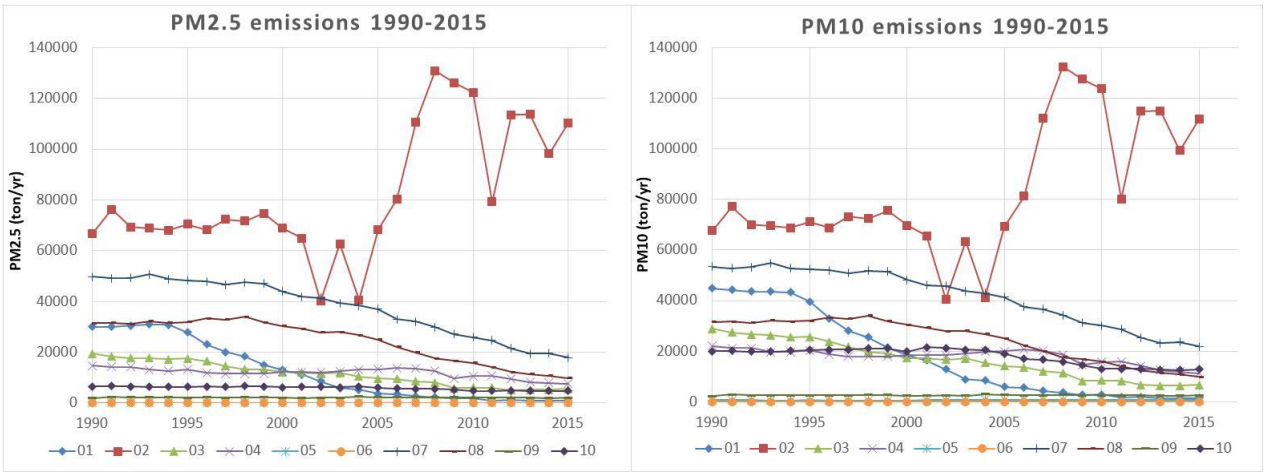

Figure S6 – Emission time series for PM2.5 (on the left) and PM10 (on the right) by SNAP sector for the period 1990-2015 elaborated for the national official submission 2017 used for the simulations of the MINNI model.

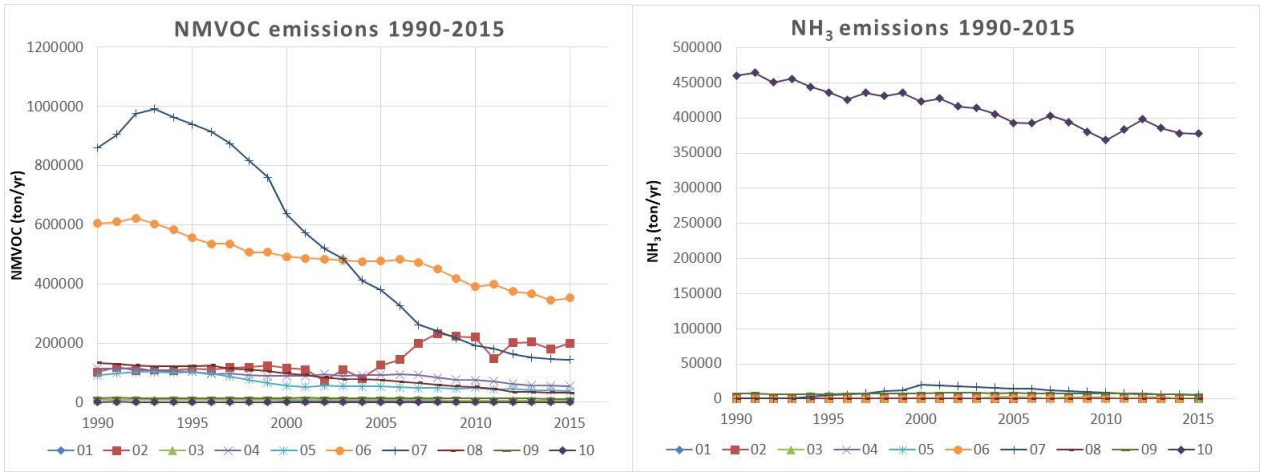

Figure S7 – Emission time series for NMVOC (on the left) and NH_3 (on the right) by SNAP sector for the period 1990-2015 elaborated for the national official submission 2017 used for the simulations of the MINNI model.

Supplementary S3 – Meteorological anomalies (2003-2010)

S3.1 Temperature

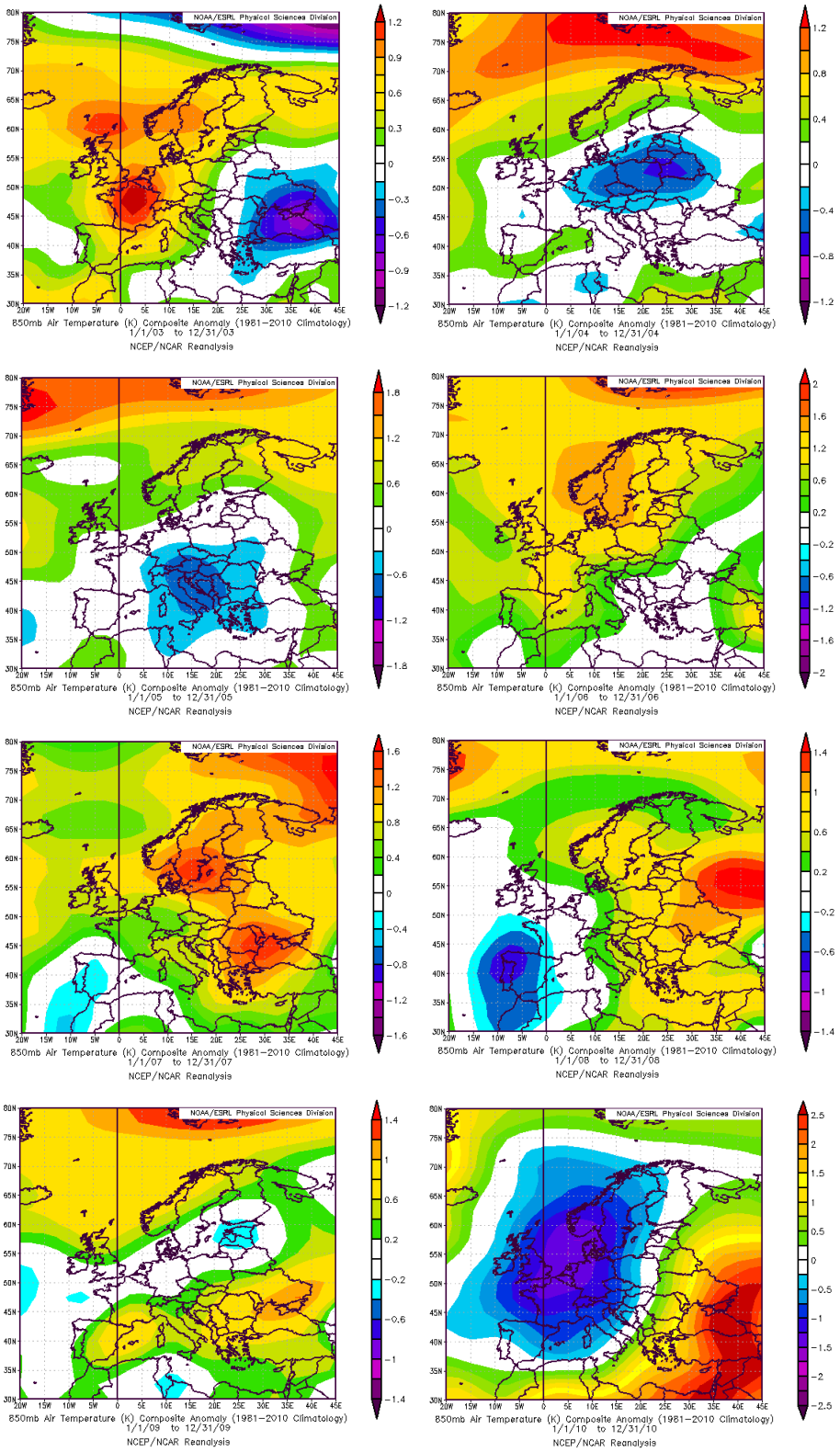

Figure S8 – Annual Temperature (850-hPa) anomalies elaborated from the NCEP/NCAR Reanalysis. Image provided by the NOAA/ESRL Physical Sciences Laboratory, Boulder Colorado from their Web site at http://psl.noaa.gov/.

S3.2 500-hPa geopotential height

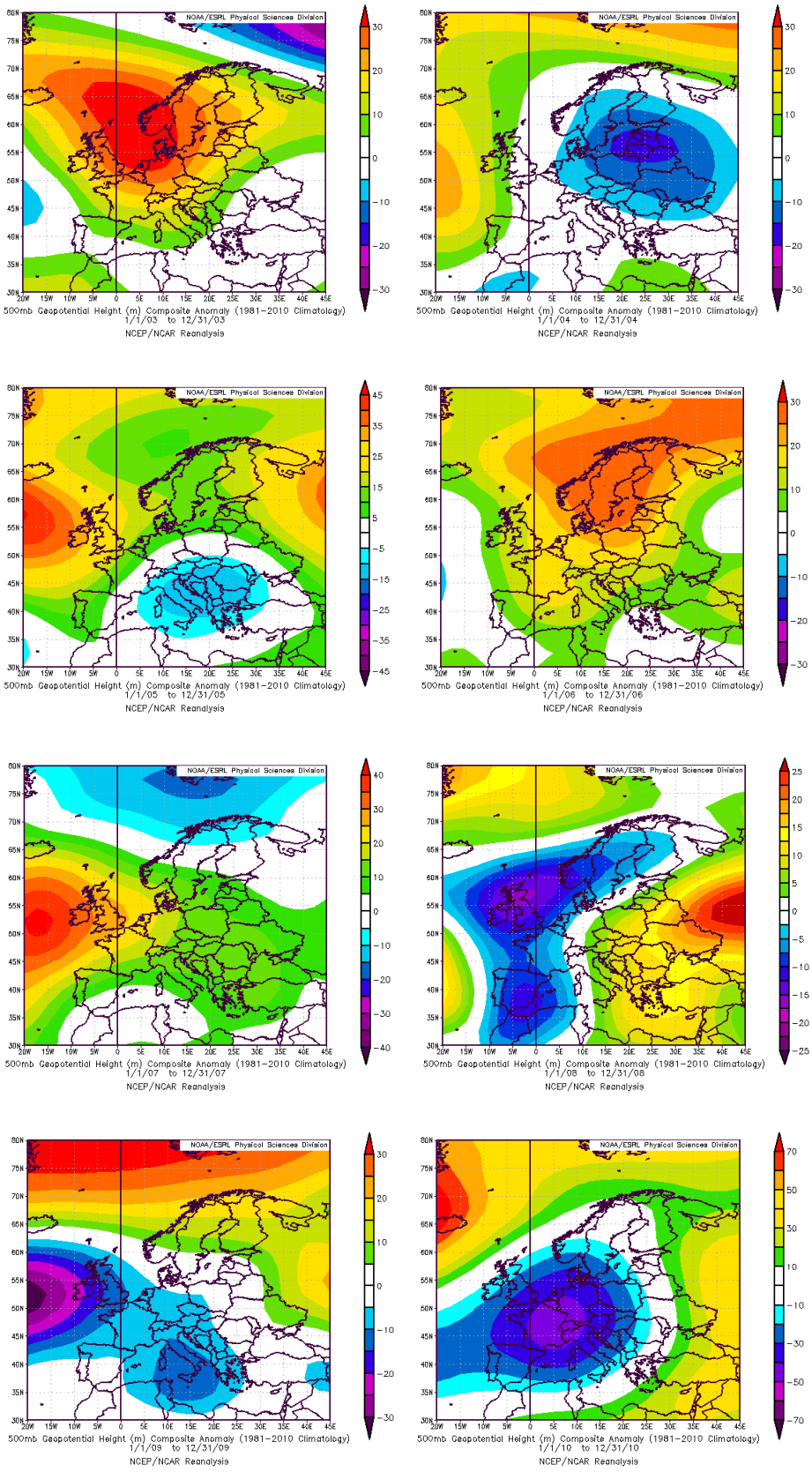

Figure S9 – Annual 500-hPa geopotential height anomalies elaborated from the NCEP/NCAR Reanalysis. Image provided by the NOAA/ESRL Physical Sciences Laboratory, Boulder Colorado from their Web site at http://psl.noaa.gov/.

S3.3 Precipitation rate

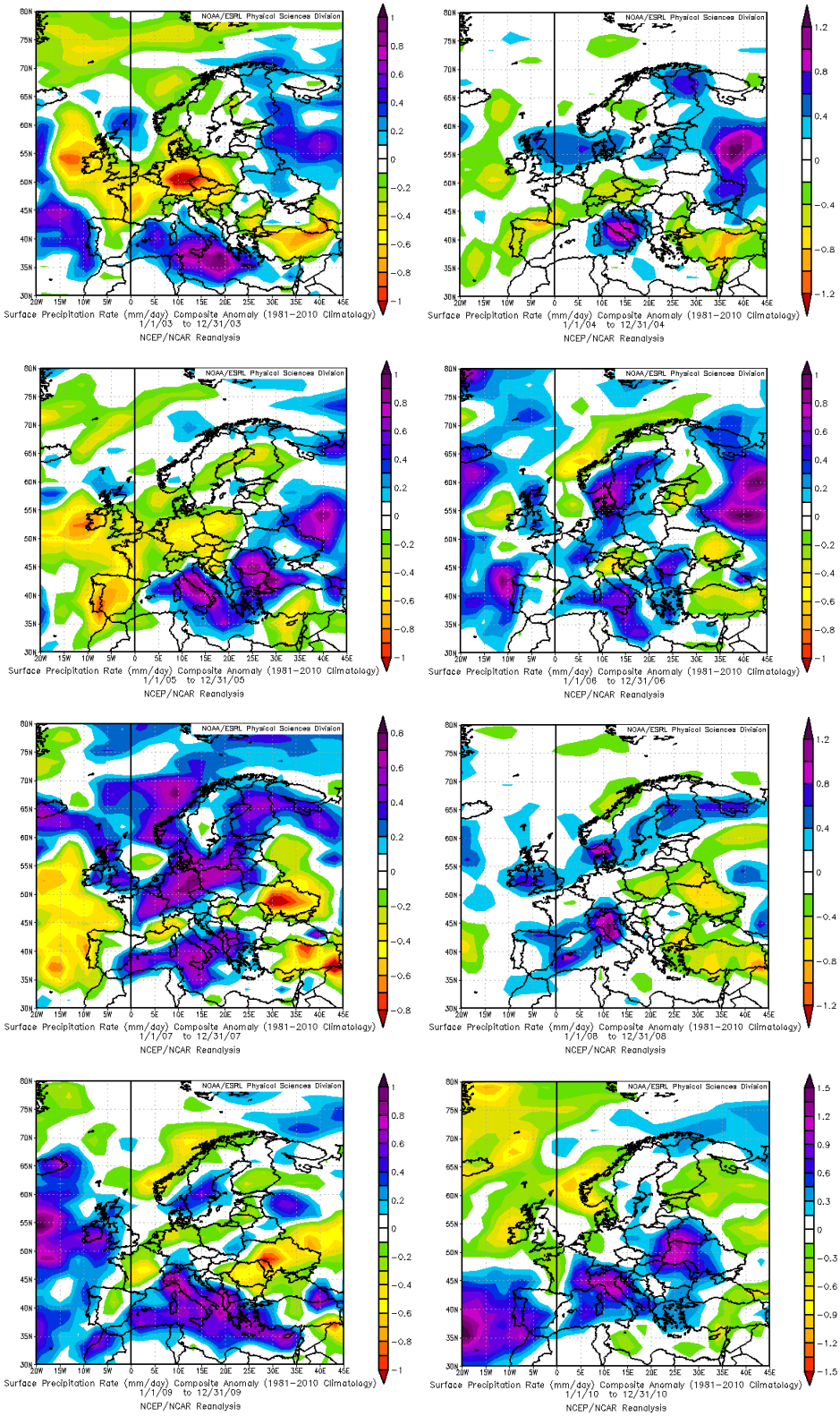

Figure S10 – Annual Precipitation rate anomalies elaborated from the NCEP/NCAR Reanalysis. Image provided by the NOAA/ESRL Physical Sciences Laboratory, Boulder Colorado from their Web site at http://psl.noaa.gov/.

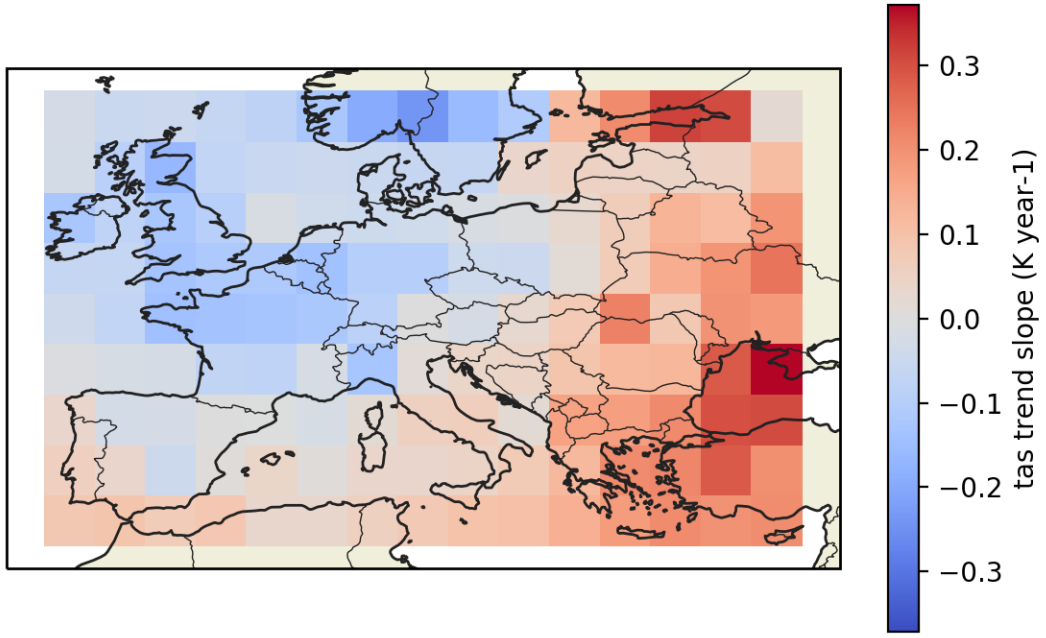

Figure S11 – Near surface temperature trend (K yr^{-1}) for the period 2003-2010 computed from Copernicus Climate Data Service.

Supplementary S4 – Model simulation validation

S4.1 Definition of model evaluation statistics

The performance statistical indexes used to compare modelled and observed values are calculated according to the following definitions

MB (Mean bias)

$$\mathrm{MB} = \frac{1}{n}\sum_{i=1}^{n} M_i - O_i$$

RMSE (Root mean squared error)

$$RMSE = \left(\frac{\sum_{i=1}^{n}(M_i - O_i)^2}{n}\right)^{1/2}$$

corr (correlation coefficient)

$$corr = \frac{1}{(n-1)}\sum_{i=1}^{n}\left(\frac{M_i - \overline{M}}{\sigma_M}\right)\left(\frac{O_i - \overline{O}}{\sigma_O}\right)$$

where the letters *O* and *M* stand for observations and model results, respectively, the subscript *i* indicates the time step, the overbars indicate the time average over *n* time intervals, while the symbol σ indicates the standard deviation.

S4.2 Comparison of model performances with Colette et al. (2011)

Table S2 – Model performances at all valid Italian monitoring stations computed over 8 years (2003-2010), as discussed in this paper. Model performances at European suburban stations computed over 10 years (1998–2007) for the six chemistry-transport models, involved in Colette et al. (2011).

		Daily NO_2			**Daily PM10**			**Daily O_3**			**MDA8 O_3**		
		RMSE	*MB*	*corr*	*RMSE*	*MB*	*corr*	*RMSE*	*MB*	*corr*	*RMSE*	*MB*	*corr*
This Paper	BKG, rural	10.8	-4.8	0.578	21.1	-12.8	0.453	23.2	2.2	0.757	24.4	-1.9	0.817
	BKG. suburban	15.8	-4.2	0.689				21.7	9.3	0.814	25.0	5.1	0.847
	BKG. urban	17.3	-9.1	0.662	21.6	-8.8	0.567	23.4	12.3	0.822	25.1	9.7	0.853
	IND	18.7	-7.9	0.606	17.3	-3.9	0.630	25.7	18.6	0.683	25.0	14.8	0.712
	TRA	28.6	-22.4	0.591	22.5	-12.2	0.585	25.6	17.8	0.761	25.1	13.4	0.801
Colette et al. (2011)	BOLCHEM	12.6	−1.46	0.658	13.9	−4.48	0.370	17.6	−4.31	0.782			
	CHIMERE	16.6	−13.4	0.633	15.5	−11.3	0.576	23.5	18.5	0.797			
	EMEP	17.4	−14.1	0.574	17.9	−14.4	0.542	21.0	13.3	0.740			
	EURAD	16.0	−6.46	0.644	15.1	−3.75	0.524	25.2	15.0	0.659			
	OSLOCTM2	18.0	−14.7	0.544				23.5	17.1	0.750			
	MOZART	21.3	−18.1	0.350				22.0	4.76	0.627			

Supplementary S5 – Trend results

S5.1 NO_2

The following table shows the results for NO_2 slopes for all the stations with a significant trend ($p<0.05$) per Region, type and zone for the entire Italian territory. The rows in red show different behaviour between observed and modelled data (increasing trend in observations and decreasing one in simulations).

Table S3 – Results of observed and modelled trends for NO_2 concentrations per stations with $p<0.05$.

airbase_ code	Region	Type	Zone	range_obs (µg $m^{-3}yr^{-1}$)	range_sim (µg $m^{-3}yr^{-1}$)	range%_obs (% yr^{-1})	range%_sim (% yr^{-1})
IT0499A	TRENTINO	background	suburban	0.56 (0.40 - 0.72)	-0.17 (-0.24 - -0.10)	4.04 (2.82 - 5.52)	-4.01 (-5.29 - -2.64)
IT0507A	TRENTINO	traffic	urban	-1.00 (-1.30 - -0.73)	-1.21 (-1.42 - -1.01)	-2.81 (-3.56 - -2.15)	-6.27 (-7.05 - -5.57)
IT0508A	TRENTINO	traffic	urban	-1.05 (-1.45 - -0.70)	-0.44 (-0.52 - -0.38)	-4.10 (-5.39 - -2.89)	-5.19 (-5.86 - -4.64)
IT0554A	PIEMONTE	background	urban	-1.17 (-1.89 - -0.44)	-2.09 (-2.63 - -1.64)	-2.13 (-3.25 - -0.82)	-3.98 (-4.79 - -3.20)
IT0591A	TRENTINO	background	urban	-0.84 (-1.16 - -0.53)	-0.75 (-0.95 - -0.60)	-2.40 (-3.12 - -1.59)	-3.43 (-4.16 - -2.84)
IT0702A	EMILIA ROMAGNA	traffic	urban	-2.71 (-3.20 - -2.23)	-0.40 (-0.64 - -0.20)	-4.64 (-5.20 - -3.93)	-1.29 (-2.03 - -0.67)
IT0705A	LOMBARDIA	traffic	urban	-0.92 (-1.59 - -0.47)	-1.14 (-1.66 - -0.69)	-1.55 (-2.56 - -0.81)	-1.79 (-2.52 - -1.12)
IT0770A	LOMBARDIA	background	urban	-1.22 (-1.99 - -0.40)	-0.91 (-1.29 - -0.56)	-2.04 (-3.08 - -0.71)	-1.68 (-2.35 - -1.07)
IT0771A	LOMBARDIA	traffic	urban	-1.86 (-2.51 - -1.09)	-0.91 (-1.18 - -0.69)	-2.51 (-3.30 - -1.52)	-2.74 (-3.42 - -2.16)
IT0775A	LOMBARDIA	background	suburban	-0.85 (-1.32 - -0.39)	-0.11 (-0.22 - -0.03)	-2.80 (-4.12 - -1.37)	-1.32 (-2.44 - -0.38)
IT0777A	LOMBARDIA	traffic	urban	-1.61 (-2.30 - -0.79)	-0.77 (-1.08 - -0.53)	-2.61 (-3.47 - -1.35)	-2.31 (-3.12 - -1.64)
IT0839A	LOMBARDIA	background	urban	-0.54 (-0.90 - -0.17)	-0.38 (-0.62 - -0.22)	-1.50 (-2.37 - -0.48)	-1.27 (-2.00 - -0.74)
IT0854A	LIGURIA	background	urban	-1.37 (-2.17 - -0.52)	-1.64 (-1.87 - -1.40)	-2.83 (-4.11 - -1.17)	-4.31 (-4.79 - -3.78)
IT0861A	TOSCANA	traffic	urban	4.26 (3.29 - 5.22)	-0.61 (-0.97 - -0.32)	6.57 (4.82 - 8.82)	-2.23 (-3.32 - -1.22)
IT0912A	LOMBARDIA	background	urban	1.19 (0.67 - 1.75)	-0.88 (-1.09 - -0.68)	3.27 (1.77 - 5.09)	-2.38 (-2.88 - -1.90)
IT0963A	VENETO	background	urban	-1.17 (-1.64 - -0.61)	-1.24 (-1.46 - -0.99)	-2.99 (-4.11 - -1.67)	-2.98 (-3.38 - -2.43)
IT0966A	FRIULI VENEZIA GIULIA	background	urban	-0.54 (-0.91 - -0.09)	-1.27 (-1.47 - -1.08)	-1.93 (-3.05 - -0.32)	-4.76 (-5.32 - -4.12)
IT0977A	VALLE D'AOSTA	background	rural	-0.68 (-0.96 - -0.39)	-0.07 (-0.12 - -0.04)	-10.04 (-12.29 - -6.68)	-2.33 (-3.56 - -1.18)
IT1005A	LIGURIA	traffic	urban	-1.01 (-1.84 - -0.11)	-0.97 (-1.11 - -0.84)	-2.07 (-3.57 - -0.23)	-4.96 (-5.42 - -4.39)
IT1010A	LOMBARDIA	background	urban	-1.65 (-2.55 - -0.87)	-0.75 (-1.03 - -0.42)	-3.26 (-4.61 - -1.83)	-1.83 (-2.41 - -1.05)
IT1098A	FRIULI VENEZIA GIULIA	traffic	suburban	-1.06 (-1.83 - -0.20)	-0.81 (-0.96 - -0.68)	-2.49 (-3.86 - -0.49)	-3.76 (-4.30 - -3.27)
IT1104A	LOMBARDIA	traffic	urban	-4.92 (-6.20 - -3.77)	-1.00 (-1.23 - -0.76)	-6.95 (-8.13 - -5.69)	-2.64 (-3.20 - -2.07)
IT1120A	PIEMONTE	background	suburban	-0.91 (-1.41 - -0.51)	-1.98 (-2.31 - -1.63)	-2.07 (-3.02 - -1.23)	-4.73 (-5.26 - -4.02)
IT1125A	PIEMONTE	traffic	urban	-1.06 (-1.54 - -0.48)	-1.57 (-1.93 - -1.22)	-2.50 (-3.46 - -1.20)	-4.36 (-5.16 - -3.51)
IT1143A	LIGURIA	traffic	urban	-0.76 (-1.13 - -0.34)	-1.48 (-1.67 - -1.32)	-2.14 (-3.09 - -1.01)	-5.35 (-5.76 - -4.88)
IT1153A	LOMBARDIA	traffic	urban	-0.99 (-1.35 - -0.68)	-0.54 (-0.72 - -0.44)	-2.48 (-3.27 - -1.75)	-1.99 (-2.55 - -1.65)
IT1174A	LOMBARDIA	background	rural	-1.01 (-1.34 - -0.68)	-0.50 (-0.73 - -0.30)	-2.91 (-3.74 - -2.04)	-1.70 (-2.41 - -1.04)
IT1176A	LAZIO	background	urban	-0.93 (-1.47 - -0.40)	-1.55 (-1.90 - -1.20)	-1.71 (-2.63 - -0.76)	-2.95 (-3.47 - -2.38)
IT1177A	VENETO	background	urban	-1.37 (-1.66 - -1.06)	-0.67 (-0.96 - -0.39)	-3.13 (-3.69 - -2.52)	-2.11 (-2.92 - -1.28)
IT1203A	LOMBARDIA	background	suburban	-0.95 (-1.32 - -0.59)	-1.02 (-1.39 - -0.70)	-2.66 (-3.56 - -1.72)	-2.51 (-3.29 - -1.77)
IT1207A	SICILIA	traffic	urban	-2.85 (-3.60 - -1.73)	-1.48 (-1.75 - -1.22)	-4.66 (-5.60 - -3.08)	-6.57 (-7.47 - -5.65)
IT1246A	PIEMONTE	background	urban	-0.83 (-1.18 - -0.50)	-0.59 (-0.78 - -0.46)	-2.66 (-3.57 - -1.68)	-4.15 (-5.21 - -3.39)
IT1247A	PIEMONTE	background	urban	-0.55 (-1.03 - -0.12)	-0.52 (-0.68 - -0.37)	-1.61 (-2.79 - -0.37)	-3.63 (-4.50 - -2.65)
IT1286A	LOMBARDIA	traffic	urban	-1.44 (-2.25 - -0.71)	-0.48 (-0.79 - -0.26)	-2.88 (-4.14 - -1.52)	-1.49 (-2.34 - -0.83)
IT1335A	TRENTINO	traffic	urban	-0.52 (-0.88 - -0.20)	-0.78 (-0.95 - -0.60)	-1.41 (-2.27 - -0.56)	-5.38 (-6.25 - -4.41)
IT1336A	VENETO	traffic	urban	-3.27 (-3.87 - -2.74)	-0.59 (-0.81 - -0.37)	-5.28 (-5.95 - -4.68)	-1.91 (-2.54 - -1.25)
IT1409A	TOSCANA	traffic	urban	-0.81 (-1.15 - -0.47)	-0.57 (-0.68 - -0.45)	-1.82 (-2.49 - -1.10)	-2.59 (-3.04 - -2.13)
IT1422A	ABRUZZO	traffic	urban	-2.01 (-3.24 - -0.43)	-1.26 (-1.43 - -1.10)	-2.51 (-3.72 - -0.58)	-6.08 (-6.69 - -5.57)
IT1453A	VENETO	background	urban	-1.36 (-1.81 - -0.84)	-0.89 (-1.11 - -0.71)	-2.78 (-3.45 - -1.82)	-2.45 (-2.99 - -2.01)
IT1459A	LOMBARDIA	background	suburban	-0.95 (-1.46 - -0.37)	-1.32 (-1.70 - -0.97)	-2.31 (-3.35 - -0.96)	-3.16 (-3.92 - -2.43)
IT1463A	LOMBARDIA	background	suburban	0.57 (0.10 - 1.16)	-0.33 (-0.72 - -0.01)	2.01 (0.34 - 4.42)	-0.79 (-1.69 - -0.02)

IT1544A	LIGURIA	industrial	urban	0.96 (0.55 - 1.54)	-1.24 (-1.42 - -1.06)	2.77 (1.50 - 4.86)	-4.72 (-5.21 - -4.20)

S5.2 PM10

The following table shows the results for PM10 slopes for all the stations with a significant trend ($p<0.05$) per Region, type and zone for the entire Italian territory.

Table S4 – Results of observed and modelled trends for PM10 concentrations per stations with $p<0.05$.

airbase_ code	Region	Type	Zone	range_obs ($\mu g\ m^{-3} yr^{-1}$)	range_sim ($\mu g\ m^{-3} yr^{-1}$)	range%_obs (% yr^{-1})	range%_sim (% yr^{-1})
IT0559A	LOMBARDIA	industrial	suburban	-2.59 (-3.14 - -2.17)	-0.81 (-1.37 - -0.20)	-5.08 (-5.88 - -4.43)	-2.11 (-3.38 - -0.55)
IT0705A	LOMBARDIA	traffic	urban	-1.85 (-2.30 - -1.44)	-1.26 (-2.04 - -0.48)	-3.42 (-4.16 - -2.71)	-2.36 (-3.58 - -0.94)
IT0707A	LOMBARDIA	background	urban	-2.25 (-2.80 - -1.68)	-0.98 (-1.53 - -0.42)	-4.53 (-5.38 - -3.53)	-2.61 (-3.92 - -1.19)
IT0709A	LOMBARDIA	background	urban	-1.99 (-2.83 - -1.09)	-0.94 (-1.41 - -0.37)	-3.69 (-4.97 - -2.18)	-2.75 (-3.87 - -1.16)
IT0776A	LOMBARDIA	traffic	urban	-1.86 (-2.23 - -1.44)	-0.79 (-1.09 - -0.47)	-4.56 (-5.23 - -3.71)	-3.26 (-4.28 - -2.08)
IT0940A	EMILIA ROMAGNA	background	urban	-0.72 (-1.21 - -0.05)	-1.19 (-1.64 - -0.67)	-1.99 (-3.24 - -0.14)	-3.36 (-4.45 - -2.05)
IT0953A	LAZIO	background	urban	-0.60 (-0.98 - -0.11)	-0.55 (-0.86 - -0.09)	-1.98 (-3.04 - -0.37)	-1.90 (-2.85 - -0.31)
IT1079A	SICILIA	traffic	urban	-0.88 (-1.26 - -0.45)	-0.93 (-1.17 - -0.66)	-2.22 (-3.06 - -1.17)	-3.91 (-4.68 - -2.96)
IT1104A	LOMBARDIA	traffic	urban	-1.56 (-2.11 - -1.00)	-1.31 (-1.78 - -0.84)	-3.24 (-4.22 - -2.14)	-3.55 (-4.59 - -2.41)
IT1159A	EMILIA ROMAGNA	traffic	urban	-1.21 (-1.70 - -0.82)	-0.65 (-1.18 - -0.16)	-2.74 (-3.63 - -1.94)	-2.08 (-3.48 - -0.55)
IT1247A	PIEMONTE	background	urban	-1.51 (-1.98 - -1.02)	-0.68 (-1.09 - -0.21)	-4.15 (-5.09 - -3.00)	-3.48 (-5.20 - -1.20)

S5.3 O_3

The following table shows the results for O_3-MDA8 (Apr/Sep) slopes for all the stations with a significant trend ($p<0.05$) per Region, type and zone for the entire Italian territory. The rows in red show different behaviour between observed and modelled data (increasing trend in observations and decreasing one in simulations).

Table S5 – Results of observed and modelled trends for O_3-MDA8 (Apr/Sep) concentrations per stations with $p<0.05$.

airbase_ code	Region	Type	Zone	range_obs (μg $m^{-3}yr^{-1}$)	range_sim (μg $m^{-3}yr^{-1}$)	range%_obs (% yr^{-1})	range%_sim (% yr^{-1})
IT0499A	TRENTINO	background	suburban	1.10 (0.21 - 2.10)	-0.67 (-1.01 - -0.56)	1.33 (0.24 - 2.68)	-0.79 (-1.18 - -0.66)
IT0505A	TRENTINO	background	rural	-1.45 (-1.91 - -0.98)	-0.30 (-0.71 - -0.17)	-1.13 (-1.47 - -0.78)	-0.33 (-0.77 - -0.19)
IT0508A	TRENTINO	traffic	urban	1.54 (1.06 - 2.01)	-0.56 (-0.84 - -0.38)	1.98 (1.34 - 2.63)	-0.63 (-0.94 - -0.43)
IT0858A	LIGURIA	background	urban	2.07 (1.05 - 3.59)	-0.49 (-0.97 - -0.03)	2.12 (1.03 - 3.92)	-0.40 (-0.78 - -0.02)
IT0867A	LAZIO	traffic	urban	3.67 (2.20 - 5.88)	-0.79 (-1.23 - -0.50)	4.82 (2.58 - 9.30)	-0.75 (-1.14 - -0.48)
IT0883A	TOSCANA	background	rural	-1.08 (-1.70 - -0.46)	-0.79 (-1.22 - -0.40)	-0.95 (-1.46 - -0.42)	-0.69 (-1.04 - -0.35)
IT0888A	LAZIO	industrial	suburban	-3.27 (-3.98 - -2.36)	-1.06 (-1.70 - -0.52)	-3.26 (-3.87 - -2.41)	-0.94 (-1.48 - -0.47)
IT0948A	TOSCANA	background	urban	1.19 (0.27 - 2.05)	-0.70 (-1.22 - -0.24)	1.18 (0.26 - 2.14)	-0.60 (-1.02 - -0.21)
IT0953A	LAZIO	background	urban	-3.39 (-4.54 - -2.44)	-1.40 (-2.34 - -0.73)	-3.00 (-3.87 - -2.24)	-1.23 (-1.99 - -0.66)
IT0988A	VALLE D'AOSTA	background	rural	-4.64 (-6.23 - -2.40)	-0.62 (-1.17 - -0.19)	-3.80 (-4.82 - -2.17)	-0.65 (-1.21 - -0.20)
IT0989A	LAZIO	background	rural	-6.92 (-7.64 - -6.45)	-0.58 (-0.71 - -0.47)	-4.31 (-4.69 - -4.11)	-0.60 (-0.74 - -0.49)
IT1017A	LOMBARDIA	background	suburban	-2.51 (-3.41 - -1.58)	-1.74 (-2.84 - -0.93)	-2.05 (-2.74 - -1.34)	-1.42 (-2.25 - -0.78)
IT1048A	EMILIA ROMAGNA	background	urban	-2.60 (-3.57 - -1.55)	-1.43 (-2.10 - -0.85)	-2.28 (-3.05 - -1.40)	-1.20 (-1.72 - -0.73)
IT1110A	TOSCANA	background	urban	-0.86 (-1.36 - -0.21)	-1.15 (-1.65 - -0.68)	-0.86 (-1.34 - -0.22)	-0.94 (-1.32 - -0.57)
IT1174A	LOMBARDIA	background	rural	-3.52 (-5.04 - -2.32)	-0.66 (-1.63 - -0.09)	-2.74 (-3.74 - -1.87)	-0.54 (-1.31 - -0.08)
IT1182A	UMBRIA	traffic	urban	1.42 (0.68 - 2.23)	-0.79 (-1.23 - -0.36)	1.53 (0.71 - 2.51)	-0.73 (-1.11 - -0.34)
IT1191A	TRENTINO	background	rural	-1.62 (-2.89 - -0.20)	-0.70 (-1.18 - -0.30)	-1.24 (-2.17 - -0.16)	-0.68 (-1.12 - -0.30)
IT1203A	LOMBARDIA	background	suburban	-4.81 (-5.80 - -4.14)	-0.94 (-1.90 - -0.16)	-3.33 (-3.90 - -2.91)	-0.78 (-1.52 - -0.14)
IT1216A	FRIULI VENEZIA GIULIA	background	suburban	2.40 (1.71 - 3.72)	-0.89 (-1.65 - -0.29)	2.94 (2.01 - 4.86)	-0.76 (-1.38 - -0.25)
IT1236A	TOSCANA	background	rural	-5.29 (-5.98 - -4.32)	-0.79 (-1.41 - -0.24)	-4.13 (-4.62 - -3.50)	-0.65 (-1.14 - -0.20)
IT1246A	PIEMONTE	background	urban	-2.03 (-3.16 - -0.89)	-0.67 (-1.27 - -0.21)	-1.63 (-2.46 - -0.74)	-0.60 (-1.13 - -0.19)
IT1247A	PIEMONTE	background	urban	-4.38 (-5.38 - -3.40)	-0.94 (-1.50 - -0.50)	-3.36 (-3.95 - -2.68)	-0.87 (-1.36 - -0.47)
IT1279A	SARDEGNA	industrial	suburban	-2.45 (-3.66 - -1.31)	-0.84 (-1.32 - -0.43)	-2.32 (-3.34 - -1.29)	-0.73 (-1.14 - -0.38)
IT1397A	SARDEGNA	industrial	suburban	-1.80 (-2.99 - -0.47)	-0.87 (-1.31 - -0.52)	-1.81 (-2.90 - -0.49)	-0.77 (-1.13 - -0.46)
IT1427A	SARDEGNA	traffic	urban	-1.51 (-2.72 - -0.66)	-0.38 (-0.50 - -0.35)	-1.60 (-2.76 - -0.74)	-0.40 (-0.51 - -0.36)
IT1474A	FRIULI VENEZIA GIULIA	background	rural	2.61 (0.78 - 4.60)	-0.79 (-1.49 - -0.19)	2.55 (0.71 - 4.93)	-0.67 (-1.24 - -0.17)
IT1478A	FRIULI VENEZIA GIULIA	background	rural	-3.83 (-5.57 - -2.17)	-0.56 (-1.21 - -0.13)	-3.17 (-4.39 - -1.93)	-0.55 (-1.16 - -0.13)
IT1515A	PIEMONTE	background	suburban	-3.23 (-4.45 - -1.82)	-0.66 (-0.81 - -0.58)	-2.61 (-3.50 - -1.54)	-0.68 (-0.83 - -0.60)
IT1519A	PIEMONTE	background	rural	-2.84 (-3.34 - -2.41)	-1.14 (-1.59 - -0.86)	-2.17 (-2.53 - -1.89)	-1.00 (-1.39 - -0.76)
IT1576A	SARDEGNA	industrial	suburban	2.29 (0.89 - 3.37)	-1.04 (-1.46 - -0.57)	2.96 (1.08 - 4.80)	-0.86 (-1.19 - -0.48)