

Evolution of NO₂ levels in Spain from 1996 to 2012

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Supplementary information

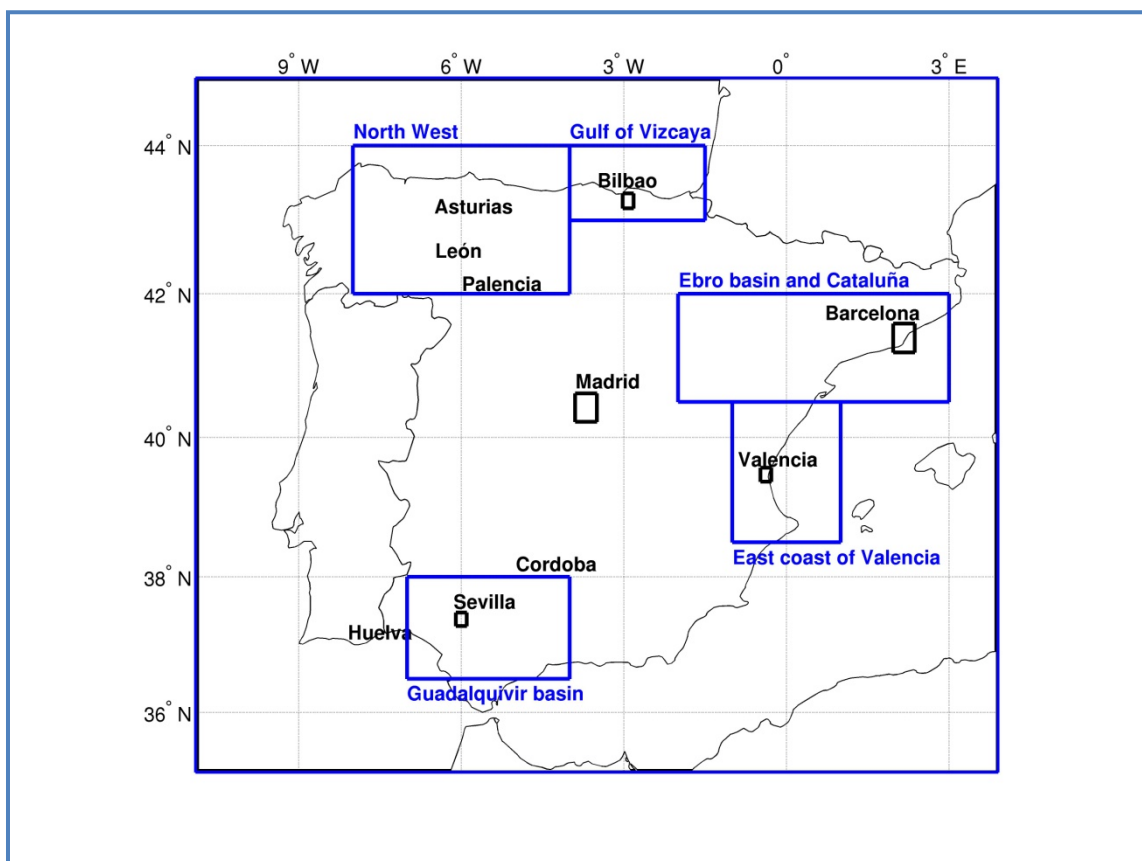


Figure S1. Map of the Iberian Peninsula including the location of the regions (Blue), the studied cities and the rest of places cited in the main text. Figure created by the authors using Matlab R213a

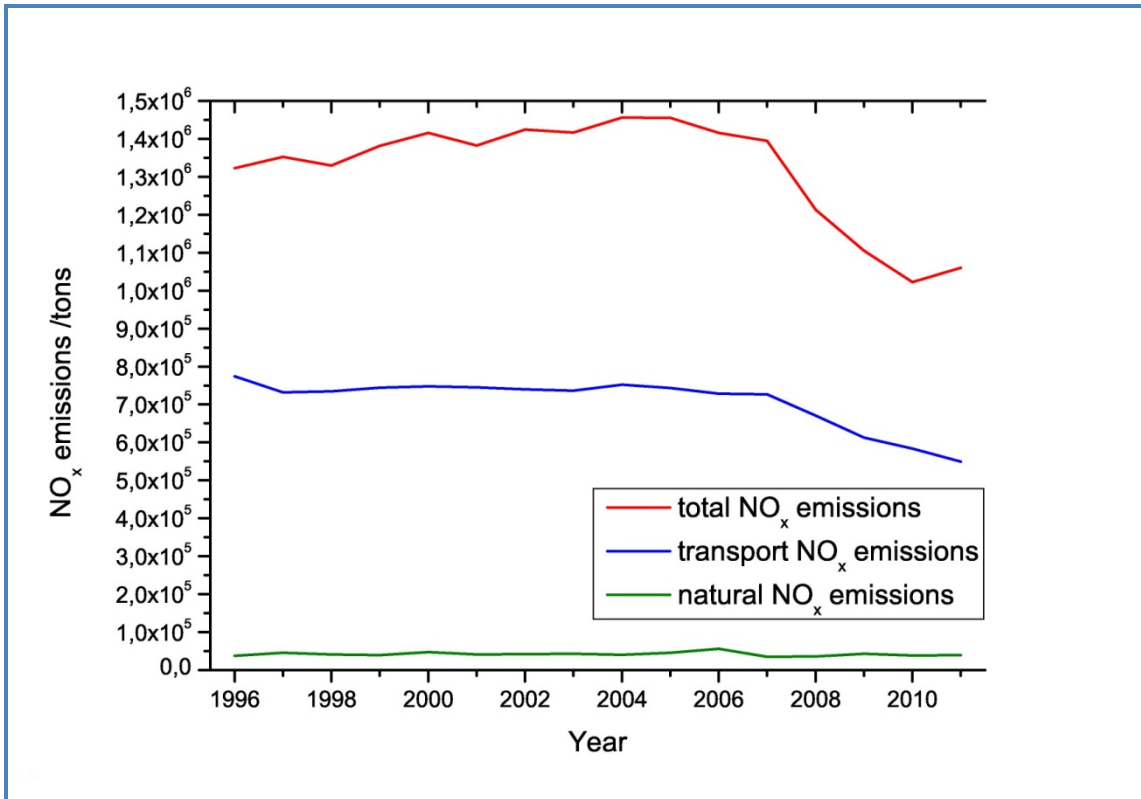


Figure S2. Spanish national emissions (MAGRAMA)¹ of NO_x.

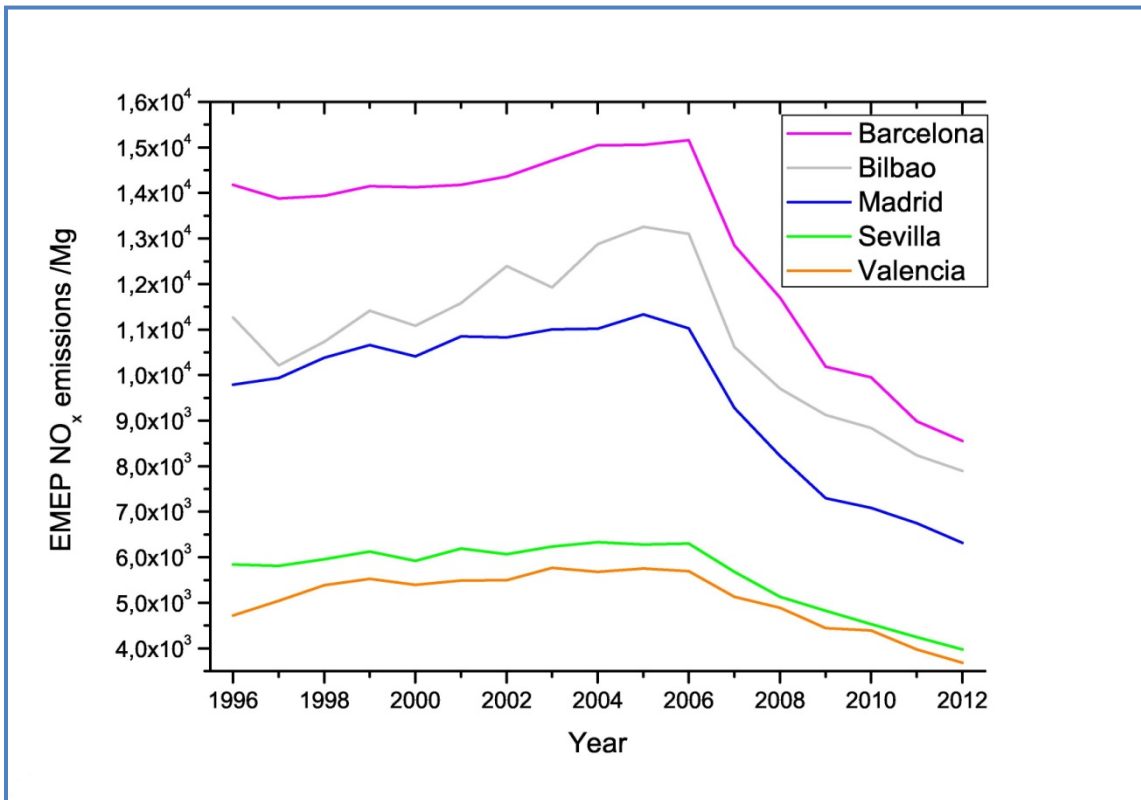


Figure S3. Emissions of NO_x as used in EMEP models for the five cities (CEIP)².

Geographic zone	Latitude	Longitude
East coast of Valencia	38.5 → 40.5	-1 → 1
Ebro basin and Cataluna	40.5 → 42	-2 → 3
Madrid	40.22 → 40.62	-3.9 → -3.5
Sevilla	37.28 → 37.48	-6.1 → -5.9
Barcelona	41.19 → 41.59	1.97 → 2.37
Bilbao	43.16 → 43.36	-3.02 → -2.82
North-West	42 → 44	-8 → -4
Gulf of Vizcaya	43 → 44	-4 → -1.5
Gualdalquivir basin	36.5 → 38	-7 → -4
Valencia	39.37 → 39.57	-0.48 → -0.28
Spain	36 → 44	-7 → 0
	42 → 44	-9.5 → -7
	39 → 43	0 → 3.5

Table S1. Coordinates of geographic zones included in table 1.

City	1996-2012		1996-2008		2008-2012	
	Slope / $\mu\text{g m}^{-3} \text{ yr}^{-1}$	Error	Slope / $\mu\text{g m}^{-3} \text{ yr}^{-1}$	Error	Slope / $\mu\text{g m}^{-3} \text{ yr}^{-1}$	Error
Barcelona	-0.63*	0.13	-0.50	0.19	-0.89*	0.63
Bilbao	-1.09*	0.23	-1.44	0.31	-0.79*	0.47
Madrid	-1.41	0.21	-0.71	0.14	-4.31	0.94
Sevilla	-1.54**	0.18	-1.71**	0.33	-1.49	0.29
Valencia	-3.18***	0.23	-3.07***	0.42	-3.89	0.52
Average****	-1.48	0.13	-1.25	0.19	-2.89	0.39

Table S2. Slopes from the regression analysis for the different time periods.

* No data available for 2012.

** No data available for 1996.

*** No data available for 1996 and 1997.

**** Average of the five cities

Supplementary information references

- 1 MAGRAMA. Inventario Nacional de Emisiones de Contaminantes a la Atmósfera. Ministerio de Agricultura, Alimentación y Medio Ambiente del Gobierno de España (<http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/>). (2014, Date of access: 6/06/2014).
- 2 CEIP. Centre on Emission Inventories and Projections. (<http://www.ceip.at/>). (2014, Date of access: 8/07/2014).