Table S1: Results of weekly cycle analysis on $PM_{2.5}$ and $PM_{10\text{-}2.5}$: black dots indicate a significant weekend effect magnitude (WEM) or weekly cycle (WCY) or 7-days periodicity (MTM) at a 95 % confidence level. Results shown are from test application on the complete series, winter and summer by grouping data in 7-day weeks (this latter applies only to WEM and WCY).

Station	Complete Series			Winter		Summer	
	WEM	WCY	MTM	WEM	WCY	WEM	WCY
$PM_{2.5}$							
Alessandria							
Ballirana		●		●			
Bergamo	●	●				●	●
Besenzone	●	●				●	●
Biella		●					
Bologna G.M.							
Bologna P.S.F.		●				●	●
Borgofranco		●				●	
Brescia	●	●				●	●
Calusco d'Adda	●	●				●	●
Casirate d'Adda	●	●				●	●
Castano Primo		●					●
Chivasso	●	●				●	●
Cornale							
Faenza		●					
Ferrara		●					
Forli'		●					●
Gavello		●					●
Guastalla			●				●
Jolanda di Savoia		●					
Langhirano		●					●
Leiní	●	●					
Lodi	●	●				●	●
Mantova	●	●				●	●
Merate	●	●				●	●
Milano	●	●				●	●
Modena	●	●					●
Mortara	●	●					
Novara							
Padova		●					
Parma		●	●				
Piacenza							
Ponti sul Mincio	●	●					
Reggio Emilia	●	●				●	
Rimini	●	●	●				
San Clemente							
Saronno	●	●				●	●
Schivenoglia	●	●					
Seriate	●	●				●	●
S. Pietro C.							
Torino C.	●						
Torino L.	●	●					●
Vercelli		●					
Vinchio							
$PM_{10\text{-}2.5}$							
Borgofranco	●	●	●			●	●
Brescia	●	●	●	●	●	●	●
Calusco d'Adda	●	●		●	●	●	●
Casirate d'Adda	●	●	●	●		●	●
Lodi	●	●				●	●
Mantova	●	●			●		
Merate	●	●	●	●	●	●	●
Milano	●	●	●	●	●	●	●
Parma	●	●	●		●	●	
Ponti sul Mincio	●	●		●	●	●	●
Reggio Emilia	●	●		●	●	●	●
Rimini	●	●	●	●	●	●	●
Saronno	●	●		●	●		●
Schivenoglia	●	●					●
Torino L.	●	●		●	●	●	●

Complete series
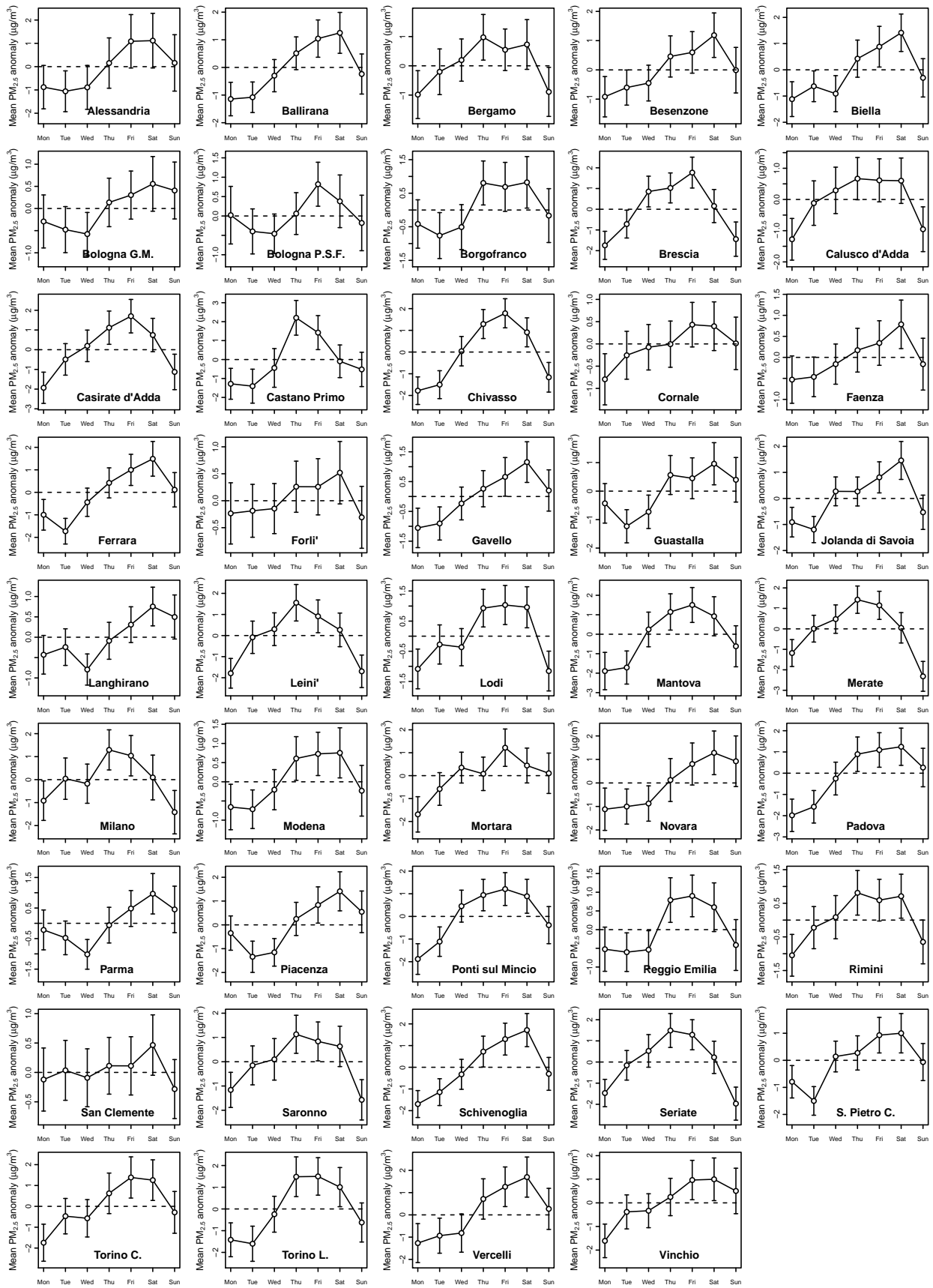
Figure S1: 7 day week mean PM$_{2.5}$ anomaly for all sites listed in table 1 (vertical bars indicate standard deviation).

Complete series
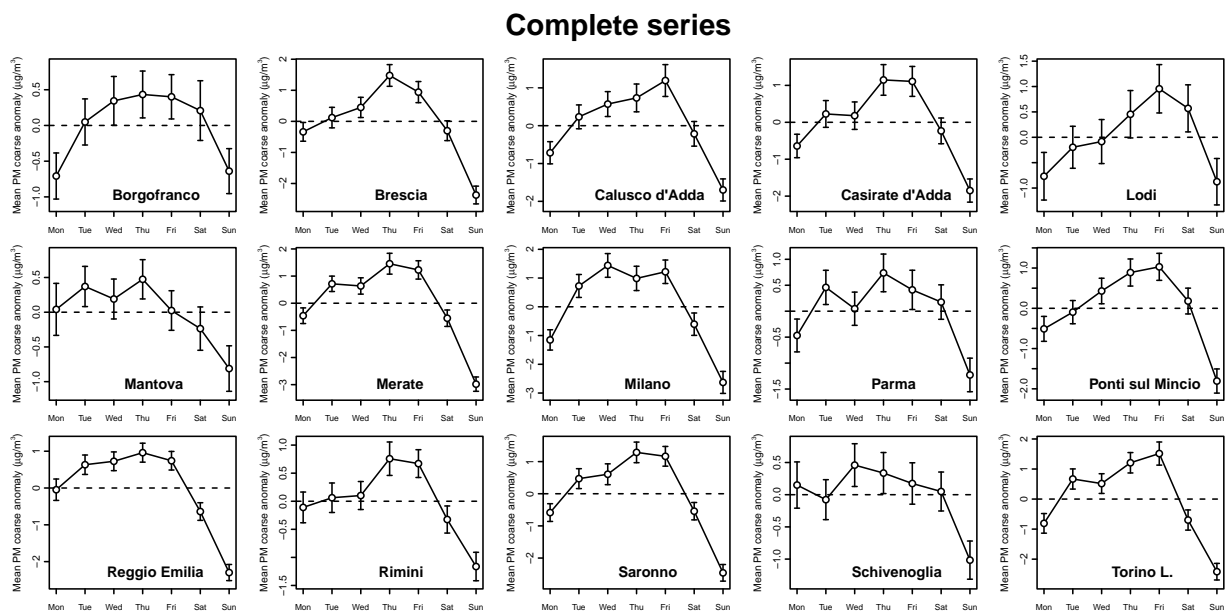
Figure S2: 7 day week mean PM$_{10\text{-}2.5}$ anomaly for all sites listed in boldface in table 1 (vertical bars indicate standard deviation).
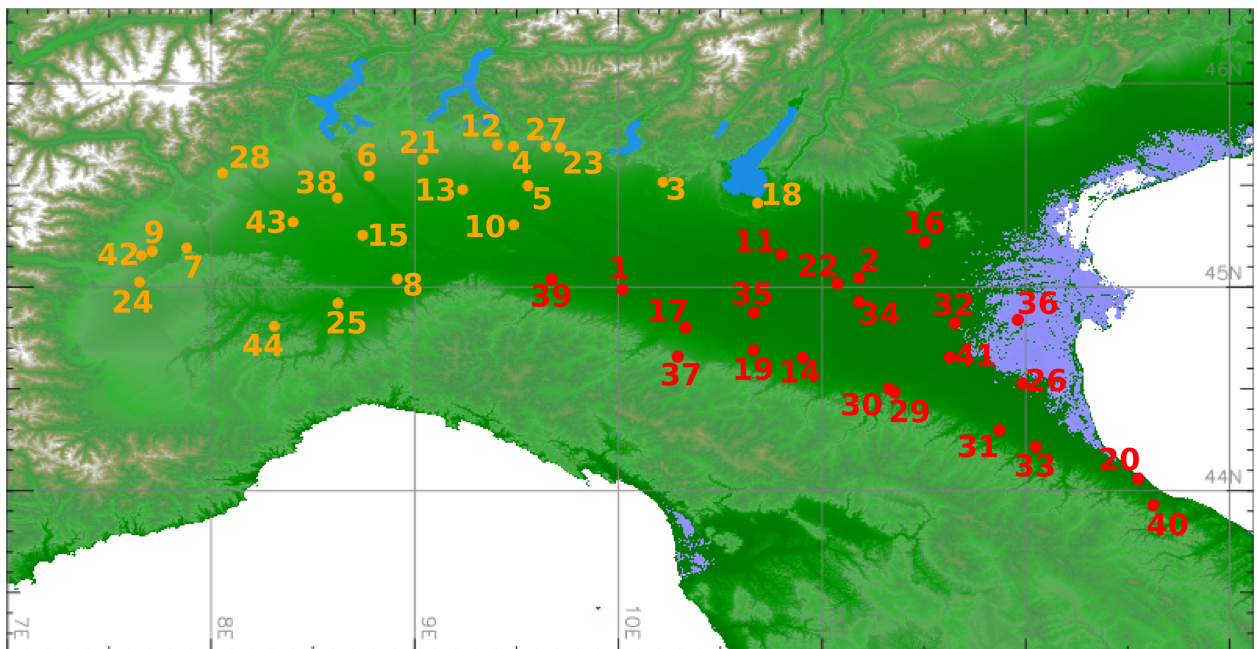
Figure S3: Map result for cluster analysis using partition around medoids algorithm: sites within the same cluster have the same colour. Results of cluster analysis using a divisive algorithm are in Figure 1. Key for ID number is found in Table 1. More details are in sections 2.3 and 3.3.
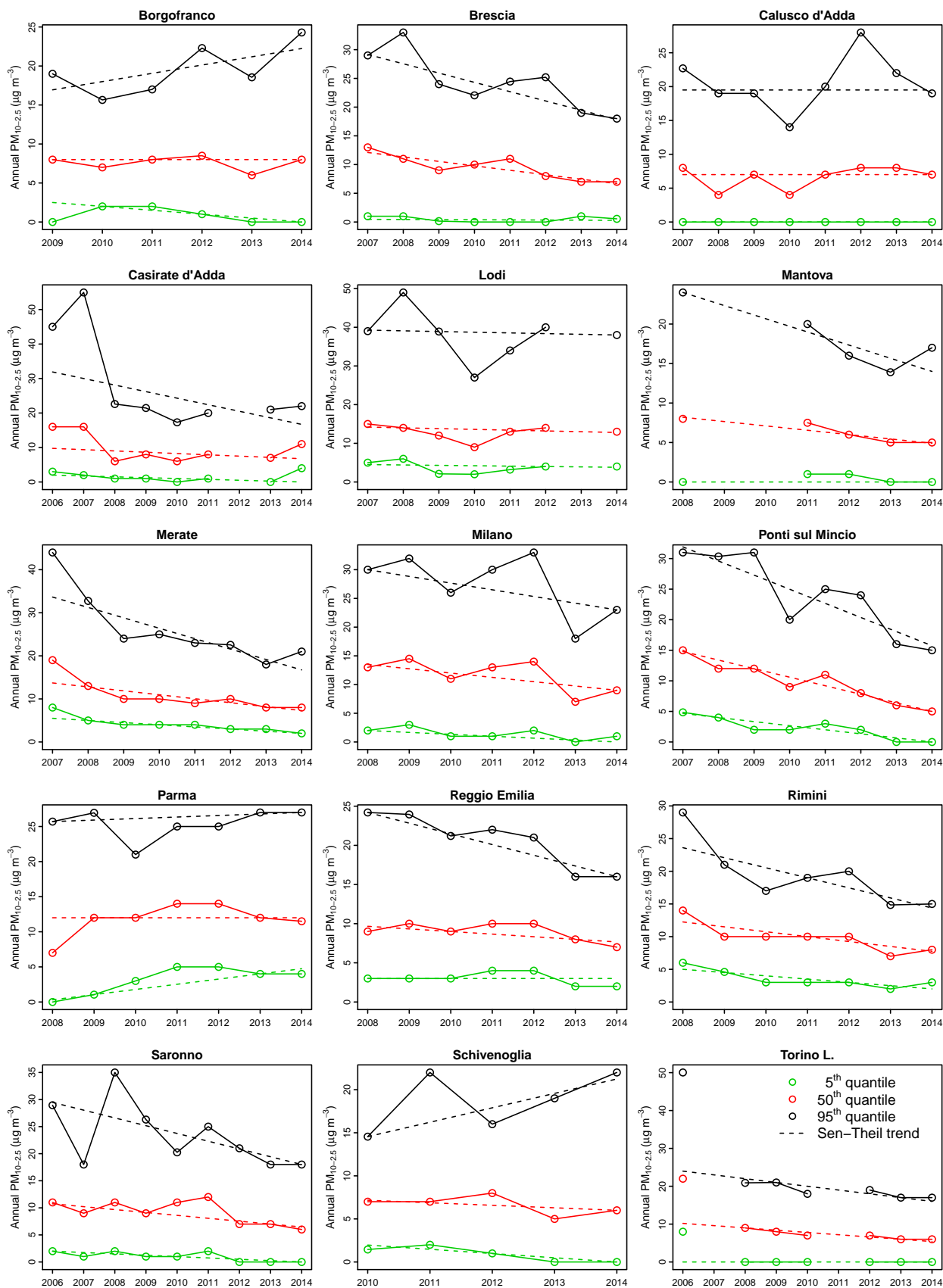
Figure S4: Annual quantile and Sen-Theil trend for daily $PM_{10\text{-}2.5}$. Slope estimate and Significance are found in table 3.
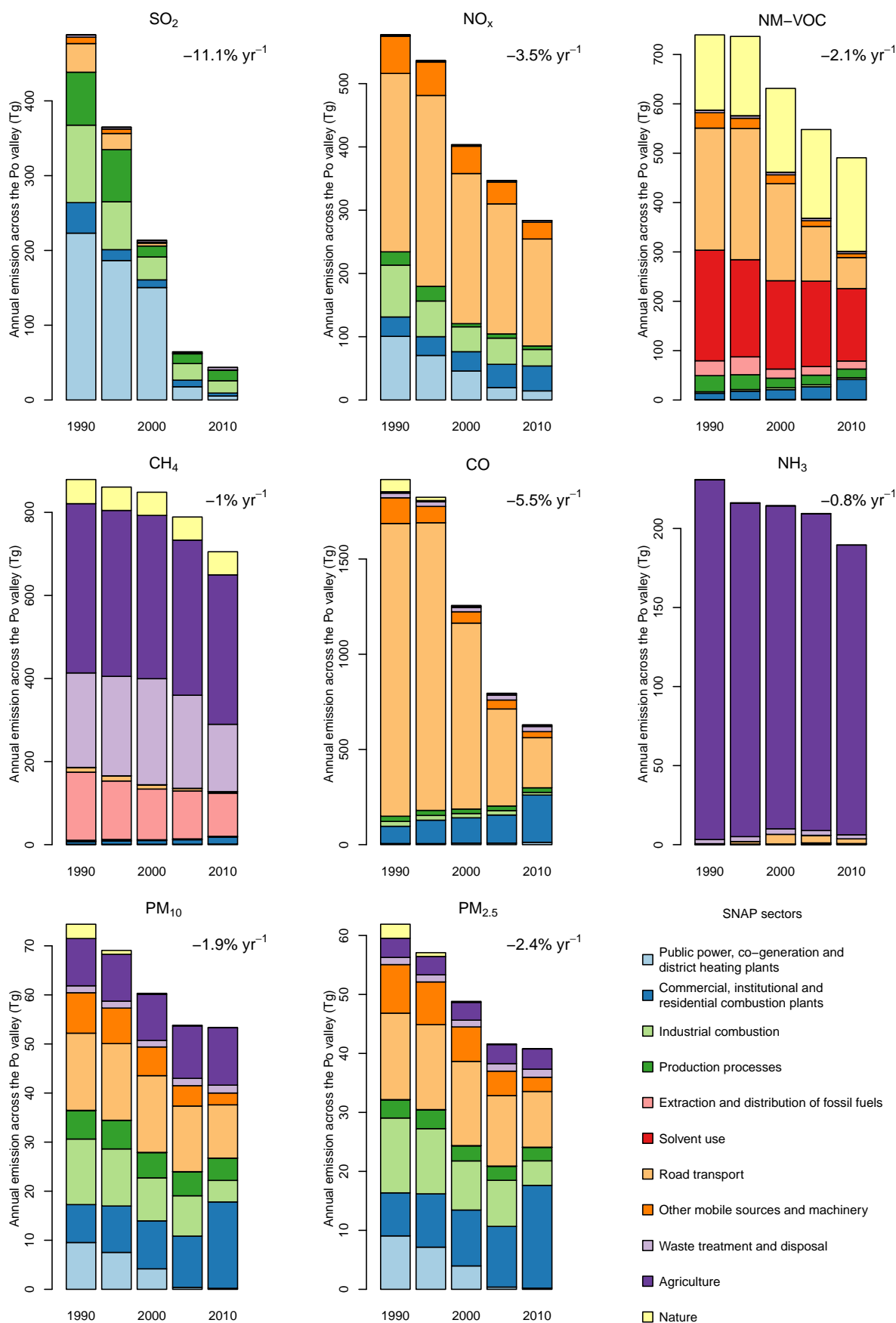
Figure S5: Emissions of selected compounds from all provinces on the Po valley, segregated by SNAP factor, over the period 1990–2010.
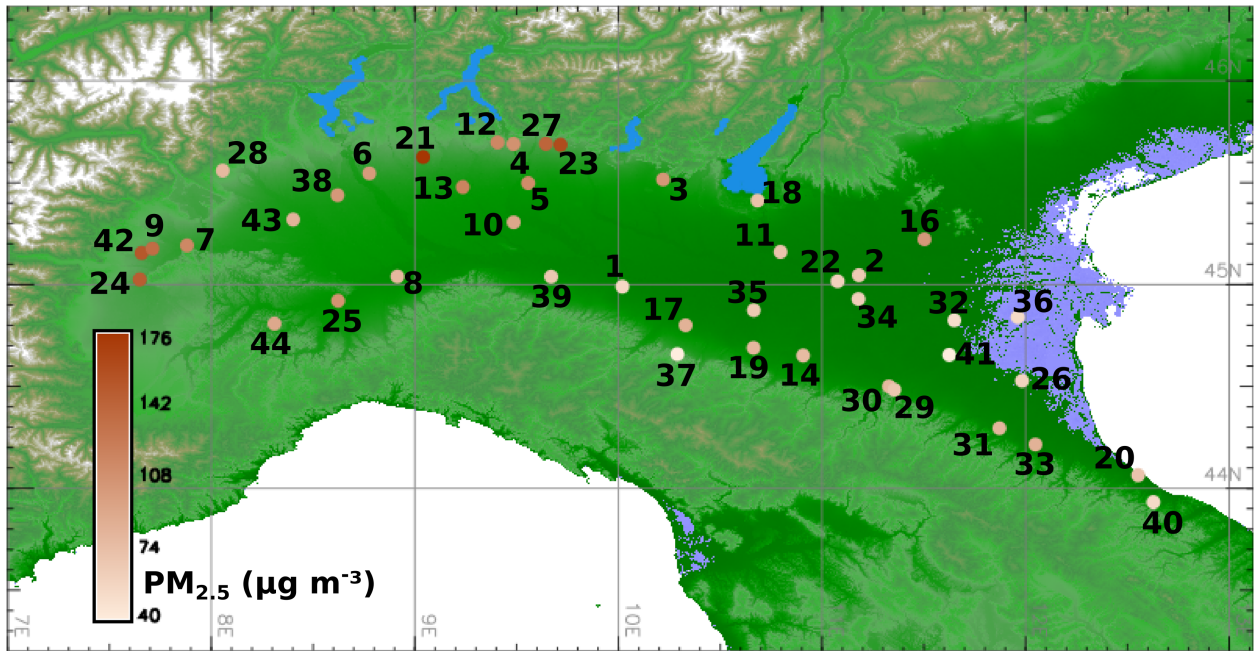
Figure S6: Maximum daily PM$_{2.5}$ observed over the Po valley over the January pollution episode.
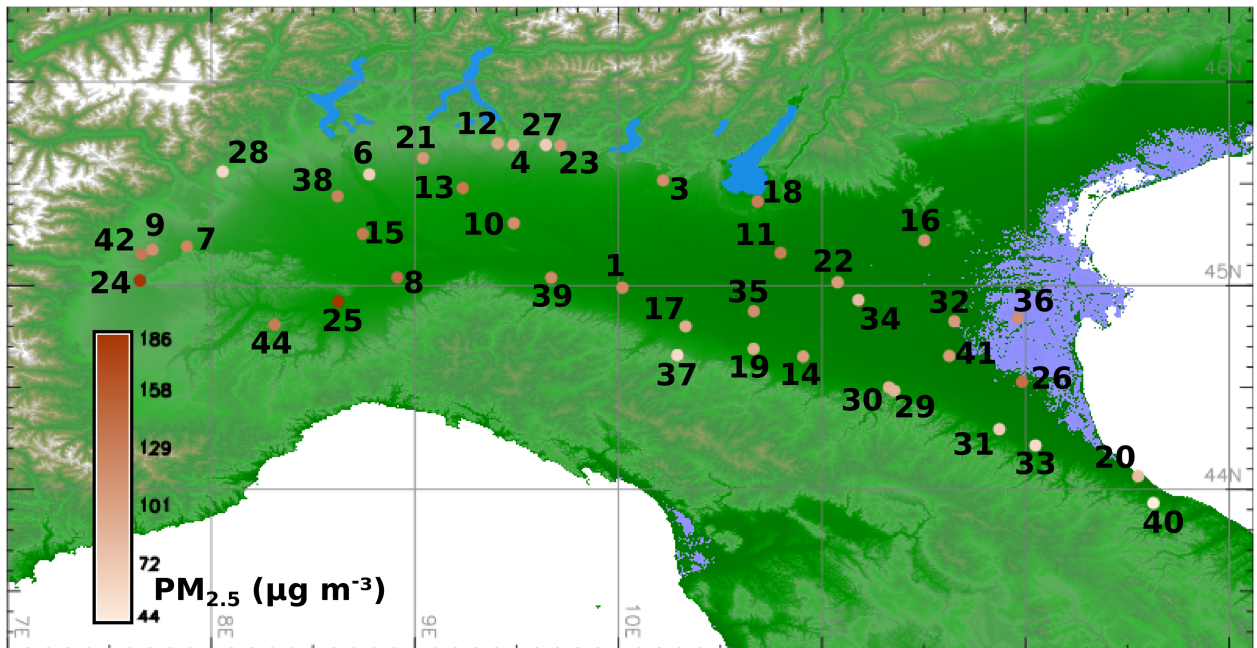
Figure S7: Maximum daily PM$_{2.5}$ observed over the Po valley over the February pollution episode.