



Primary emission sources of PM and precursors

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U.O Modellistica Qualità dell'Aria e Inventari

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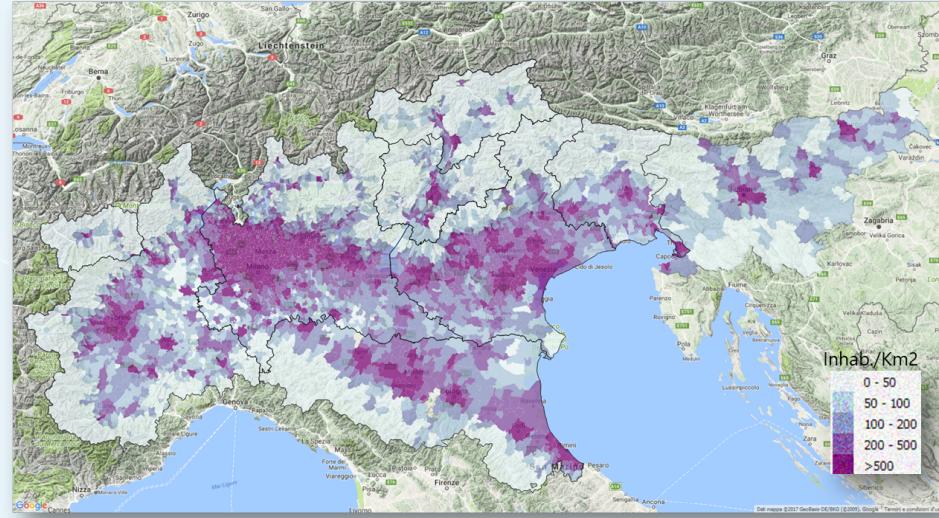
Actions network during the years



Activity in Action A1 and D2

development of a common pollutant emission dataset on the Po-basin and Slovenia (domain of 135000 Km² and population of 28 million inhabitants).

**9 different institutions involved
and two updates on 2013 and 2017
completed**



8 technicians involved in ARPA Lombardia

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17 partners contacted in the project

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Primary emissions and PM precursors

Emission share on year 2017 for Po-Basin and Slovenia	PM10	SO2	NOx	NH3	NMVOC	NMVOC (excl. mac 10-11)
1-Combustion in energy and transformation industries	1%	17%	7%	0%	0%	0%
2-Non-industrial combustion plants	60%	9%	11%	1%	5%	13%
3-Combustion in manufacturing industry	4%	45%	15%	0%	1%	2%
4-Production processes	3%	23%	2%	0%	4%	10%
5-Extraction and distribution of fossil fuels and geothermal energy	0%	0%	0%	0%	3%	6%
6-Solvent and other product use	3%	0%	0%	0%	23%	53%
7-Road transport	18%	1%	49%	1%	6%	14%
8-Other mobile sources and machinery	3%	3%	13%	0%	1%	2%
9-Waste treatment and disposal	0%	2%	1%	1%	0%	0%
10-Agriculture	4%	0%	2%	96%	24%	
11-Other sources and sinks	4%	1%	0%	0%	33%	

Definitions

“Particulate matter” (PM) is the general term used to describe solid particles and liquid droplets found in the air. PM can be emitted directly or formed in the atmosphere.

“Primary” particles are those released directly to the atmosphere.

“Secondary” particles, on the other hand, are formed in the atmosphere from chemical reactions involving primary gaseous emissions. Secondary particles are not released directly from stacks, the emission inventories instead tracks the precursors that contribute to formation of secondary particles. These precursors include **nitrogen oxides**, **sulfur dioxide**, **ammonia**, and other gases (e.g., particle-producing organic gases).

Source US-EPA: <https://cfpub.epa.gov/roe/indicator.cfm?i=19>

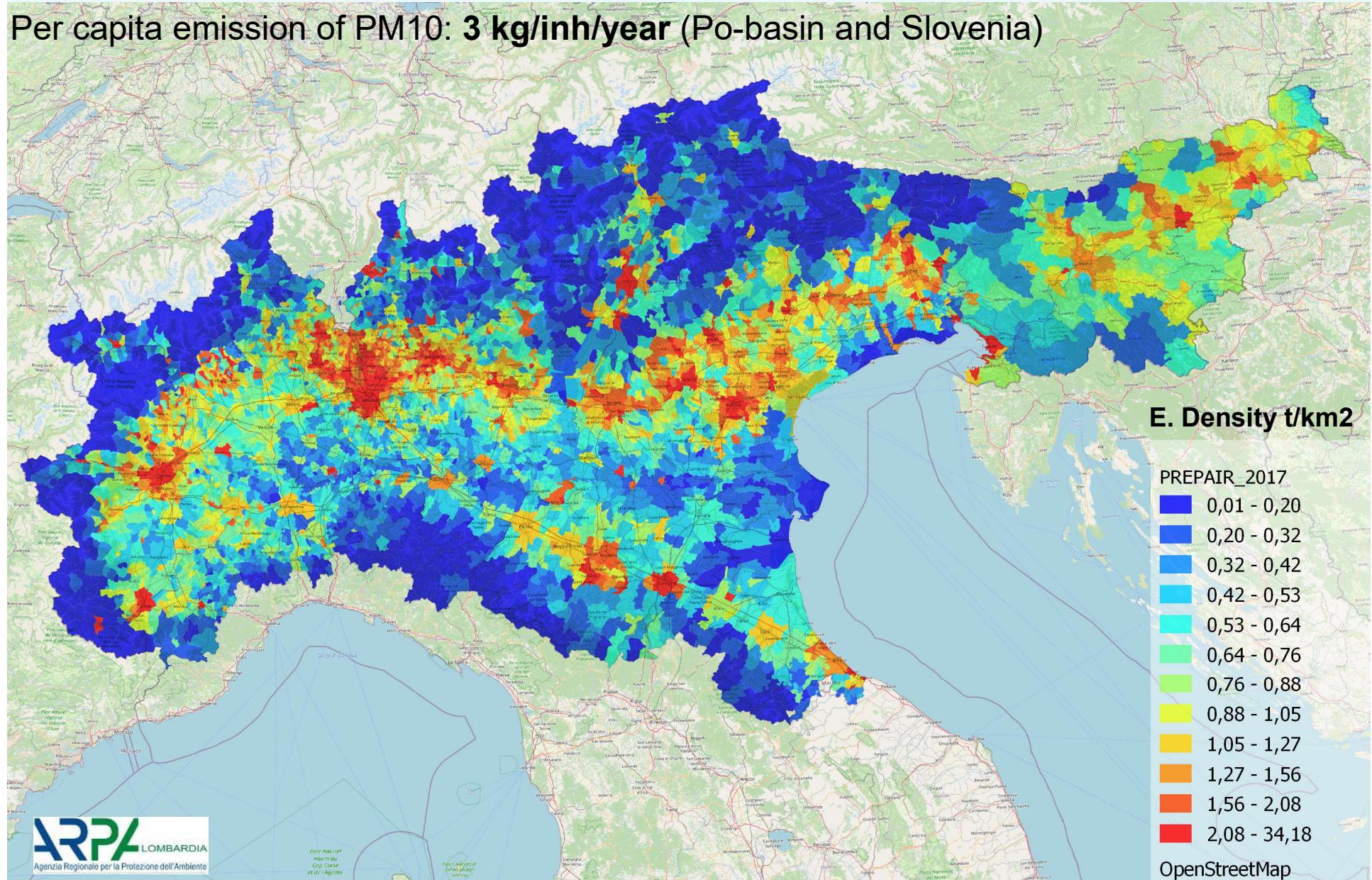


Primary emissions of PM10

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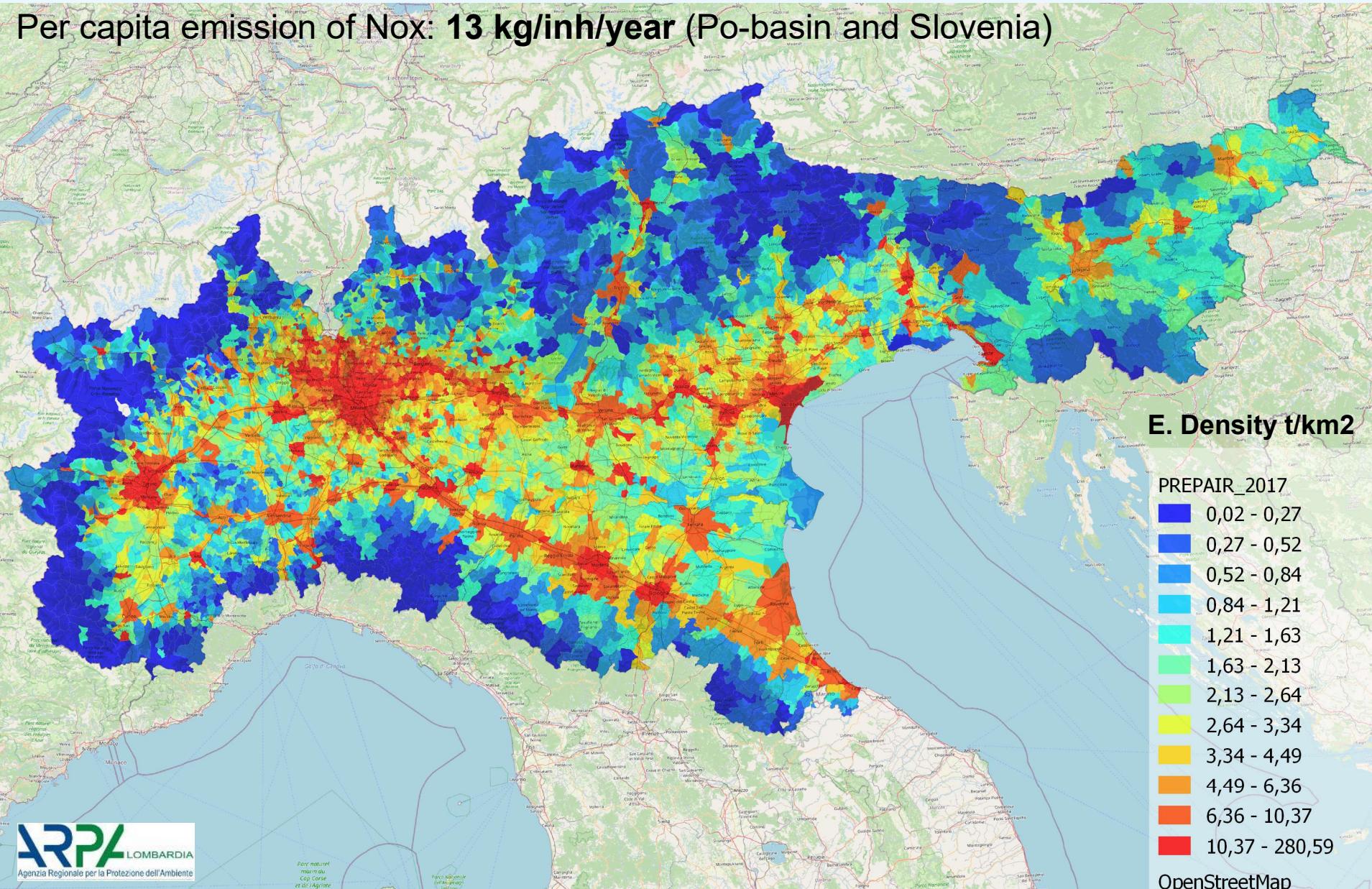
Per capita emission of PM10: 3 kg/inh/year (Po-basin and Slovenia)





Primary emissions of NOx

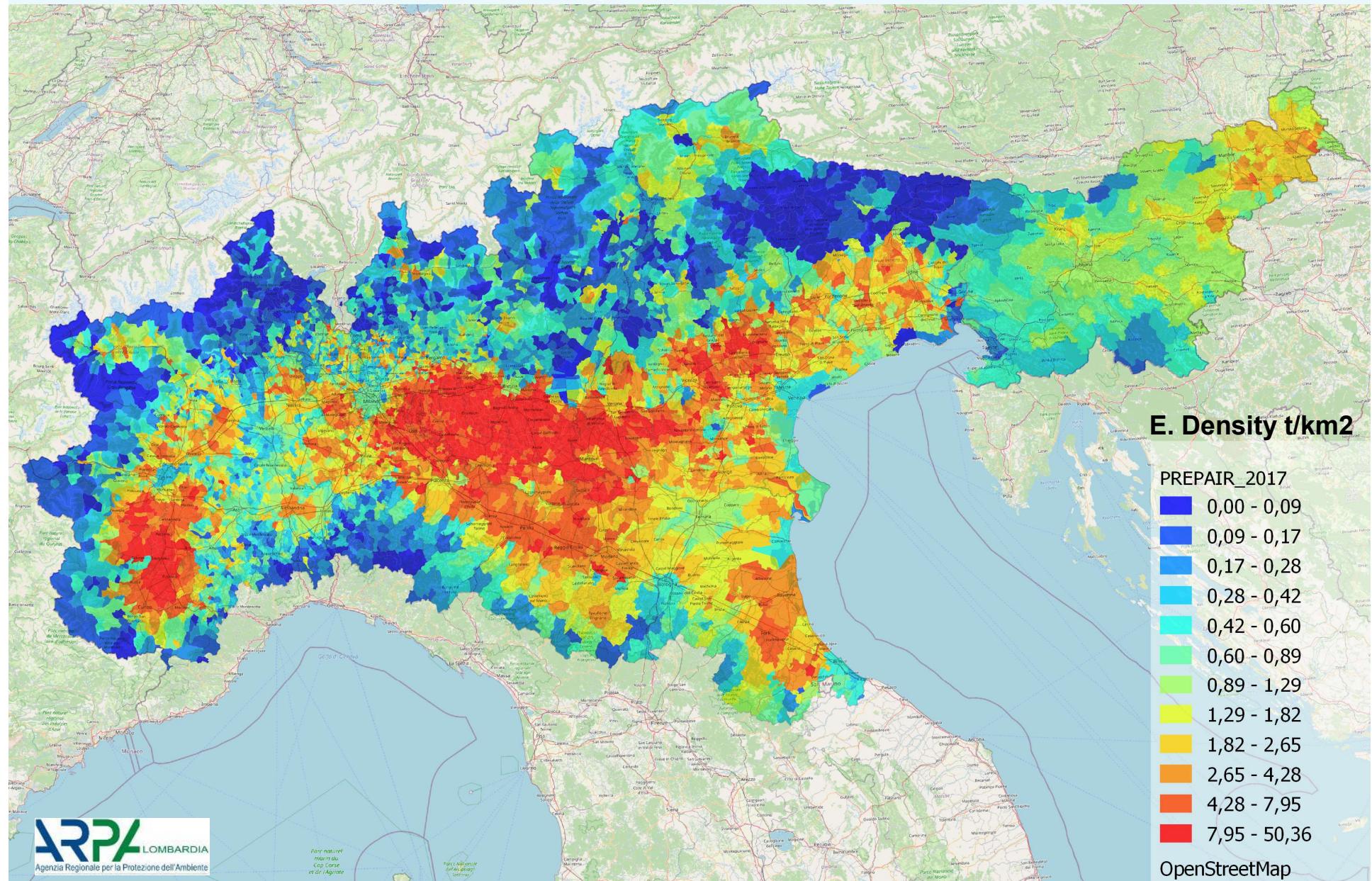
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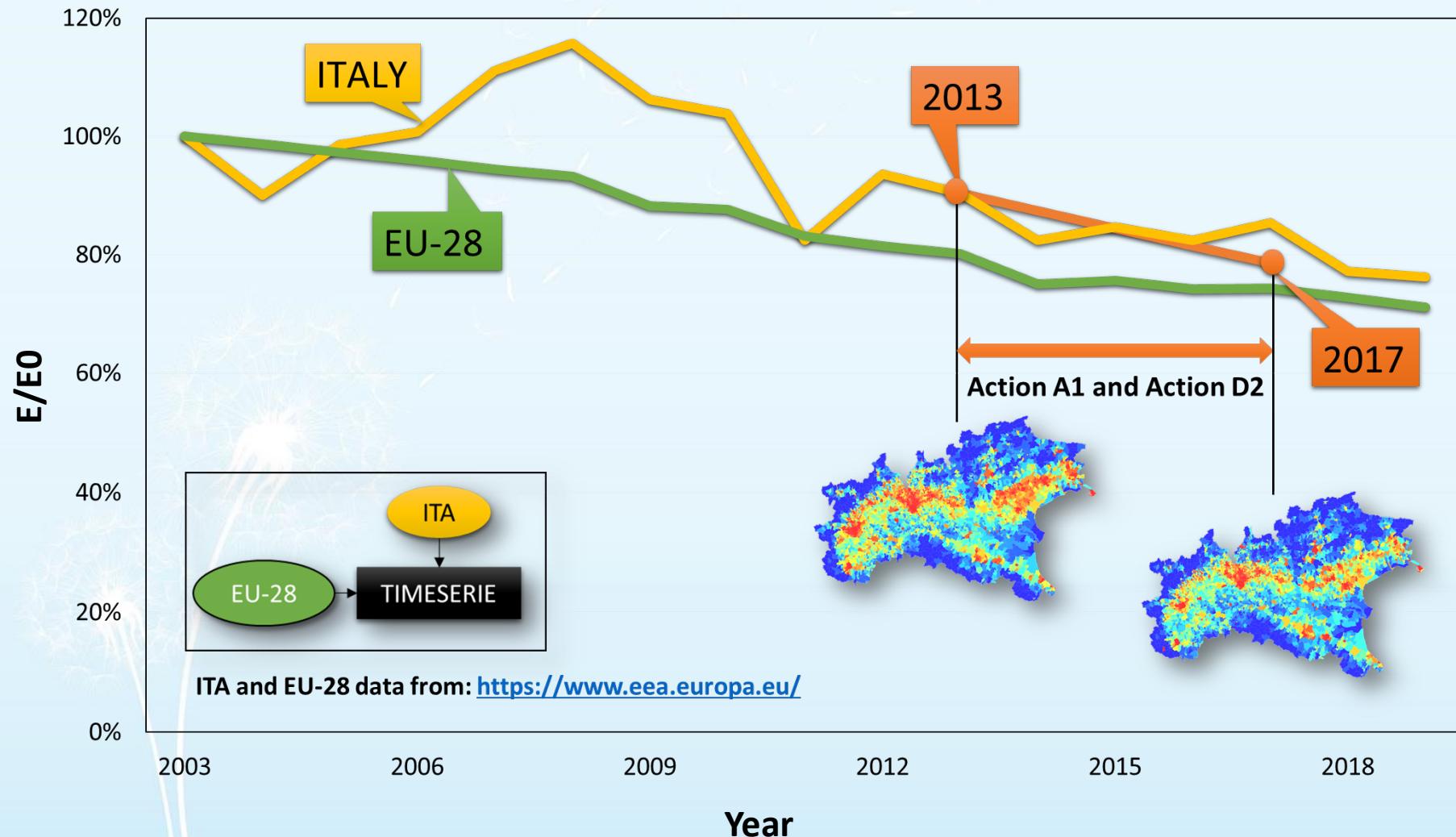


Primary emissions of NH3

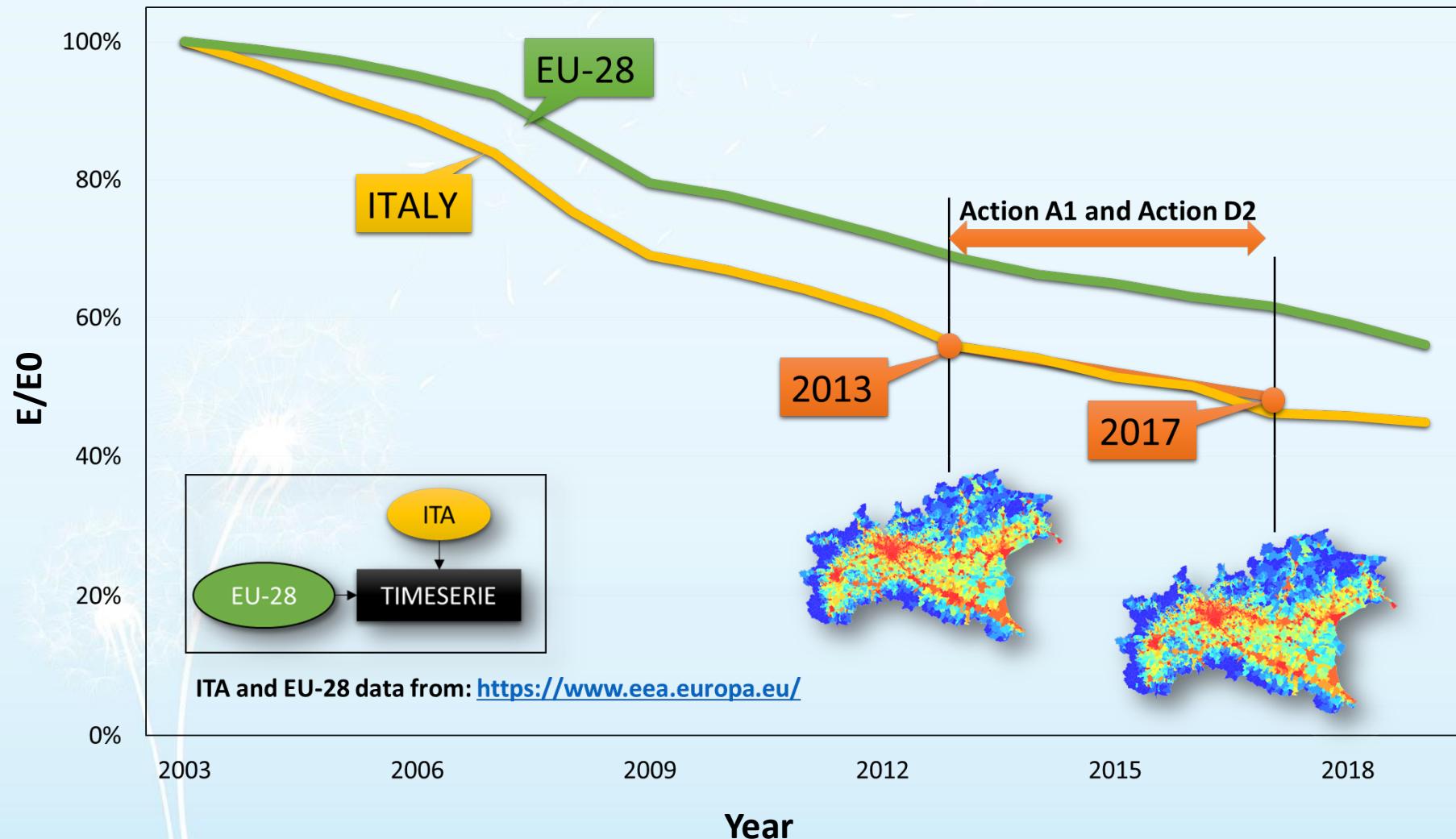
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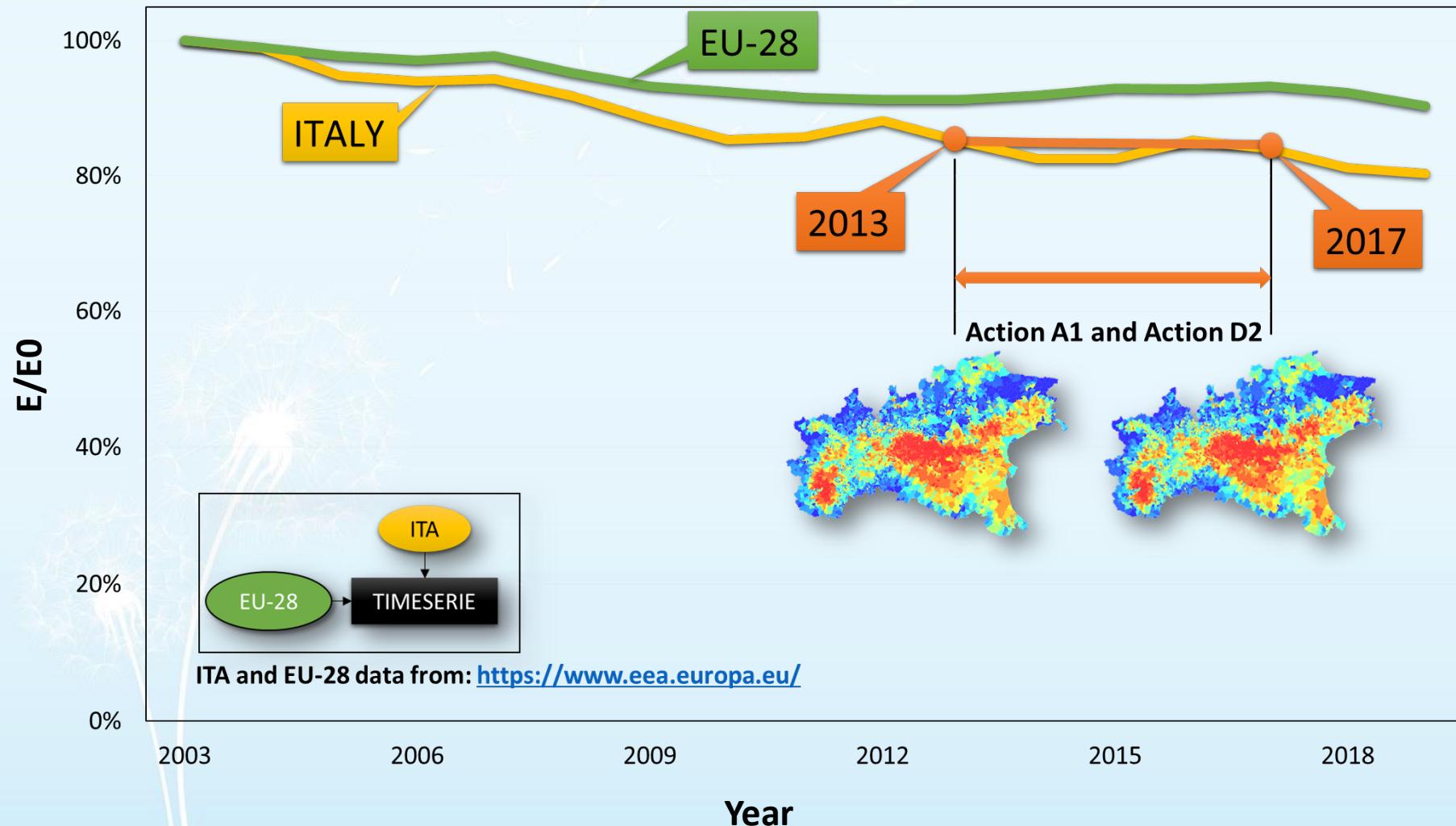
Time serie of primary emissions – PM10



Time serie of primary emissions – NOx



Time serie of primary emissions – NH3

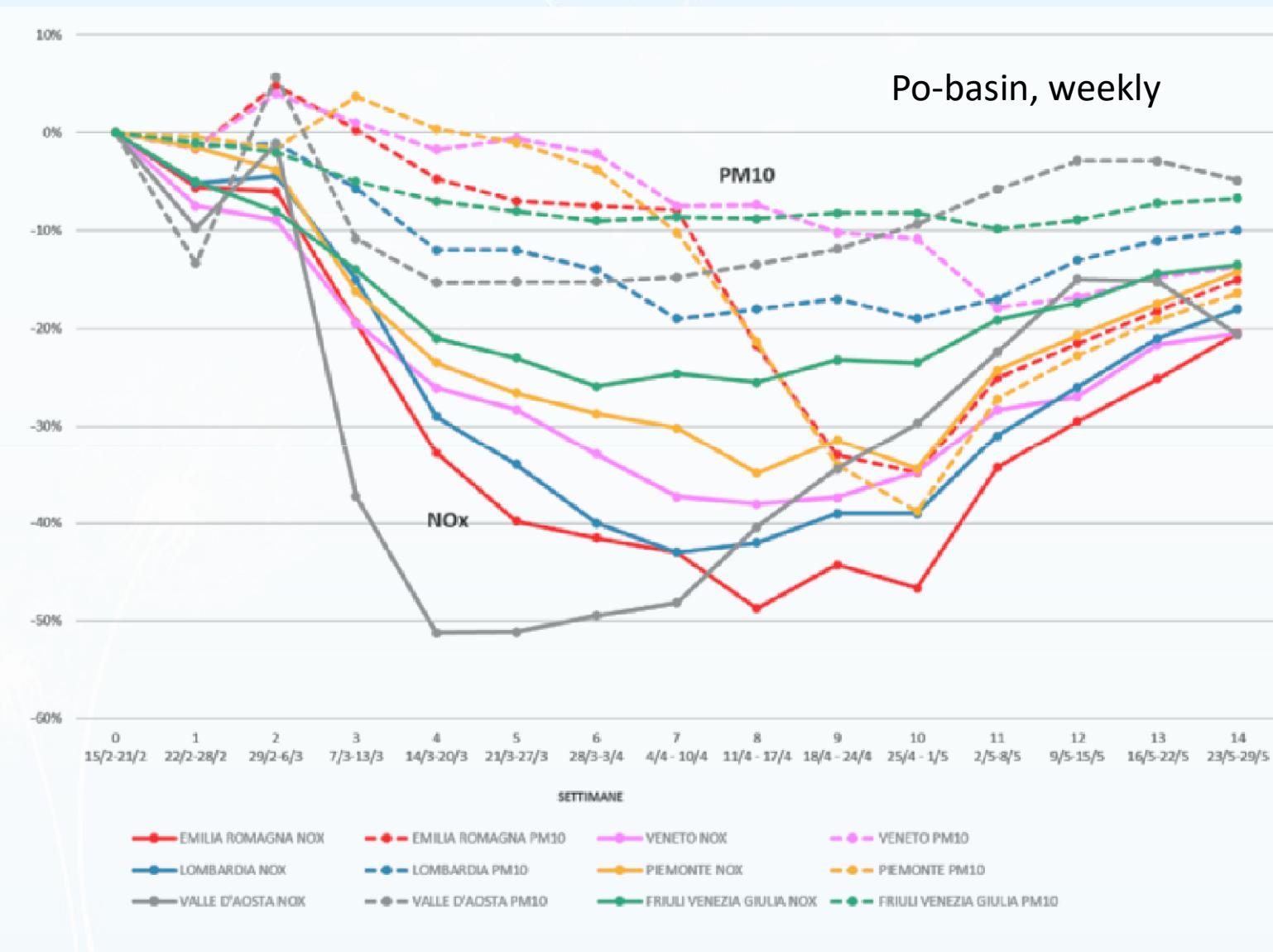


Emission trend in 2020

The fluid situation and amount of available data has required a different approach (estimates combined with scenarios) and an increase in time resolution (from annual to daily and weekly).



Emission trend in 2020





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