LIFE 15 IPE IT 013

What future for the air quality in Po Basin? A scenario based perspective

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UO Modellistica Qualità aria

Arpae Emilia- Romagna

prepAIR 1st MidtermConference
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Simulation Model Setup

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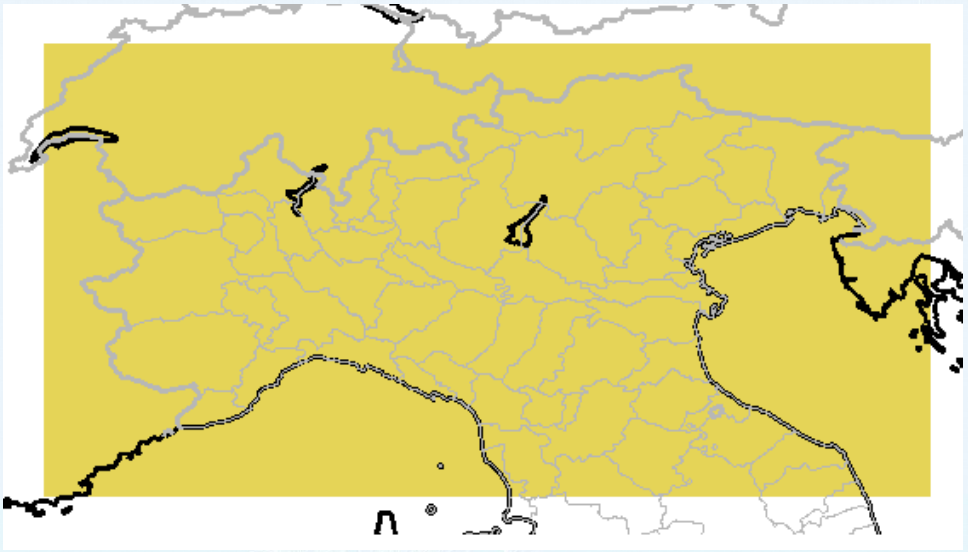

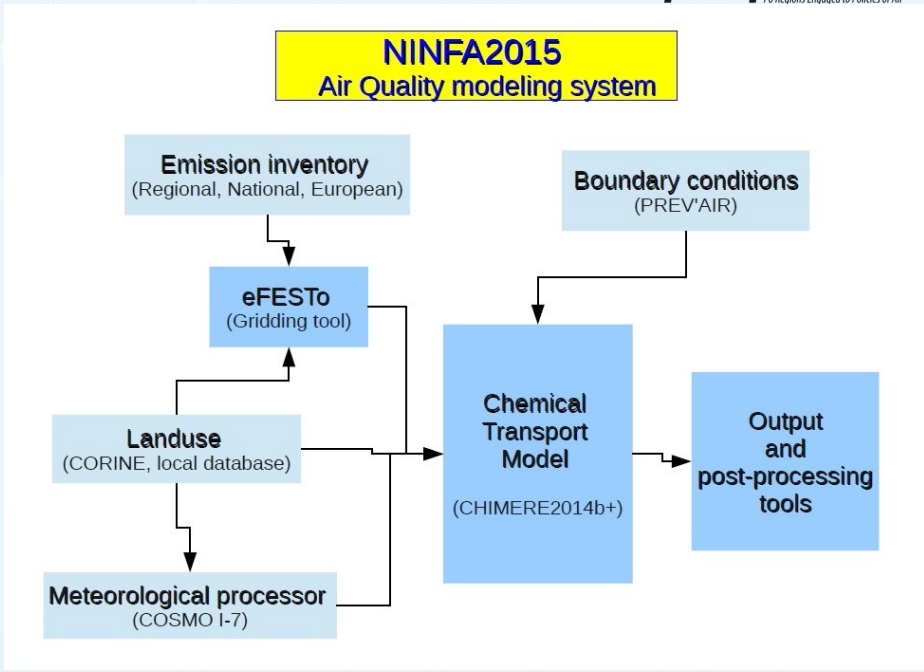

CTM: CHIMERE
Simulation year: 2016
Emission: Base Case (2013), CLE2025, CLE2025+AQP+PrepAIR Actions
METEO: COSMO I7
BC: Coarse CHIMERE CTM (20km horizontal resolution)
Proj: Lat/Lon Dx= 0.07 Dy=0.05 Nx=117,NY=86

Horizontal resolution: around 5 km
X1=6.25 Xn=14.37 Y1=43.1 Yn=47.35 (center cell)

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Emission Scenarios (1/2)

Base case: union of local or national inventories (in the case of Slovenia) developed in the different territorial areas, maintaining the greatest possible detail on the classification of the types of emission sources and with reference to the territory of each municipality.

CLE2025: This scenario has been derived from a survey among local regional emission inventory compilers and the emission scenario SEN14 calculated with GAINS-Italy by ENEA.

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Emission Scenarios (2/2)

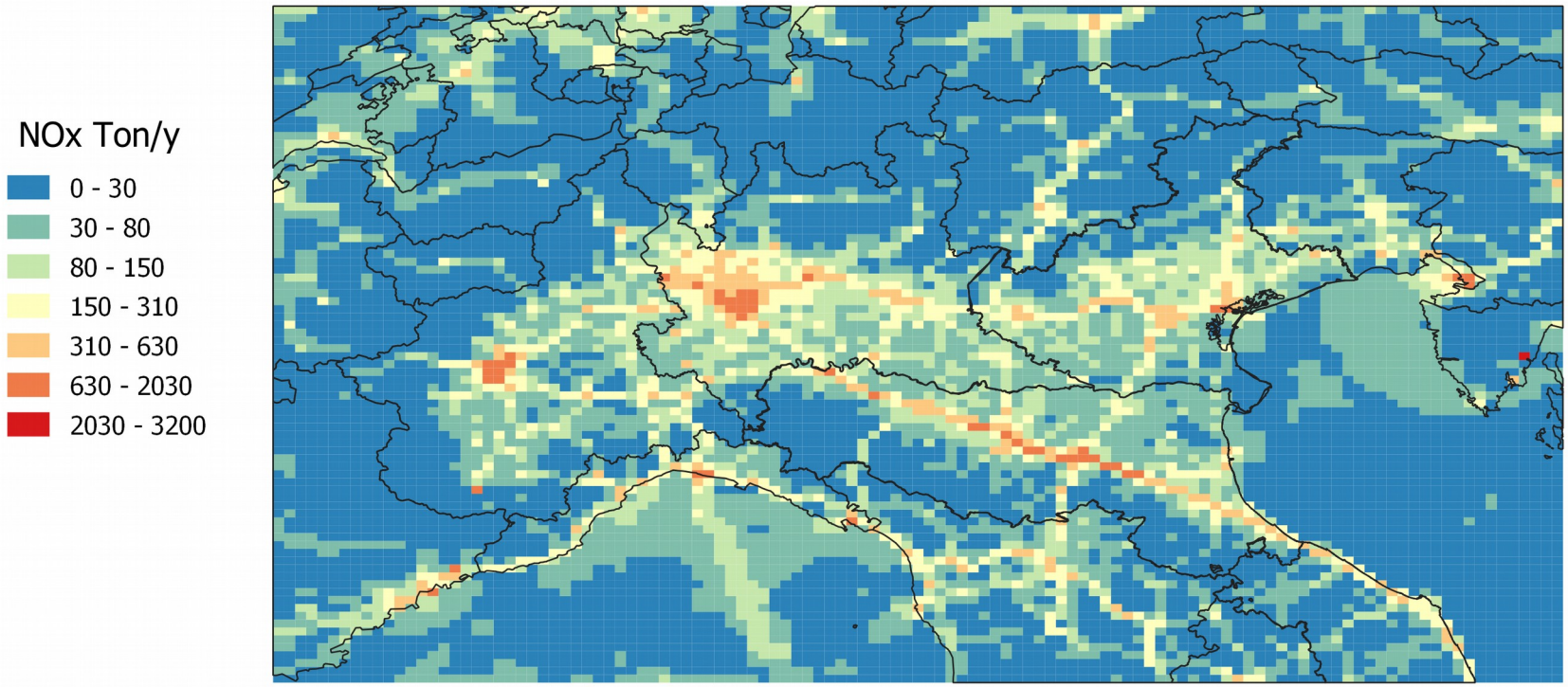
CLE2025+AQP: standardization of the emission reductions in Regional AQP to 2025 as reference year;

CLE2025+AAS: AQP+Po basin Agreement+ *prepAIR Action.*

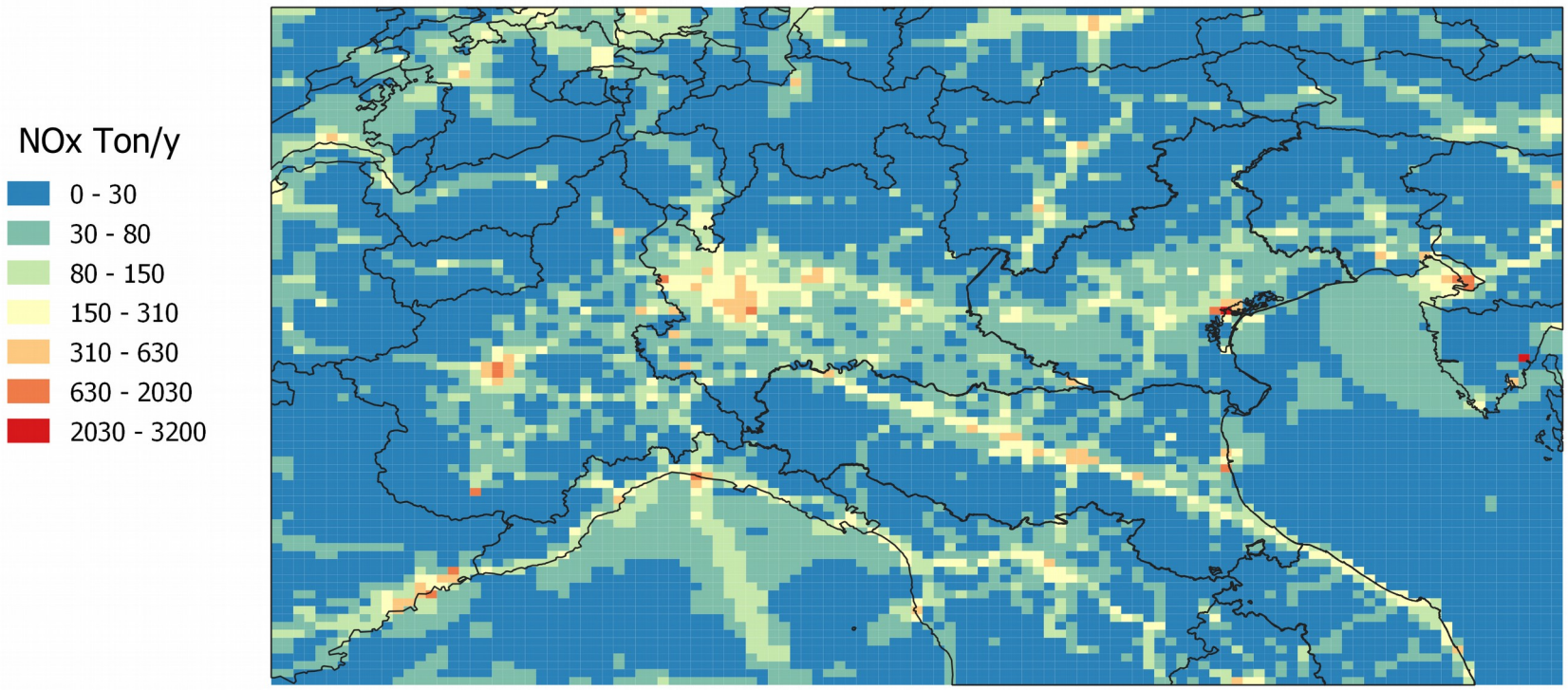
PrepAIR Actions have been evaluated as an improve proportionally to the performance of AQPs measures, agriculture, biomass burning, transports and energy efficiency, that act in the same sector, as a function of type of action, the intensity of application and the number of emission activities involved. INC value around 3%-11%

$$Inc(\%)_{n,R} = A_{n,R} \cdot B_{n,R} \cdot C_{n,R} \cdot R_{max}$$

Base case scenario



CLE2025+AAs scenario



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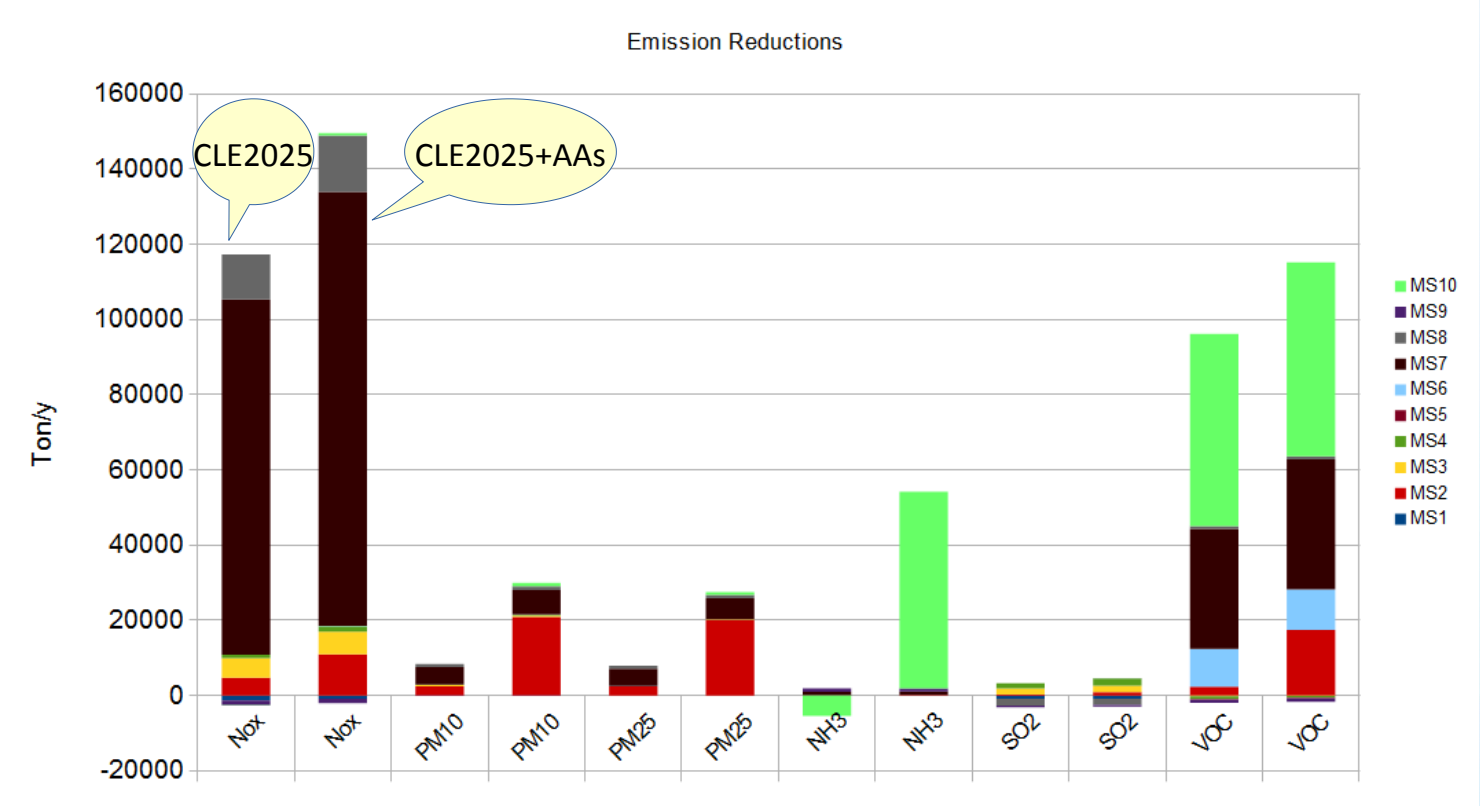
Reduction Emissions Scenarios



Reduction CLE2025+AAs respect to basecase 2013
NOx 39%, PM10 38%, PM25 40%, NH3 22% SO2 3%

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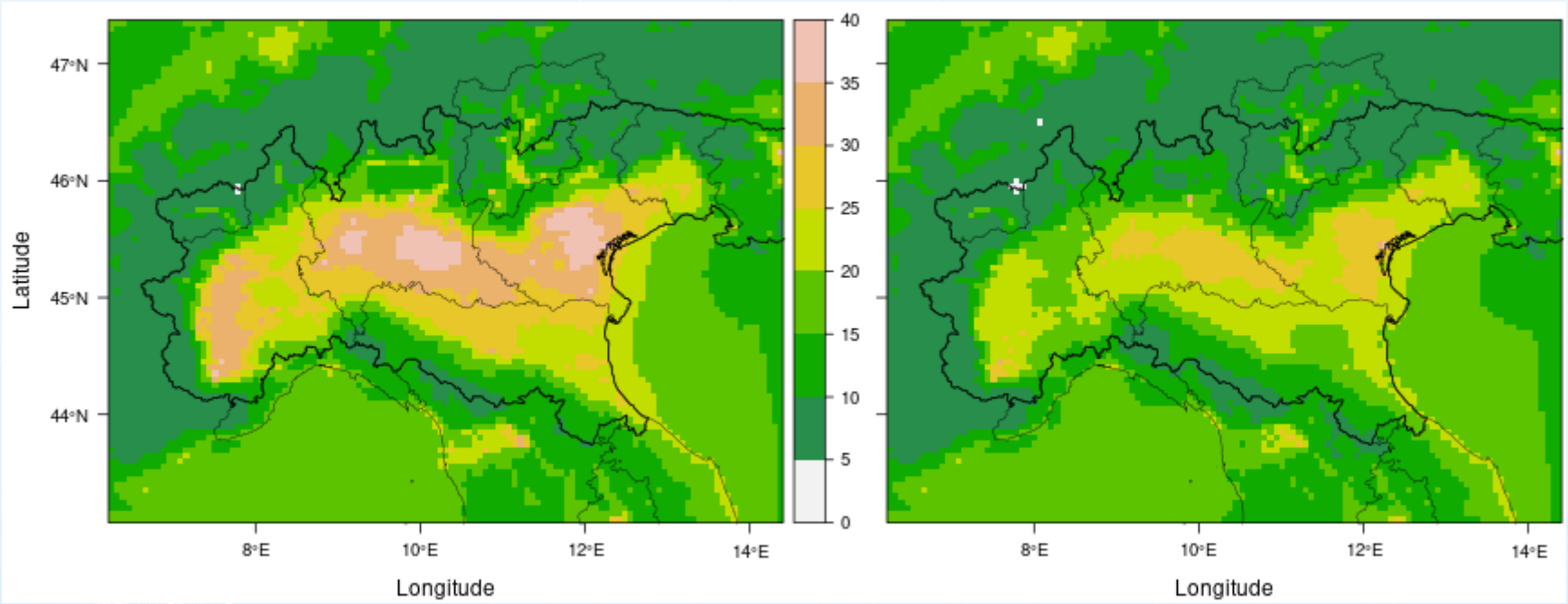
PM10 simulation results

Base case scenario

CLE2025+AAs scenario



The analyses are related to annual mean: studies in Italy and Europe show that PM10 annual average < 26-27 µg/m^3 should allows to comply EU AQD to LV for daily exceedances

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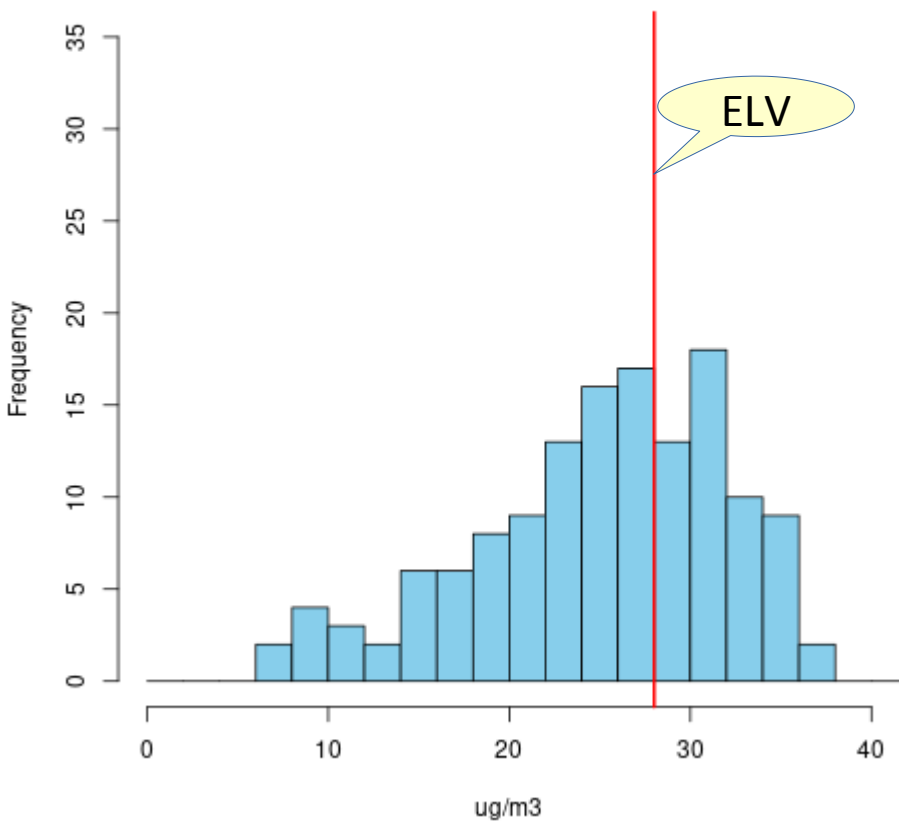
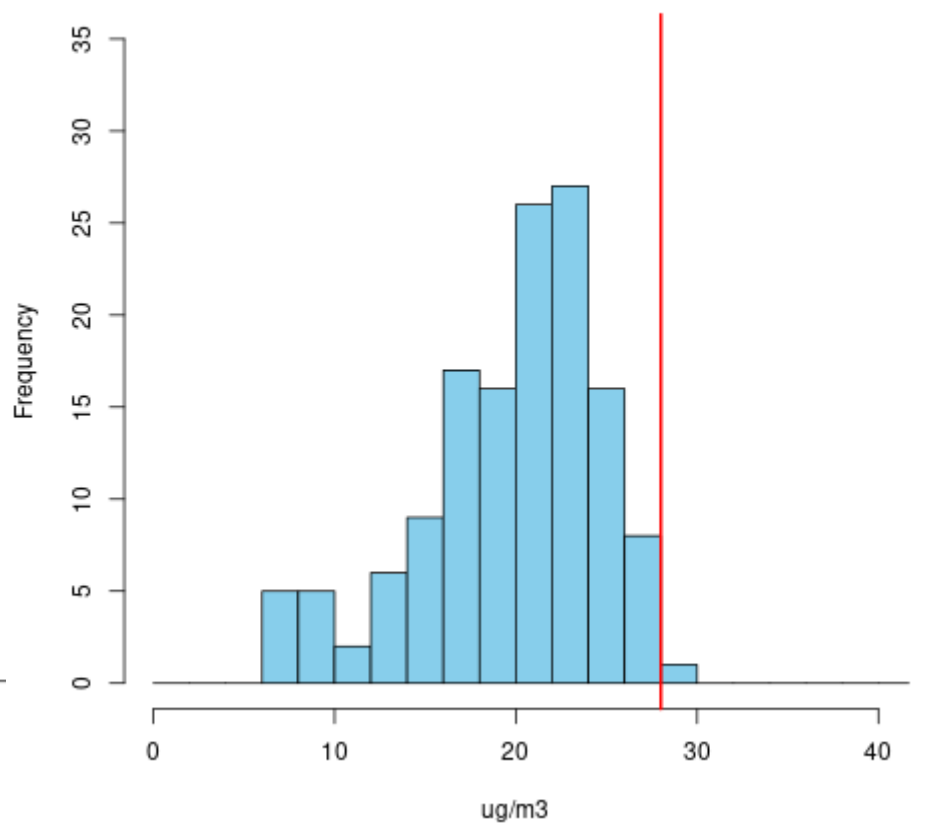
Frequency PM10 concentration distribution background station

Base case scenario



CLE2025+AAs scenario



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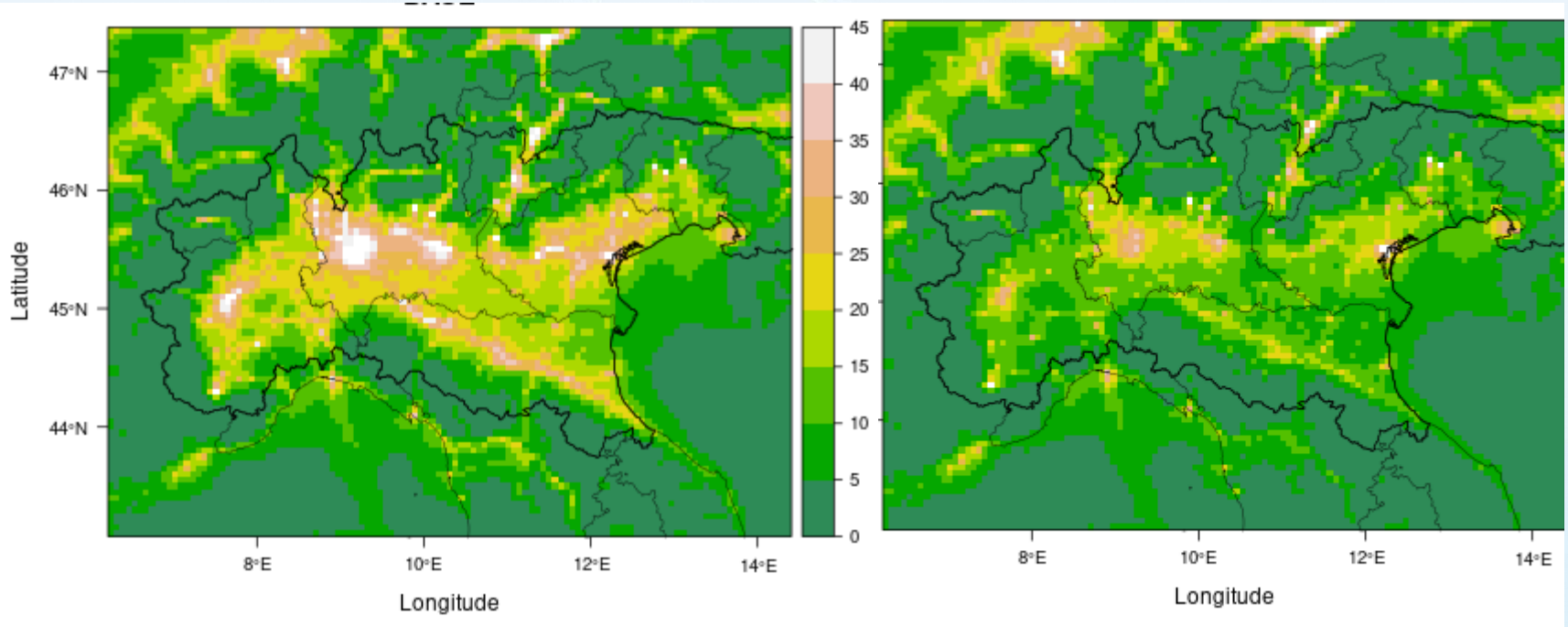
NO2 annual mean µg/m^3

Base case scenario

CLE2025+AAs scenario



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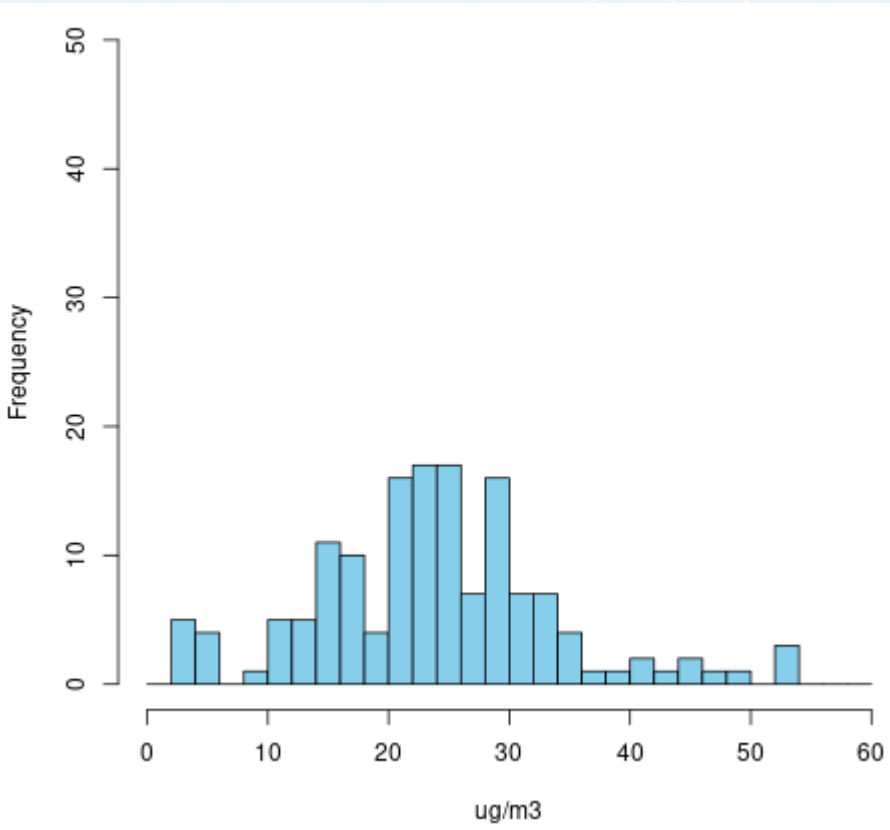
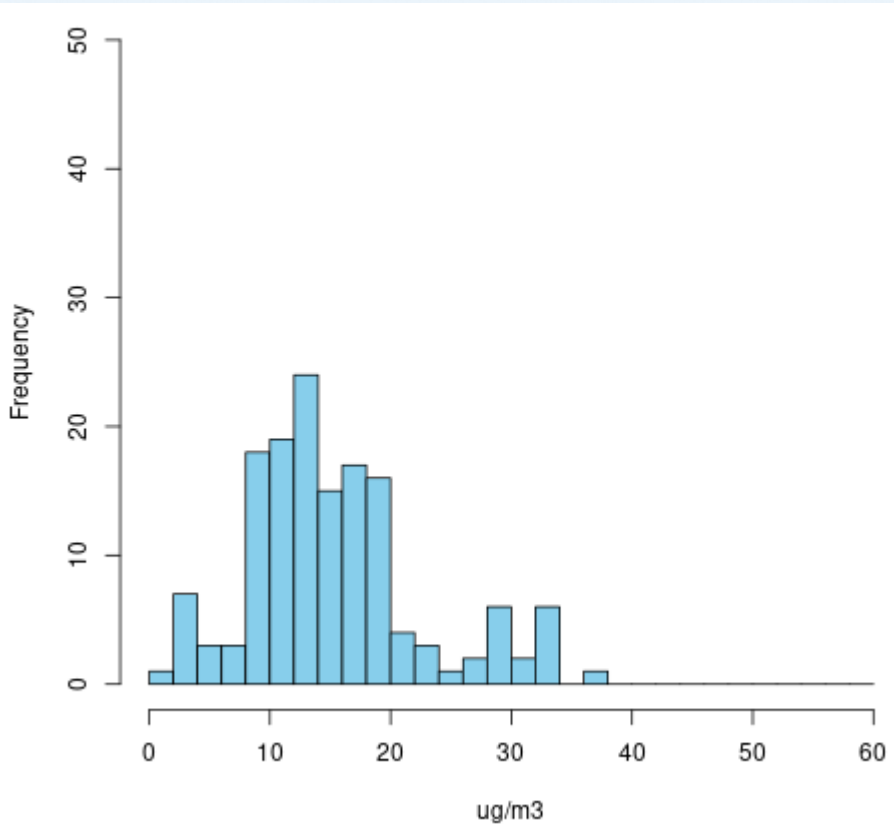
Frequency NO2 concentration distribution background station

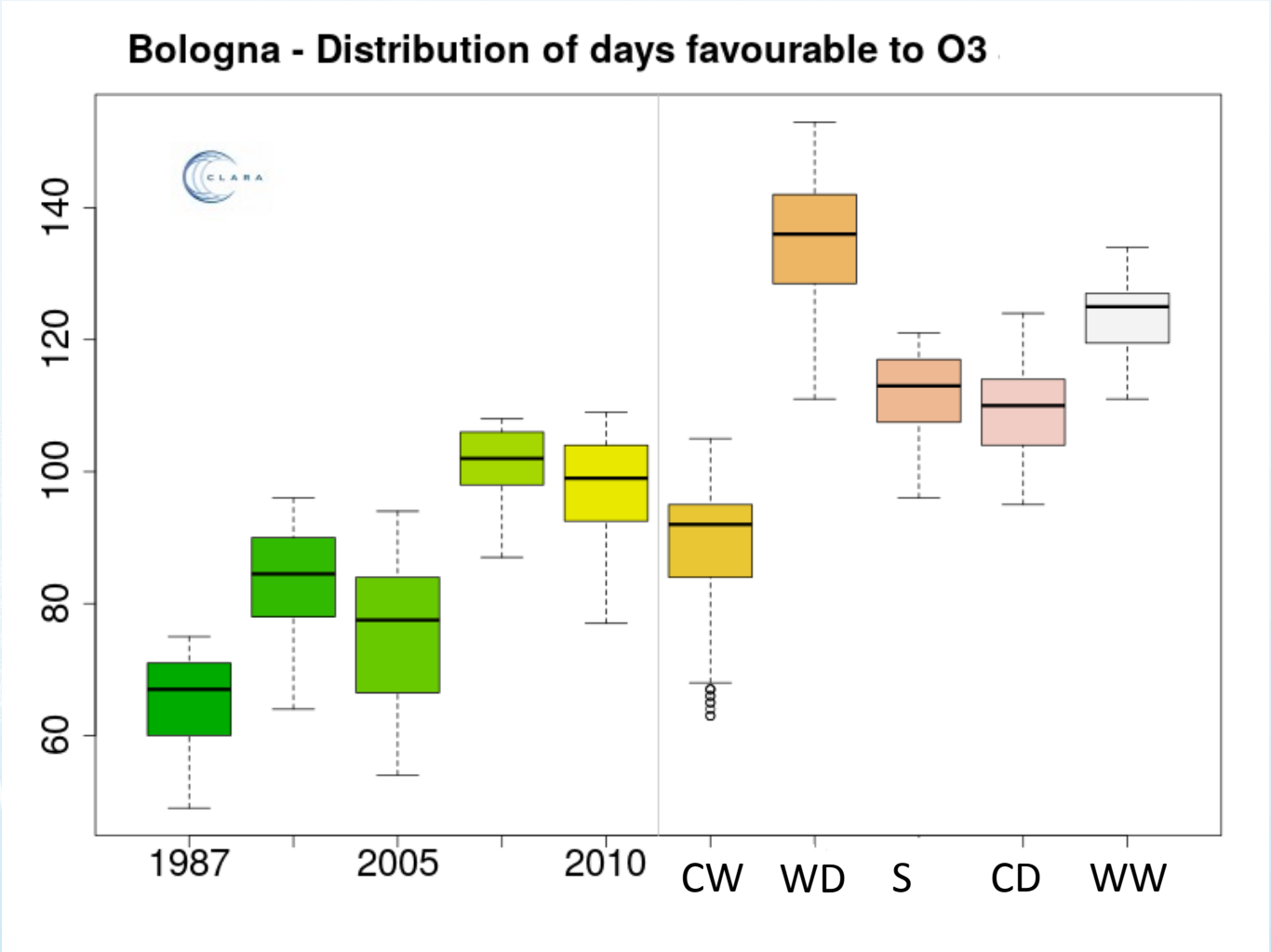
Base case scenario



CLE2025+AAs scenario



Climate change?



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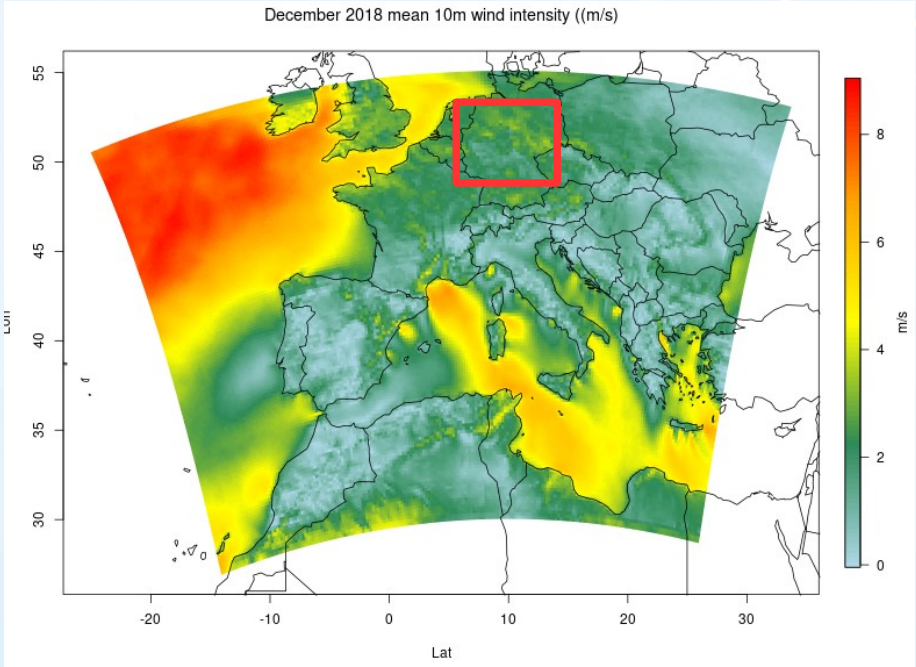
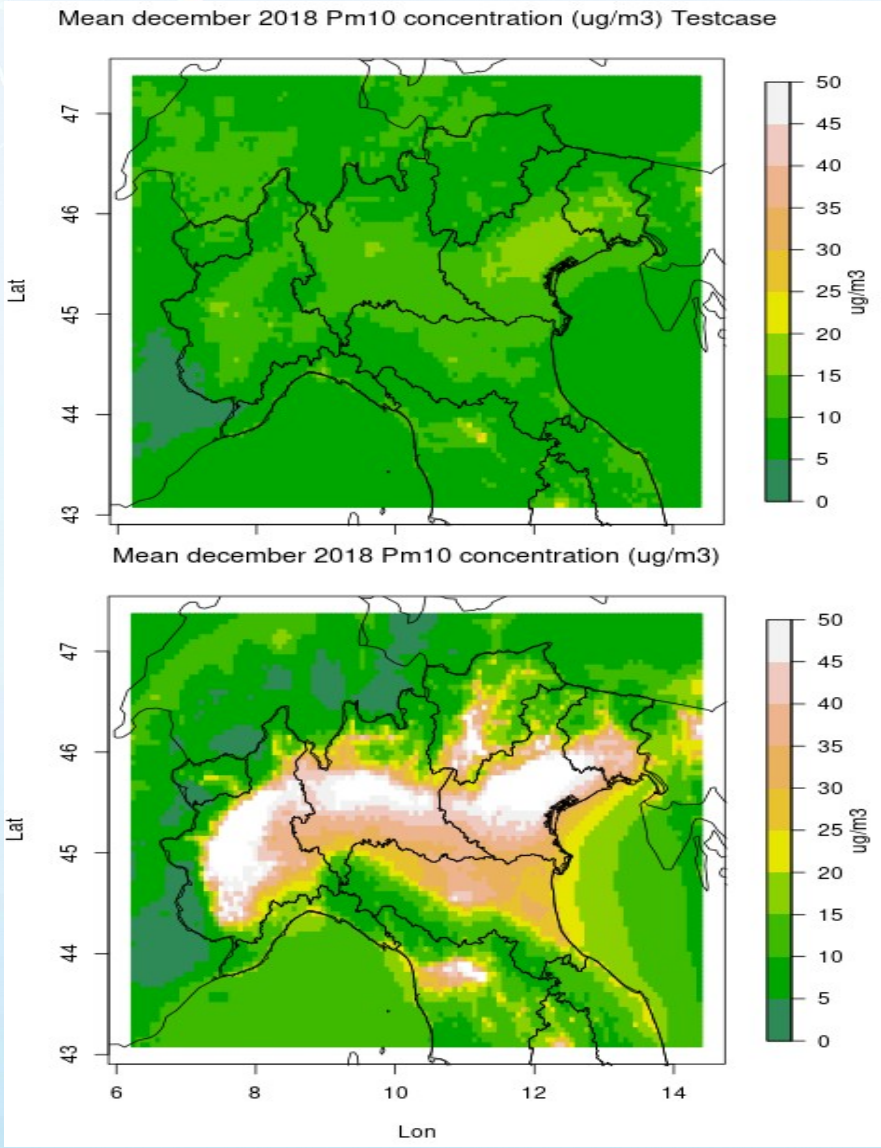
Meteorology impact?





Simulation with different meteorology condition: high HMIX and wind

With the contribution
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Thank for your attention

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