Air quality management in France: nesting national and local scales

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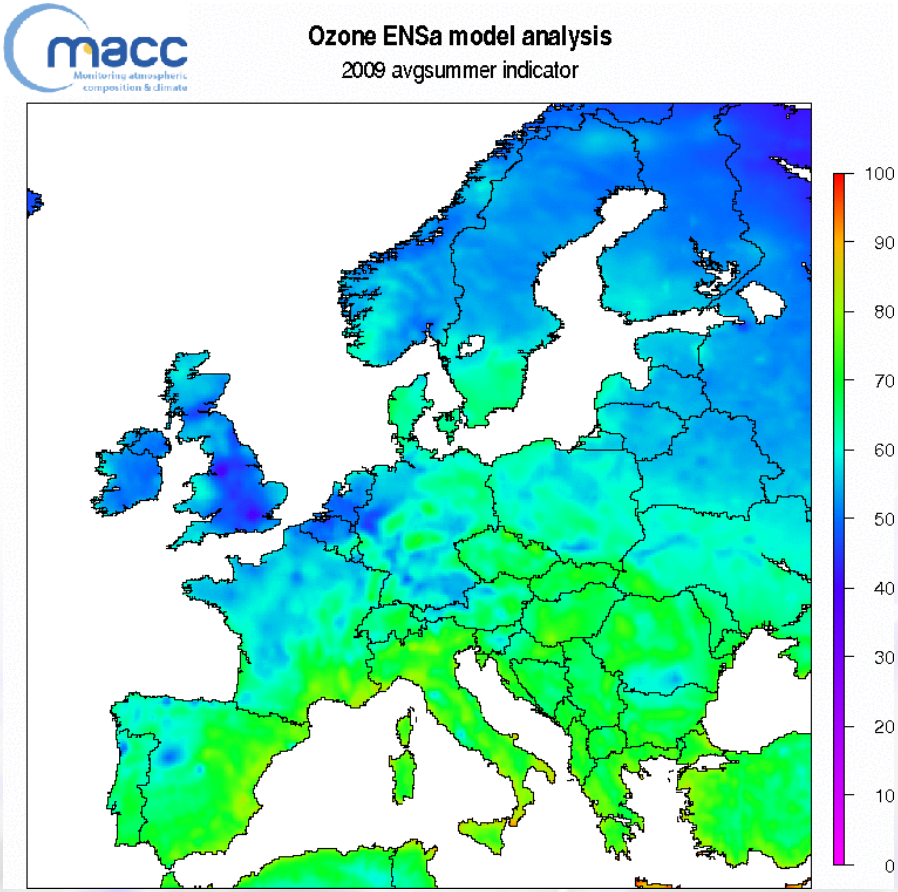
Air pollution : local or large scale issue?



- Ground level ozone is characterized by long range transport and chemistry
- Chemical reactions develop over large spatio-temporal scale and ozone plumes generally extend to several hundred of kilometers
- Anthropogenic sources in all activity sectors and natural sources are involved
- Ozone peaks reduced over the 10 past years but not background ozone which is even influenced by hemispheric transport

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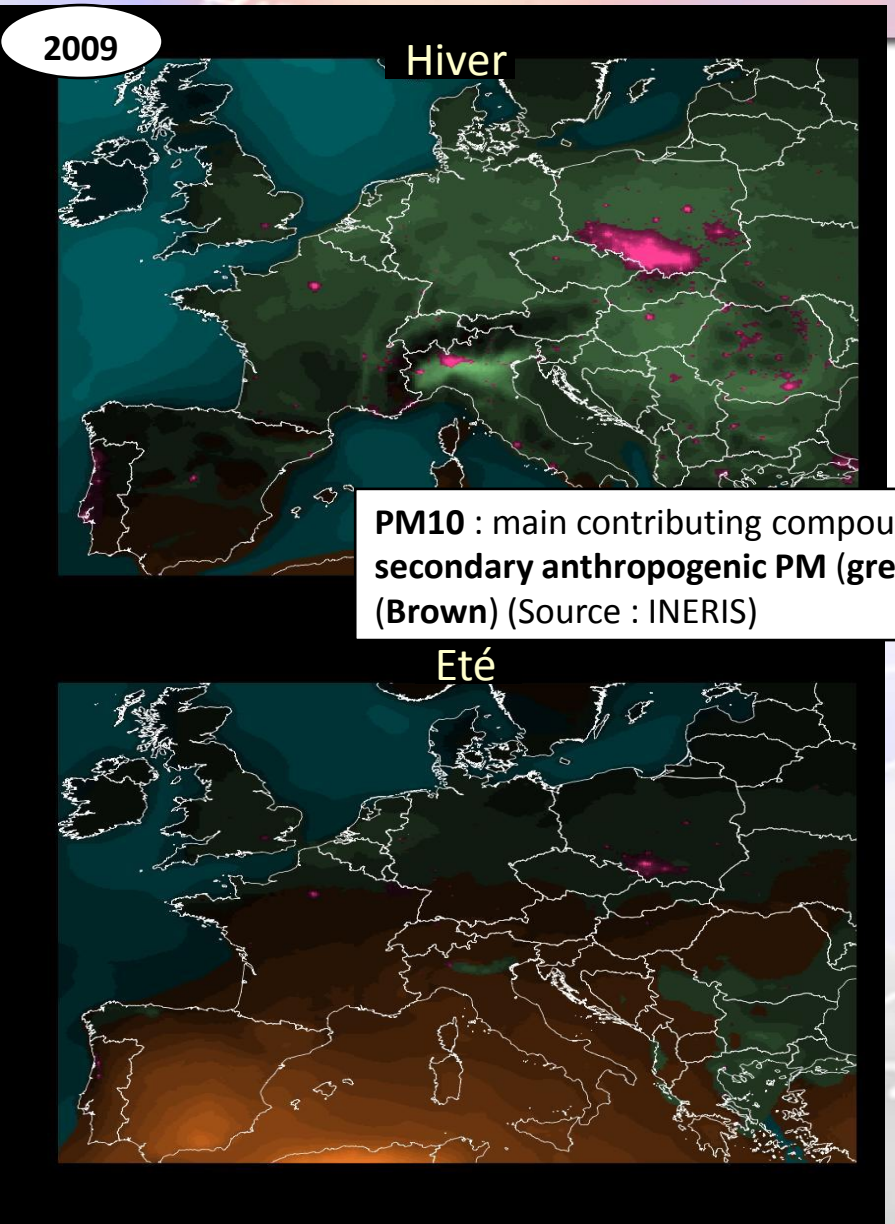
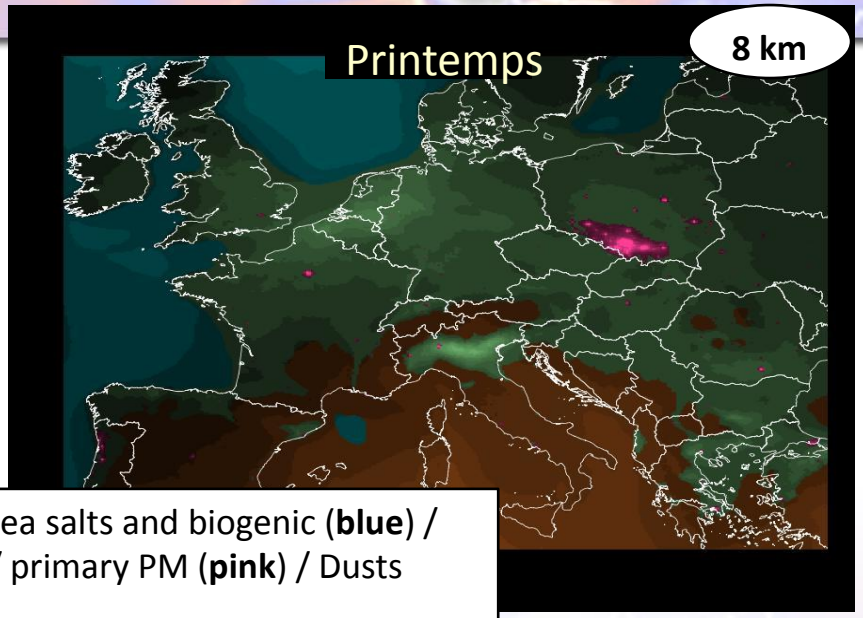
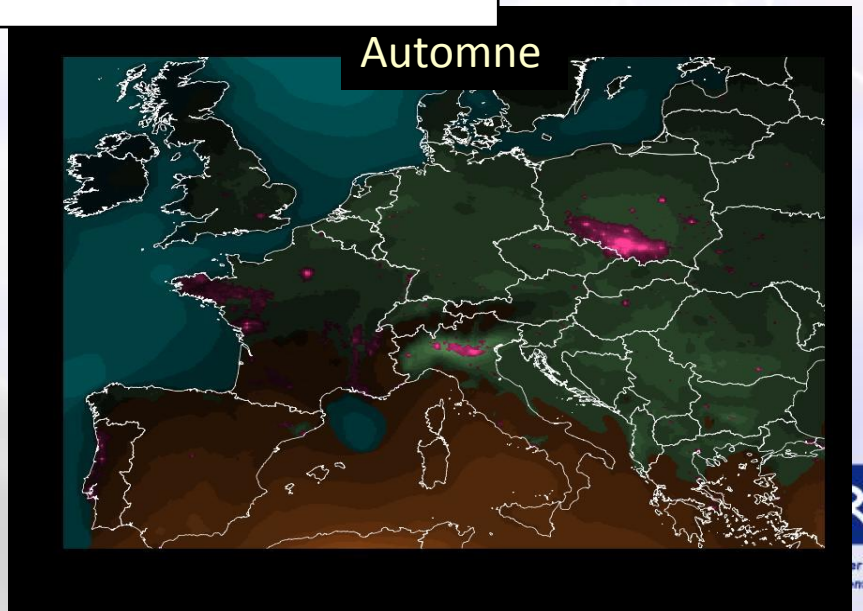
PM situation is much more complex …

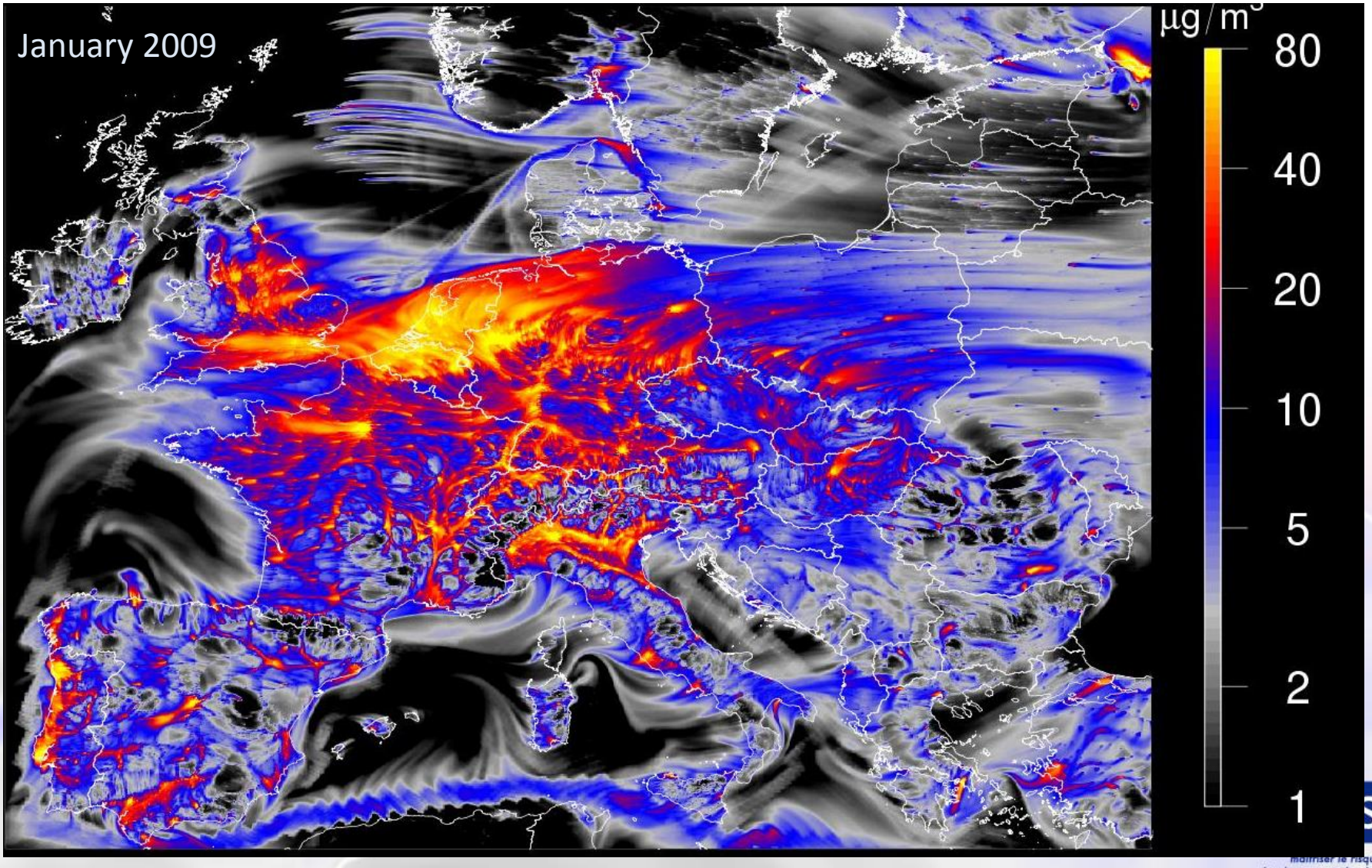




PM10 : main contributing compound: sea salts and biogenic (**blue**) / **secondary anthropogenic PM** (**green**) / primary PM (**pink**) / Dusts (**Brown**) (Source : INERIS)

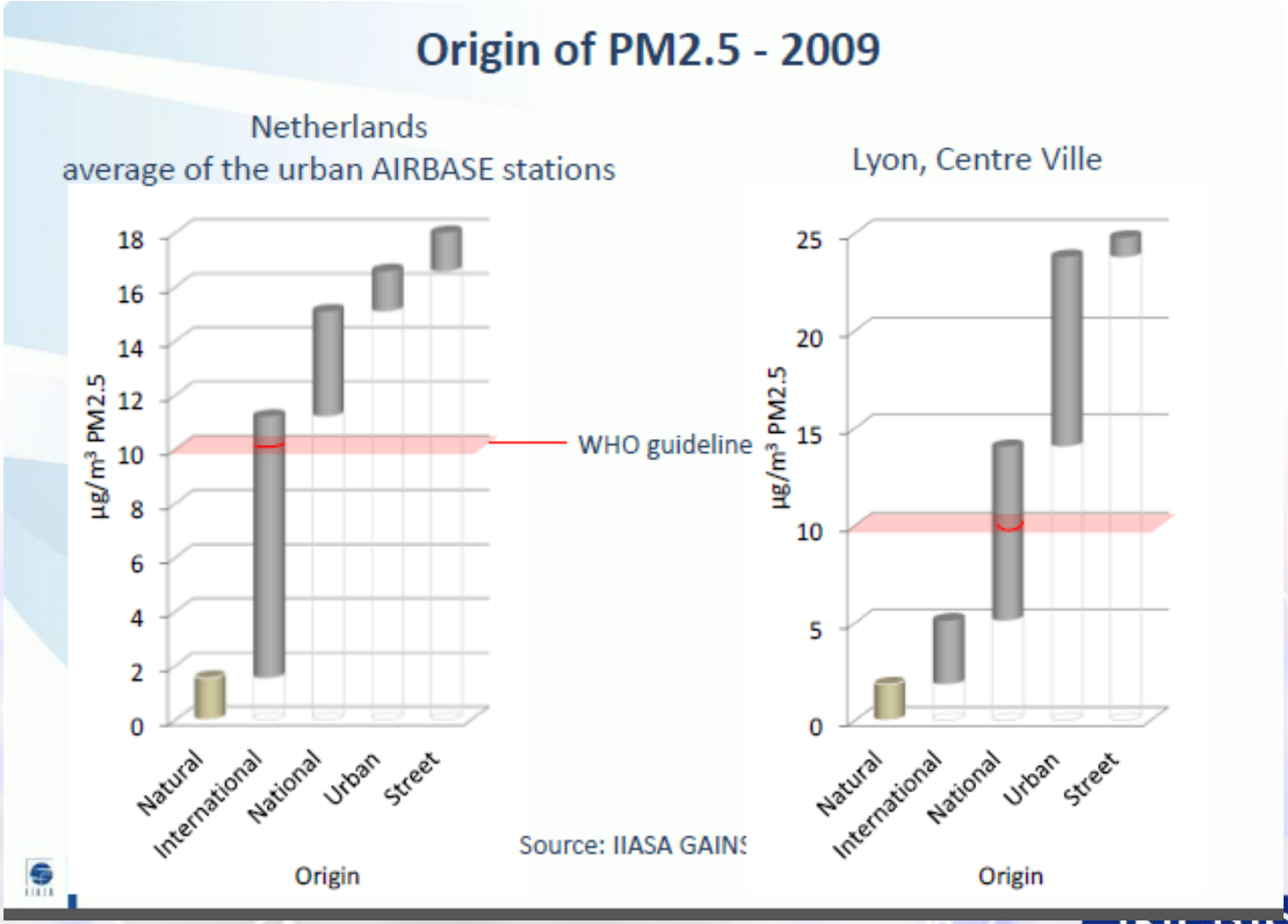


Nitrogen dioxide : local sources but large scale impacts (chemistry)



Looking for the « right » scale for action

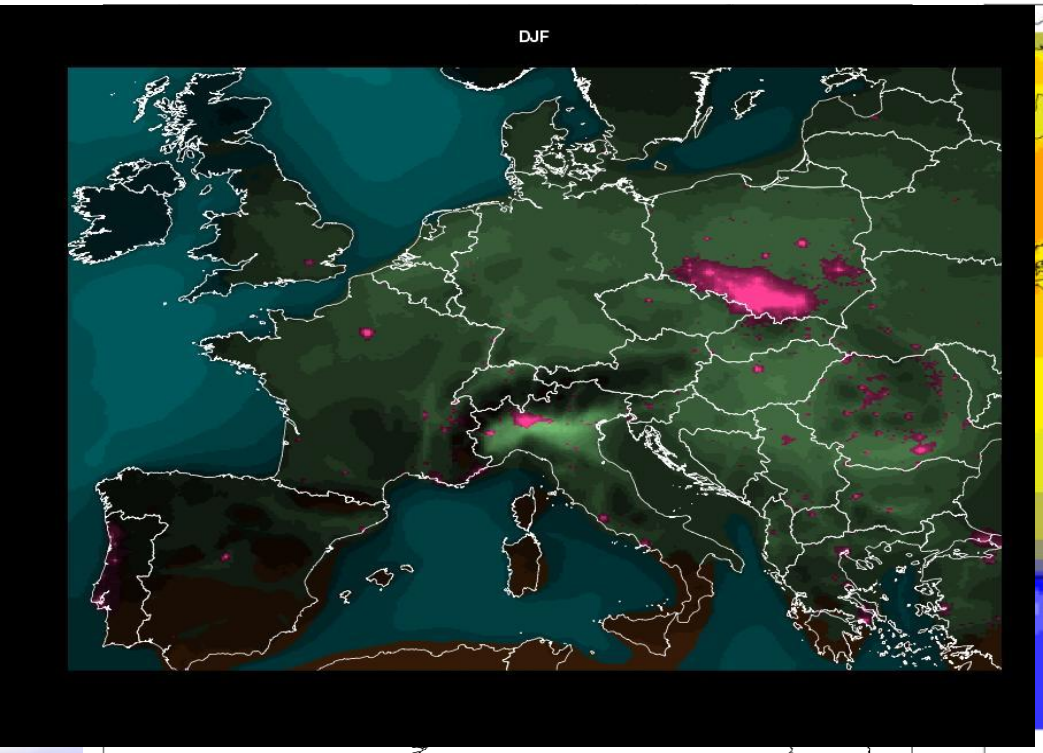
IIASA study , 2014
Based on EMEP and CHIMERE models

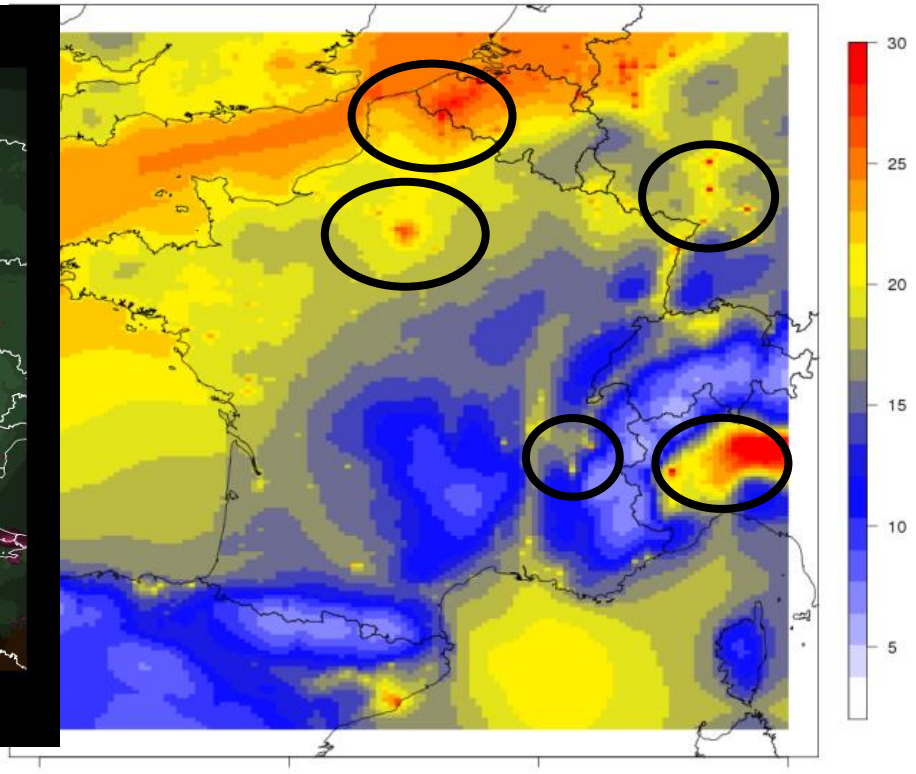


- Transboundary and national contributions are high
- To which extend depends on the location

Projections in 2030

CHIMERE runs (7km resolution): base case = 2009 , scenario = TSAP projections for 2030





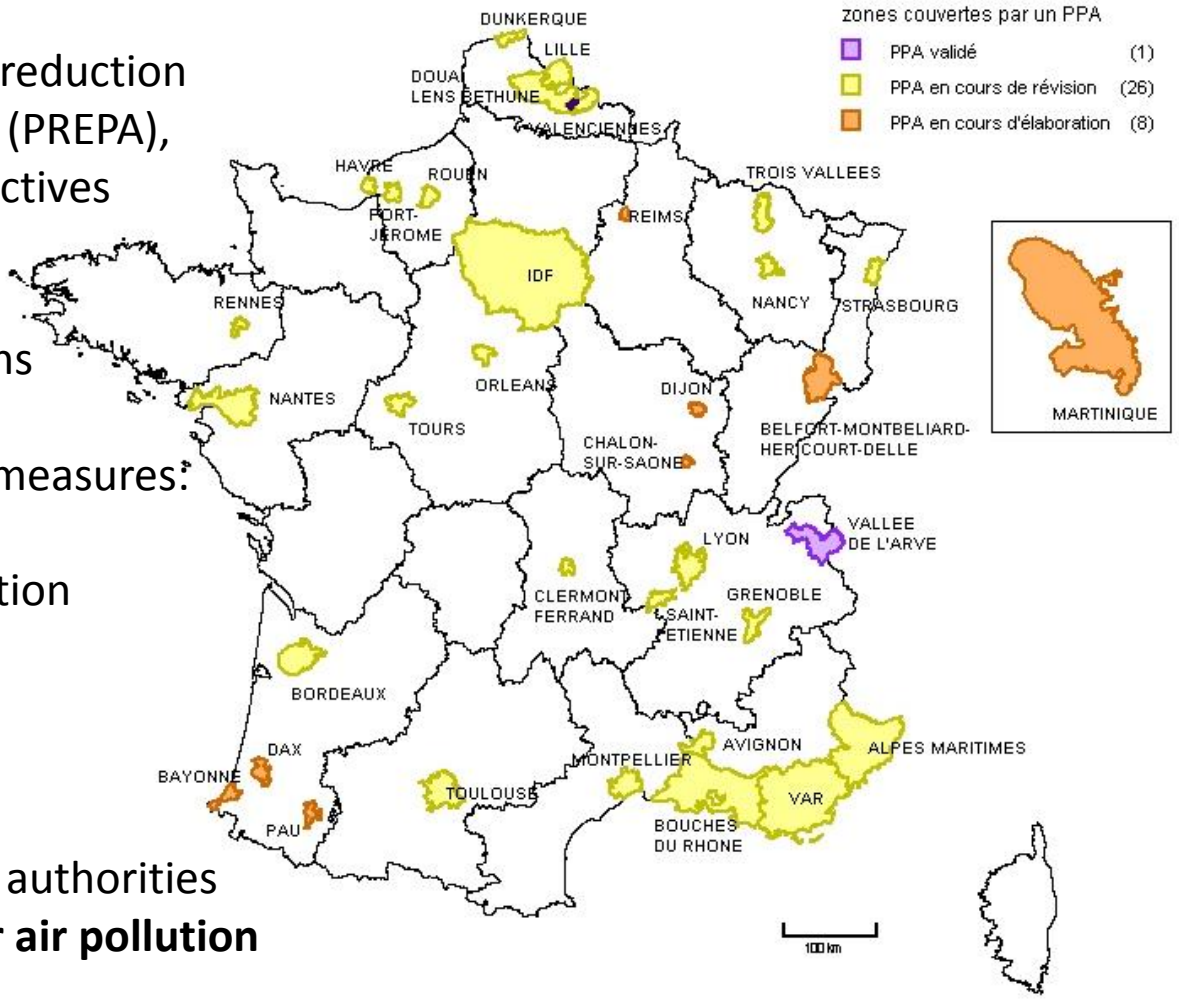
In France : National action plan and Atmosphere Protection Plans (PPA)

National action plans : “Plan de reduction des polluants atmosphériques” (PREPA), Plan particules .. NEC et IE Directives implementation

PPAs (35 in total) are local actions plans which
include local additional control measures:

- Complementary to national action plans
- To fix local exeedances of limit values

PPAs give the possibility to local authorities to take **short term measures for air pollution control.**



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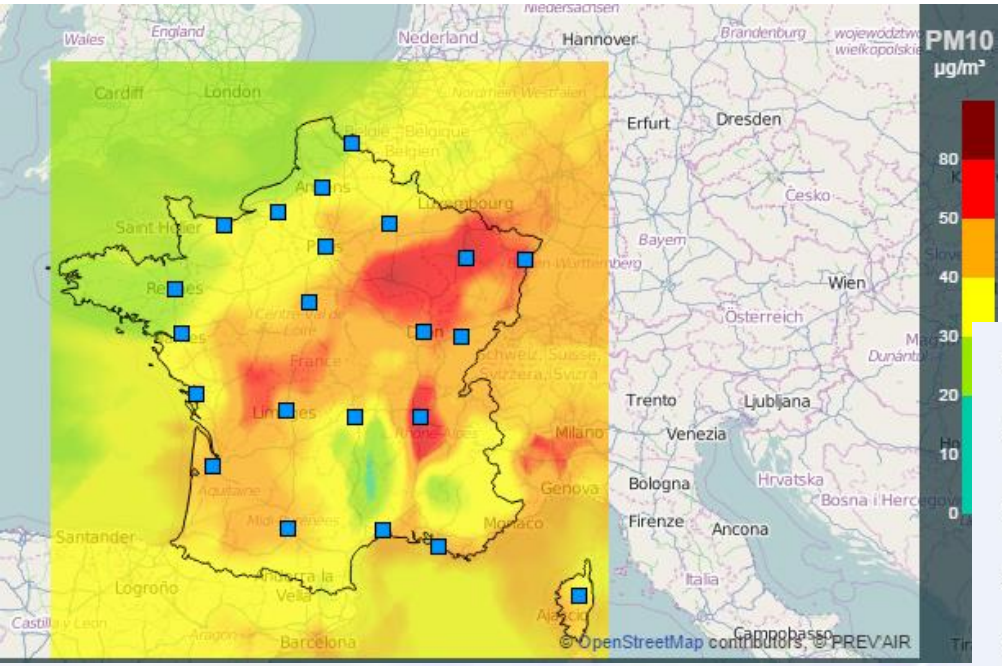
Lessons and Challenges

- Priority of control policies should be put on reduction of background air pollutant concentrations (obvious for ozone, also true for PM10)

- The largest part of air quality improvement in Europe will come from European/national/sectoral control strategies
- Local plans are focused on local exceedances situations but what is their actual impact on background air pollutant concentrations ?
- What is the appropriate scale for action?

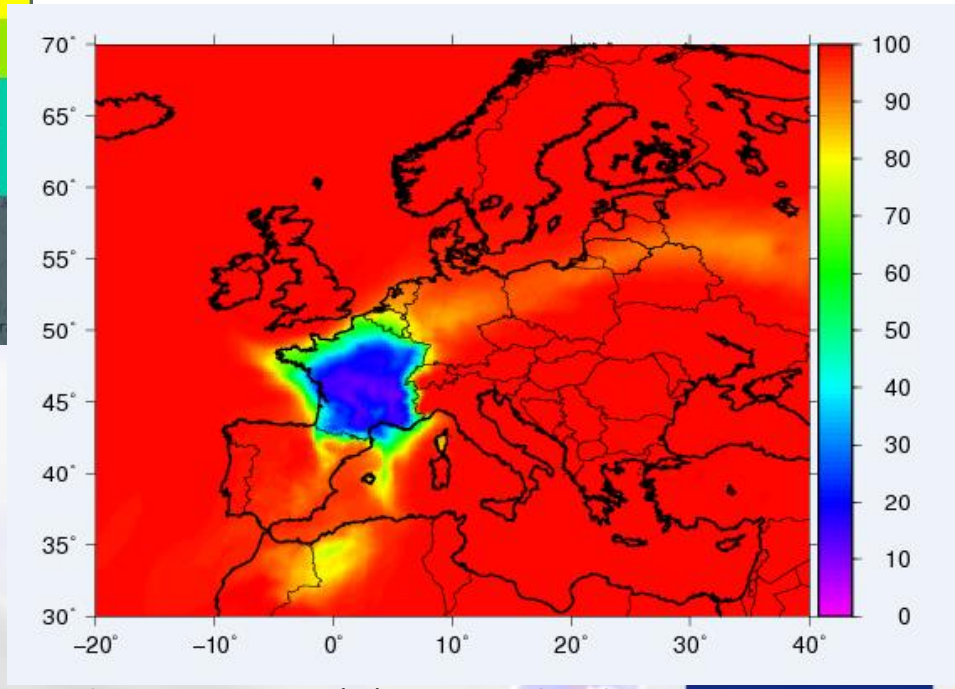
- On-going analysis on the contribution of “foreign sources” during PM episodes in France :
  - March 2014 – March 2015 case studies
  - Sunny periods with very stable meteorological conditions
  - High temperatures during the day but a quite low in the night and the morning -> inversion layers
  - Fertilizer spreading period -> very high concentrations of ammonium nitrate in PM

March 2015 preliminary analysis



PM10 concentrations in France (source : PREV'air)

10th march 2015



Natural and foreign contribution to PM10 (%) estimated with the CHIMERE model

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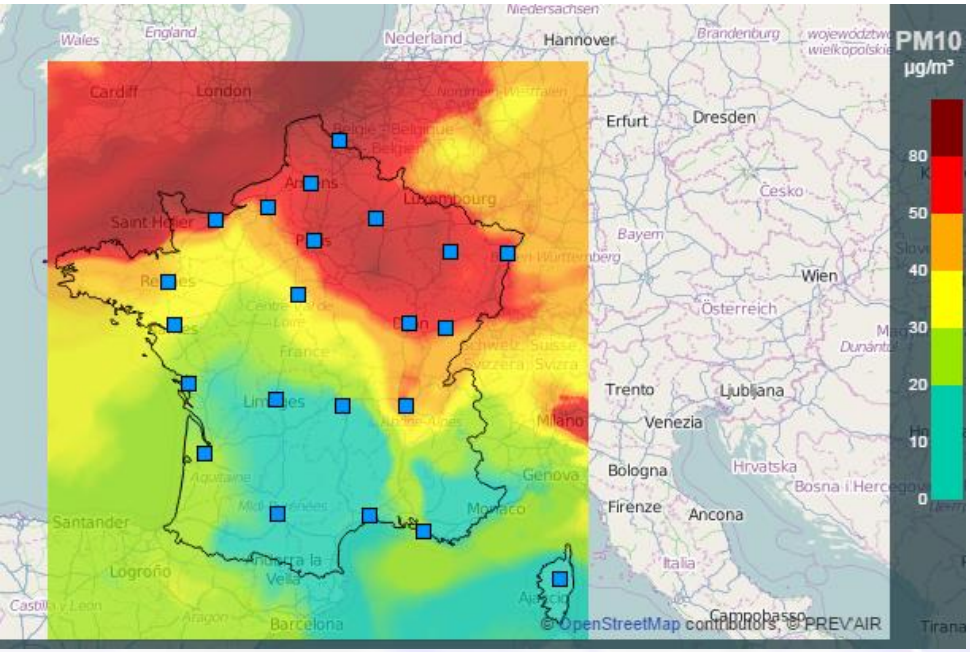
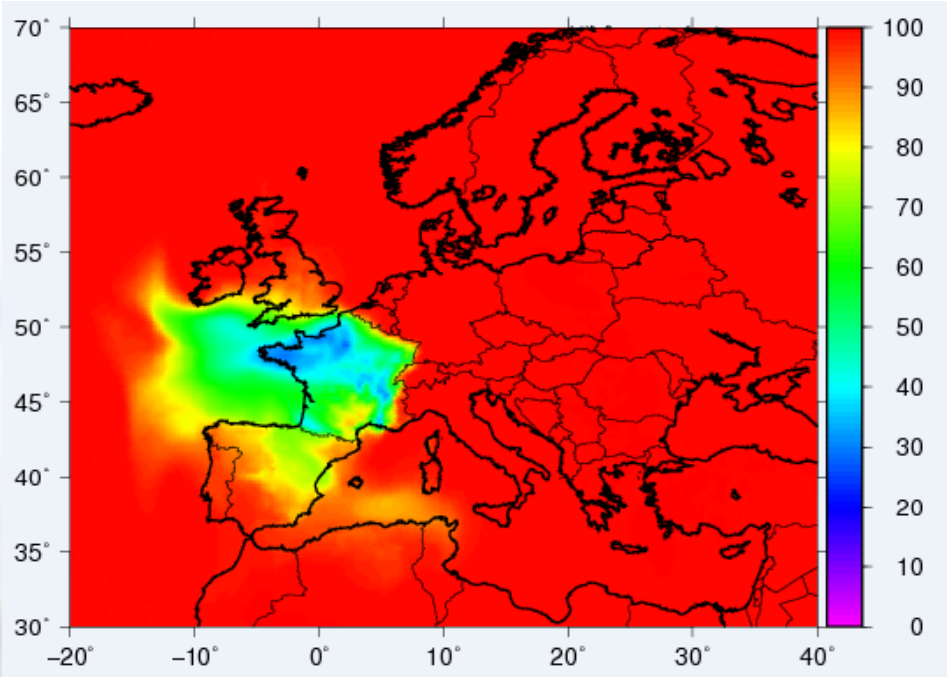


PM10 concentrations in France (source : PREV'air)

17th March 2015



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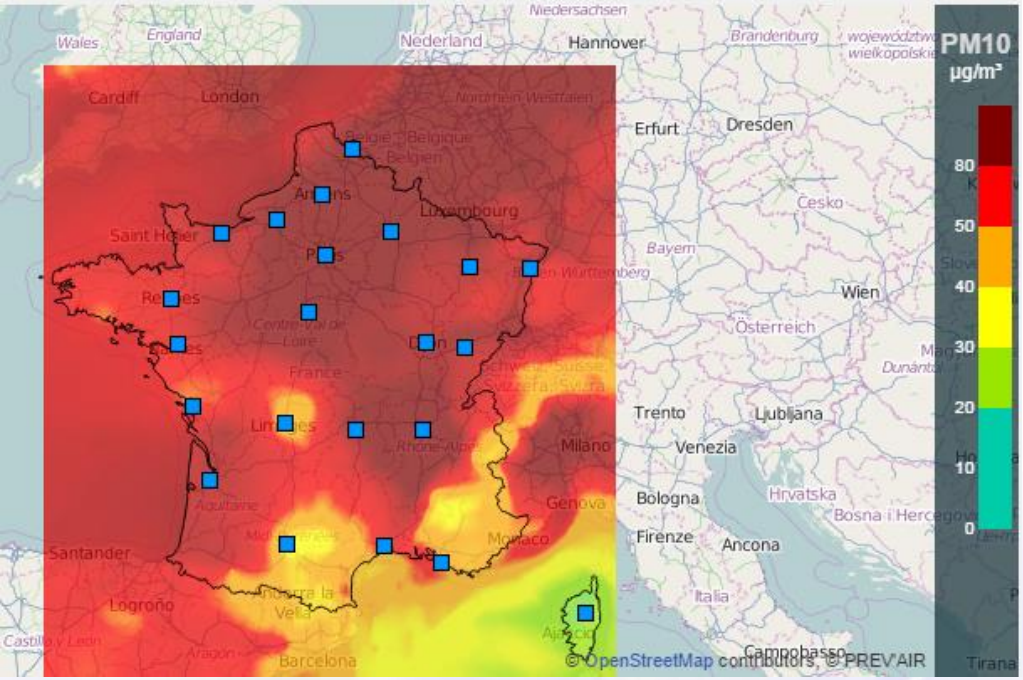
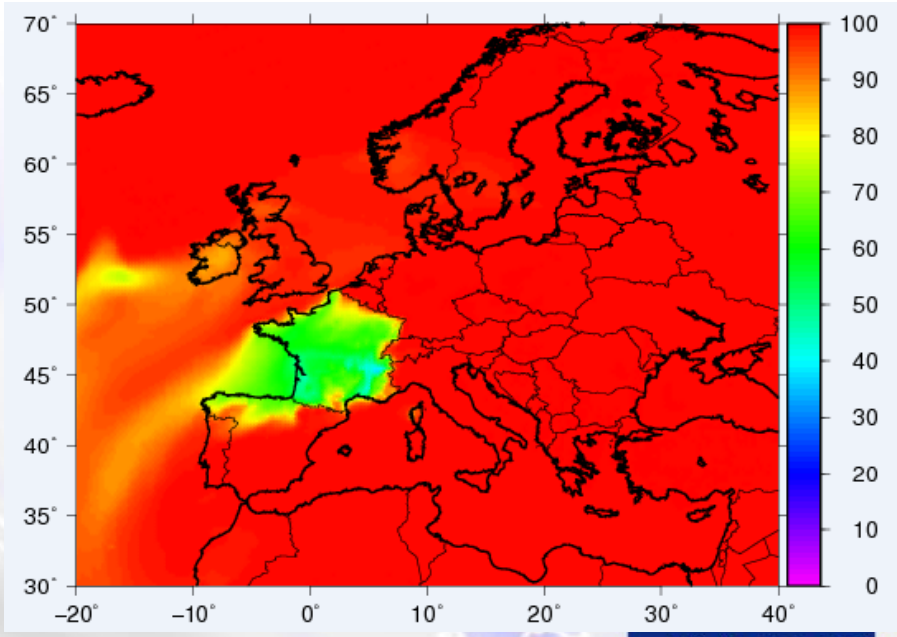


PM10 concentrations in France (source : PREV'air)

20th March 2015



Natural and foreign contribution to PM10 (%) estimated with the CHIMERE model

Can we expect the same evolution patterns in neighboring countries ?

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First recommendations

- Air pollution (especially secondary compounds) develops throughout very large domains under non dispersive conditions
  - International cooperation and coordinated actions are essential to achieve results

- Local sources of PM and precursors play an important role at the beginning of episodes
  - Implementation of local action plans should be coordinated at a large scale, especially during episodes, to reduce significantly their impact
- Actions in some sectors should be more ambitious
  - Agriculture, shipping
  - Synergies with climate mitigation strategies

- Remaining hot spots should be managed with specific approaches (resuspension)
- Reduce not only emissions but also exposure :
  - Consistency of air quality policies with health policies and urban development policies
  - Implementing the right measure at the right scale …!

THANK YOU FOR YOUR ATTENTION

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