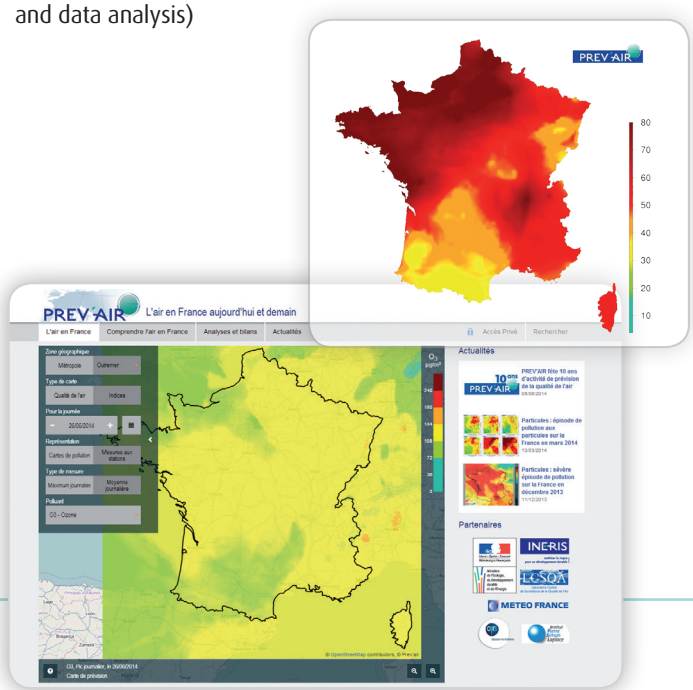
Air quality management at INERIS

INERIS (National Institute on Industrial Environment and Risks) is a key actor for environmental risk assessment in France. Therefore, INERIS' expertise includes modelling and monitoring the effects of pollution from anthropogenic activities on humans and the environment to elaborate efficient control strategies.

This expertise covers air quality challenges, and INERIS provides technical support and assistance to public institutions and private companies on the following topics:

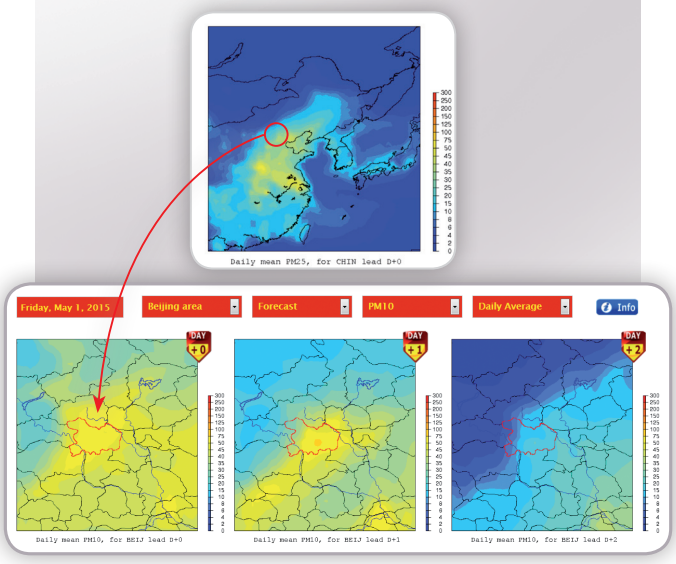
- **Conception and Analysis** of air quality monitoring strategies
- **Expertise on air quality monitoring** (measurements, modelling), and available data (statistical analyses...), organization of audits in this field of activities
- **Elaboration and implementation** of air quality modelling chains to assess the air quality at the urban, regional scales (air quality forecasting such as PREV'AIR in France, ***www.prevair.org***, or scenario analyses)
- **Effect of climate change** on air quality at regional scales
- **Cost-benefit analyses** of air quality regulations for stakeholders (public sector, private actors) in terms of public health (improved air quality) and environment protection (reduced acidification and eutrophication and effect of ozone on crops yields)
- **Collection and centralisation** of air quality data (instrumentation and data analysis)



北京市劳动保护科学研究所
BEIJING MUNICIPAL INSTITUTE OF LABOUR PROTECTION

A first application on air quality management in Beijing:

INERIS develops a partnership with the Beijing Municipal Institute of Labour Protection (BMILP) belonging to the Beijing Academic of Science and Technology (BJAST) in order to elaborate new strategies for air quality management in Beijing and analyse the effects of pollutants on health. This collaboration started with the development of an air quality modelling demonstrator based on the CHIMERE model **INERIS** develops with the French Research centre for almost 15 years. This demonstrator forecasts every day the air quality in Beijing and evaluates the impact of three mitigation scenarios reducing emissions in Beijing. This partnership benefits from long term **INERIS**'s experience in France dedicated to the evaluation of air quality policies.



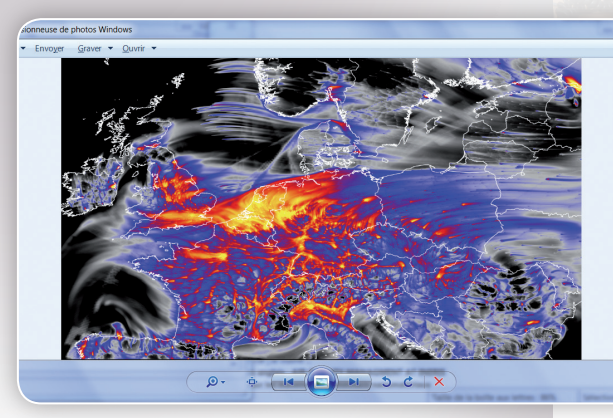
Example of $PM_{2.5}$ concentration forecast in µg m^{-3} on May, 1st 2015, over China and particularly Beijing. The added value of a better resolution over Beijing is clearly highlighted.

INERIS

controlling risks for sustainable development

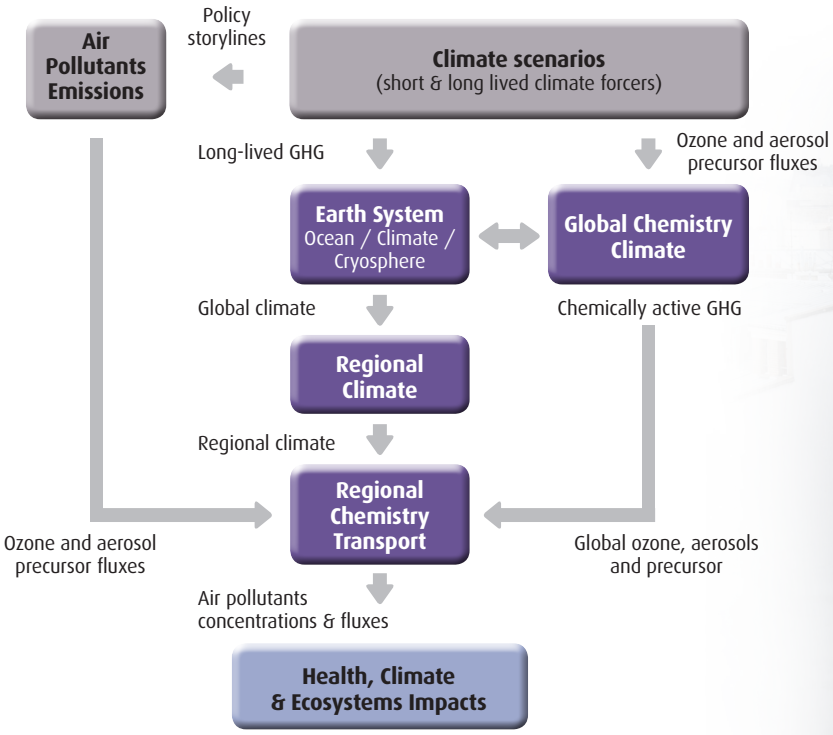
Air quality management at INERIS

This figure is an example of using **the chemistry transport** model CHIMERE to simulate nitrogen dioxide concentrations at very high resolution in Europe. In parallel to the development of models to predict the concentrations of pollutants (PM_{10}, $PM_{2.5}$, NO_2, O_3, SO_2) **INERIS** develops is own expertise on emission regridding to perform high resolution simulations of air quality.



In addition to the evaluation of metrological performances of current measurement devices and newly available on the market, **INERIS** offers the realization of measurement campaigns or proposes its support for the implementation of such devices. **Most recent technologies** allow the characterisation of various chemical species in the particle matter (sulphates, nitrates, ammonium, organic matter,...) and the identification of sources contributing to the ambient levels of PM. These measurements can be used in combination with chemistry transport models to better evaluate the air quality.

INERIS has designed a complex suite of models to analyse the impact of climate change on air quality for various scenarios related to economic hypotheses based on the energy demand and the ambitiousness of air quality measures. **INERIS** provides an interdisciplinary analysis involving climate change and air quality modelling, health impact analysis and an economic assessment of climate and air pollution policy costs against monetised health benefits of improved air quality in Europe.



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Direction des Services aux entreprises et de la Certification - 06/2015 - Article n°18353 | 349 792 754 RCS Compiègne | DAUSSON

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