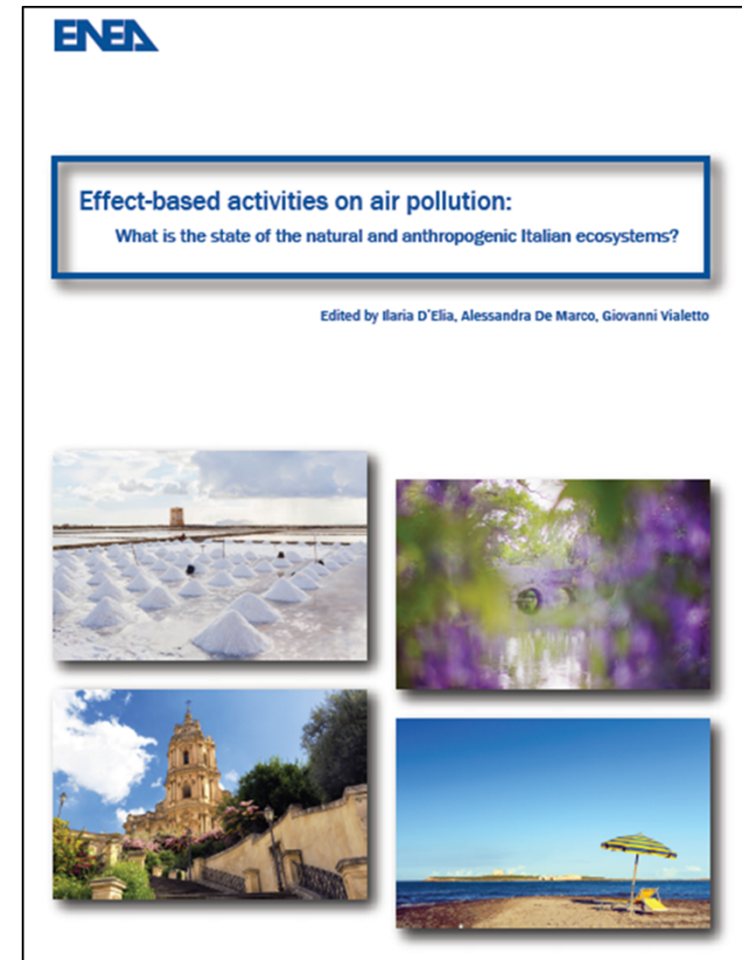


**Effect-based
activities on air
pollution:
What is the state of
the natural and
anthropogenic
Italian ecosystems?**

Conference organized in
Rome, March 16-17, 2017



Objectives:

To collect all the information available in Italy about effect-based activities on:

- Emission trends
- Impacts of atmospheric pollutants on forests, surface waters, crops, materials, human health....
- Possible solutions to reduce air pollution
- Increasing the connection between air pollution effects experts
- Mediterranean peculiarity
- Implication of climate change on the effects of air pollution

Three different working groups were organized after the plenary session

1. Working group on regional, national and local modelling
2. Potential role of vegetation in improving the air quality in the urban environment
3. Implementation of the NEC Directive in Italy



Chapters:

- ✓ Effect Oriented Activities in the LRTAP Convention
- ✓ Sources and Emissions of air pollutants
- ✓ Actual and potential impact of air pollution on Italian forests: results from the long-term national forest monitoring networks under the ICP Forests
- ✓ Effects of air pollution on crops and semi-natural vegetation
- ✓ Biodiversity as an important indicator of soil acidity and eutrophication: the role of the modelling in preserving it
- ✓ The contribution of Italy to the ICP WATERS Programme
- ✓ Are technical materials and cultural heritage exposed to air pollution risk? The contribution of Italy to ICP Materials
- ✓ Vegetation and urban air quality: recent findings
- ✓ Effects of Air Pollution on Health
- ✓ What remains to be done to reduce air pollution?

Contributors:

5 Universities

CFS

4 Research centres

3 Agencies

1 Private company



Actual and potential impact of air pollution on Italian forests: results from the long-term national forest monitoring networks under the ICP Forests



Forest condition has improved in Italy since the 1990s, with limited evidence of an impact due to tropospheric ozone. On the other side, there was a distinct effect of N deposition on forest nutrition, growth and carbon sequestration.

Effects of air pollution on crops and semi-natural vegetation

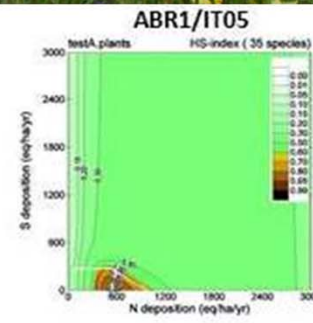


Increasing background O₃ levels in Italy still affect health, productivity and quality of crops and (semi-) natural vegetation. The risk assessment should be based on the effective O₃ dose absorbed through stomata, taking into account the different species/cultivar sensitivity, and the concurrent effect of other stress factors, such as the reactive nitrogen deposition and climatic conditions typical of the Mediterranean area.

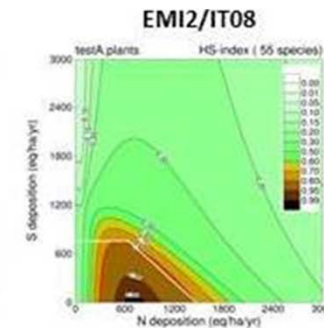
Biodiversity as an important indicator of soil acidity and eutrophication: the role of the modelling in preserving it



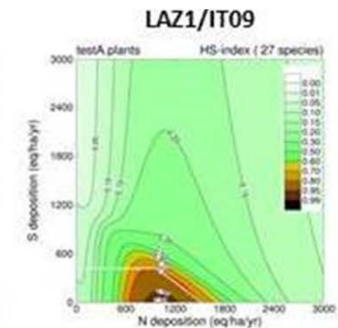
Biodiversity indices and habitat suitability index in forest sites are recovering consequently to decrease in pollutant deposition.



CLN min	539.5
CLS max	272.89
CLN max	962.57
CLS min	1

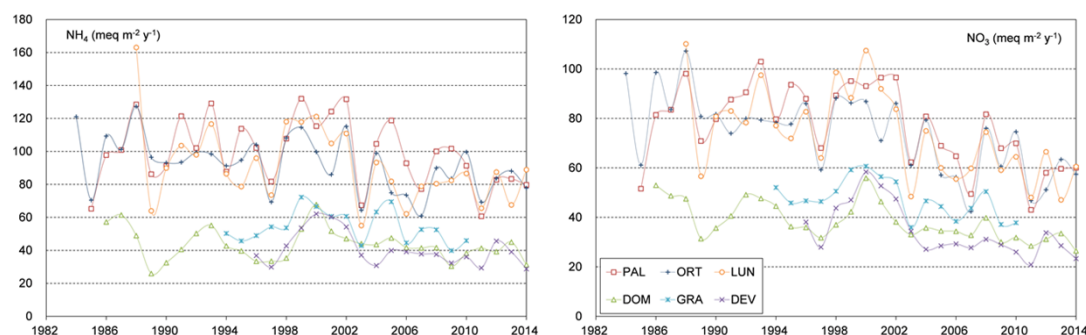


CLN min	645.68
CLS max	753.5
CLN max	1464.84
CLS min	1



CLNmin	977.78
CLSmax	415.94
CLNmax	1515.95
CLSmin	1

The contribution of Italy to the ICP WATERS Programme



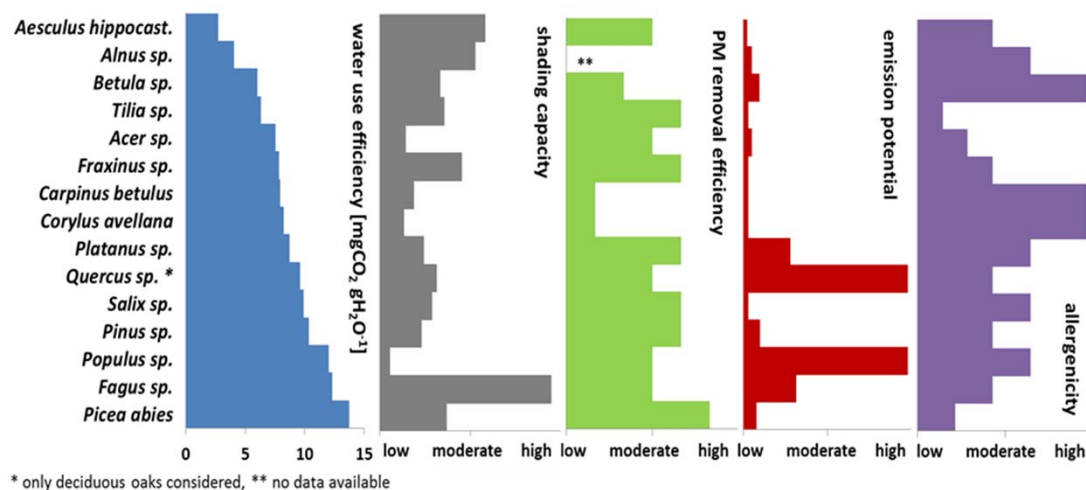
Surface water showed a widespread response to decreasing deposition of acidity, sulphate and nitrogen compounds, but the recovery was somewhat delayed, due to the interacting effect of several factors, such as nitrogen saturation of soils in the catchments and climate change. Nitrogen deposition will continue to have a prominent role in the acidification processes and in the nitrogen status of surface water. The recovery patterns in the next future will be more and more influenced by climatic factors.

Are technical materials and cultural heritage exposed to air pollution risk? The contribution of Italy to ICP Materials



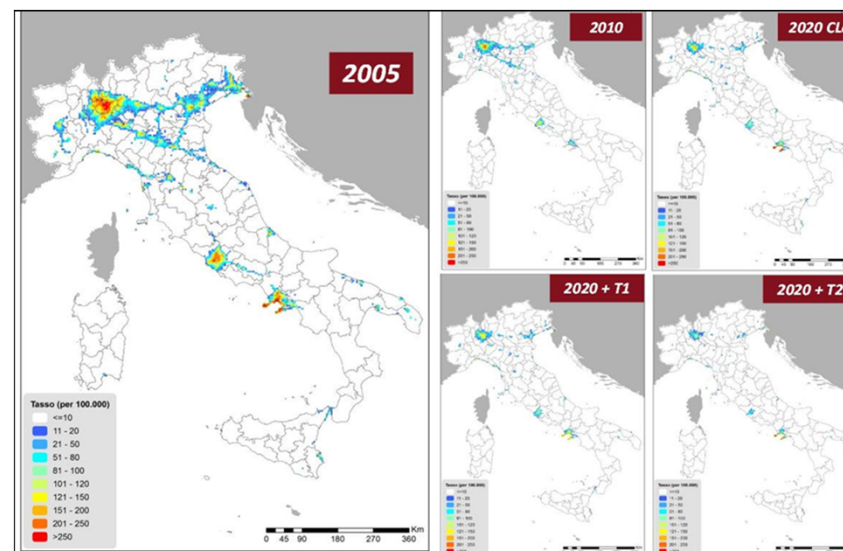
Atmospheric pollution is a key factor in the deterioration of sensitive materials and materials used in historical and modern cultural heritage are the most vulnerable to air pollution. Despite the decrease of concentrations of air pollutants has led to the decrease of deterioration rates (mainly due to the decrease of SO₂), current corrosion rates and soiling are still unacceptably high.

Vegetation and urban air quality: recent findings



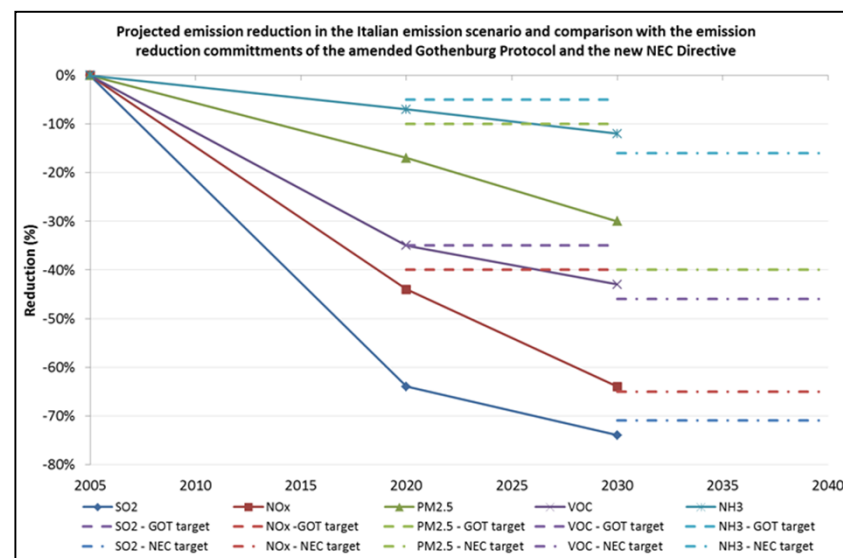
The interactions between air quality and urban vegetation are potentially of great interest, although understanding is still imperfect. In Italy, a few studies have been carried out to estimate potential uptake of pollutant from trees, in particular in two cities: Rome and Florence.

Effects of Air Pollution on Health



Health impact assessment of air pollution at national scale in Italy has been carried out in several projects, based on measured data and modelling techniques. Results agreed on showing that PM10 and NO2 induce several thousands of premature deaths and hospital admissions per year, due to cardiovascular and respiratory diseases. Confirming conclusions of previous European-scale assessments, air pollution is proved to be a major risk for human health in Italy.

What remains to be done to reduce air pollution?



Many solutions are available and only an integrated approach takes into account the co-benefits of linking air pollution and climate change. The integration of all the different tools, from measures to models, and the coordination among science sectors and different research teams could help in identifying effective environmental policy.

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