

ICP Materials

Summary of activities and results 2014-2015 & workplan 2016-2017



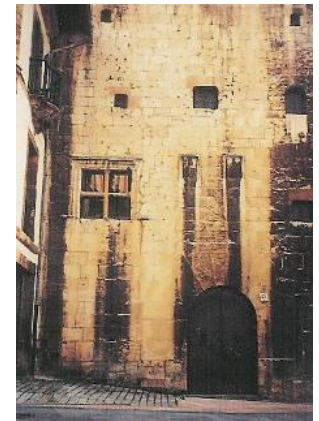
Aims of the programme

- Quantify effects of corrosion and soiling (dose-response functions)
- Describe and evaluate long-term changes in corrosion and soiling (trends)
- Apply results for mapping areas with increased risk of corrosion and soiling
- Calculation of cost of damage caused by corrosion and soiling
- Focus on multi-pollutants but taking into account confounding factors including climate effects



"Corrosion"

"Soiling"



Overview of work plans

- 2014-2015 work plan (highlights)
 - Report on trends in pollution, corrosion and soiling 1987-2012
 - 2014-2015 exposure for trend analysis - ongoing
 - Initial discussions on call for data on inventory and condition of stock of materials at UNESCO cultural heritage sites
- 2016-2017 work plan
 - To be discussed and confirmed at task force meeting
 - 2017-2018 exposure for trend analysis
 - Further development of activities targeted towards cultural heritage at UNESCO sites

ICP Materials Report on trends in pollution, corrosion and soiling 1987-2012

- Policy relevant questions
 - What improvements in corrosion and soiling of materials and cultural heritage can be observed?
 - Considering the improvements, are there still differences in corrosion and soiling between polluted and non-polluted areas?
 - What are the main pollutants responsible for corrosion and soiling of materials and can the most recent dose-response functions predict corrosion and soiling in the current multi-pollutant situation?
 - Will climate change decrease or increase the risk of corrosion and soiling due to pollution?
 - What errors, if any, are introduced by using EMEP (50 km x 50 km) data for predicting corrosion?
- Basis for ICP Materials contribution to WGE trend report and assessment report
- Available for download at ICP Materials home page

Outreach

- Russia is included in the programme and participated recent meetings and has declared its willingness to be active in involving other EECCA countries
- Interaction with standardisation group ISO TC 156 Corrosion of metals and alloys - new work item proposal on a technical specification of mapping procedures
- Interaction with standardisation group CEN TC 346 on cultural heritage conservation – information exchange

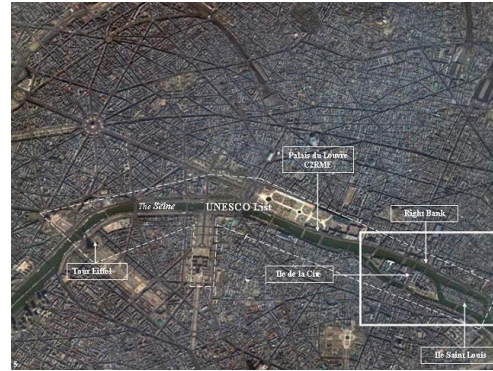
Activities targeted towards cultural heritage at UNESCO sites



Pilot study on inventory and condition of stock of materials at risk at UNESCO cultural heritage sites



**Greece, Athens
The Parthenon**



**France, Paris
The Facades in the
Centre of City**



**Czech Republic, Prague
The Klementinum**



Germany, Berlin Neues Museum



UK, City of Bath Royal Crescent

Further development of activities targeted towards cultural heritage at UNESCO sites

Collection of information from literature data on anthropogenic activities that could determine the levels of pollutants affecting the studied UNESCO sites.

Elaboration of maps of atmospheric pollution;

Elaboration of corrosion maps in an adequate area around the site;

Individuation of the major contributors of air pollution-related problems at the studied UNESCO sites;

Propose measures to be adopted to improve air quality at UNESCO sites and to prolong the maintenance intervals for restoration works.

Call for data proposed by ICP Materials

Cultural sites included in the UNESCO World Heritage List can serve as well-known indicators for the individuation of areas with increased risk of corrosion due to atmospheric pollution and for the economic evaluation of the damage caused by air pollution.

The purpose of the call would be:

To disseminate the experience gained during the “Pilot study on inventory and condition of stock of materials at risk at UNESCO cultural heritage sites”;

To identify UNESCO sites at risk in individual countries;

To raise the interest in the work of ICP Materials.

Call for data proposed by ICP Materials

Draft template

- Site information
- Characterisation of the cultural heritage
- Concentration of atmospheric pollution
- Climate
- Additional information

Site information		
Country		
State, province or region		
Name of the site		According to the UNESCO World Heritage List
Short description		Short text describing site.
Denomination of the artistic/cultural realization to which the following data relates		Please, specify whether the reported information relates to the entire UNESCO site or individual building/monument (for example, Historic Centre of Florence, Italy or Cathedral of Santa Maria del Fiore).
Characterization of the cultural heritage		
Total surface of building(s)/monument(s), m ²		Please, report all available/estimated data. The amounts of different materials may be reported as total amount (m ²), percentage (%) or simply as yes/no
Limestone / marble		
Sandstone		
Render / Mortar / Plaster		
Brick		
Copper		
Bronze		
Wood		
Painted surfaces		
Glass		
Others		
Concentrations of atmospheric pollutants		
Year		Please, report all available data. Year: the year to which the data relate (possibly the most recent year). Location of measurement station: Geographic latitude and longitude of the measurement station (possibly the monitoring station nearest to the site). Alternatively, indicate the source of the data (eg. EMEP model results). All data expressed as annual averages.
Location of measurement station		
SO ₂ , µg/m ³		
NO ₂ , µg/m ³		
PM ₁₀ , µg/m ³		
Meteorological parameters		
Year		Please, report all available data. Year: the year to which the data relate (possibly the most recent year). Location of measurement station: Geographic latitude and longitude of the measurement station (possibly the monitoring station nearest to the site). Alternatively, indicate the source of the data (eg. EMEP model results). All data expressed as annual averages.
Location of measurement station		
Temperature, °C		
Relative humidity, %		
Amount of rain, mm/year		
pH of precipitations		
Additional information		
Environment		Short description of the surrounding environment (eg urban, traffic, rural)
State of conservation/preservation		
Conservation approaches		Please provide available information. Relevant documents can be attached as separated files to this template.
Life cycle of maintenance/restoration		
Cost of maintenance/restoration		

Draft brochure on activities targeted towards cultural heritage at UNESCO sites

LRTAP
Long-range Transboundary Air Pollution

United Nations Economic Commission for Europe
Convention on Long-range Transboundary Air Pollution

swerea | **KIMAB**

ENEA
Italian National Agency for New Technologies,
Energy and Sustainable Economic Development

Pilot study on inventory and condition of stock of materials at risk at five United Nations Educational, Scientific and Cultural Organization (UNESCO) cultural heritage sites

wge Working Group on Effects of the Convention on Long-range Transboundary Air Pollution

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Proposed time plan

- **Finalization of the Call for Data at 31st ICP Materials Task Force meeting, Kjeller, Norway (April 2015)**
- **Pre-announcement of a Call for Data on inventory and condition of stock materials at UNESCO cultural heritage sites (May 2015).**
- **Proposal of the Call for Data submitted to WGE (September 2015) for review and possible adoption and subsequent EB confirmation.**
- **Launch of a Call for Data (early 2016).**

**Welcome to
ICP Materials
31st meeting!
April 22-24, 2015
Kjeller, Norway**