Agenda WG1

**Wednesday 24th June 2015**

- 17:45-18:00 Methodology to detect outliers in the AirBase database (O. Kracht, JRC)

**Thursday 25th June 2015**

- 11:00-13:00 WG1 - Session 5 – CCA Spatial Representativeness
  - 11:00-12:30 Outcomes of the survey & conclusions on the feasibility and possible design of an intercomparison exercise (F. Martin, J.L. Santiago, M. Gerboles & O. Kracht; CIEMAT, JRC)
  - 12:30-13:00 Discussion (all WG1 participants)
Agenda WG1

Thursday 25th June 2015

• 11:00-11:15 Methodology to detect outliers in the AirBase database (O. Kracht, JRC)
• 11:20-13:00 WG1 - Session 5 – CCA Spatial Representativeness
  • 11:20-12:30 Outcomes of the survey & conclusions on the feasibility and possible design of an intercomparison exercise (F. Martin, J.L. Santiago, M. Gerboles & O. Kracht; CIEMAT, JRC)
  • 12:30-13:00 Discussion (all WG1 participants)
Proposed Intercomparison Exercise: Spatial Representativeness of Air Quality Monitoring Stations

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CIEMAT, SPAIN

CCA Spatial Representativeness

Fairmode Technical Meeting
24th and 25th June 2015
Aveiro - Portugal
Introduction (O. Kracht, 10 min)
J.L. Santiago (20-25 min)
  - State of the art (literature study results)
  - Survey design
  - Survey results
F. Martin (20-25 min)
  - Feasibility study
  - Outcomes and conclusions
  - Proposal of the intercomparison exercise
  - Need of detailed dataset specifications
Discussion with the participants (30 min)
FAIRMODE proposed 2014 – 2016 roadmap:

Cross-cutting activity on spatial representativeness

• ...

• Evaluate the feasibility of methodological comparisons on SR, preferably on shared datasets. The methodological diversity of the different approaches might impose significant challenges in this regard.
Work Plan

The exercise shall:

- Be executed by different groups, but on the same shared dataset.

- Cover as much as possible the total variety and diversity of procedures which are in use today - ranging from methods with moderate complexity, used for pragmatic purposes, to those which involve higher levels of data requirements and computational efforts.
We anticipate a considerable variety of different types of spatial representativeness methods:

1. Methods immediately based on an estimate of the spatial distribution of pollutants combined with a set of statistical similarity criteria
   a. Concentration fields derived from observations
   b. Concentration fields derived from air quality modelling

2. Methods based on pollutant proxies and / or surrogate data (e.g. emissions, population density, land use) in combination with a set of statistical similarity criteria

3. Methods linked to the classification of stations or sites
Outputs (SR results) may range from:

1. Detailed **geospatial descriptions** of the SR area (spatial polygons, maps ...)
2. Quantifications by **simplified geometric concepts** (radius of the SR area, length of street segment ...)
3. **Semi-quantitative estimates** (scale or the order of magnitude of the SR area)
4. An estimated spatial variance or other **statistical parameters**
5. Characterisations by surrogate categorical attributes (different types of **station classification schemes**)
6. Other means of reporting, including **qualitative descriptions**
IC Exercise

Schedule and Mode of Operation

A. Feasibility study and survey
1. Timeframe: October 2014 until June / July 2015
2. Organisation:
   – Mainly the hands of CIEMAT (F. Martin & J. L. Santiago Del Rio)
   – JRC functions as a coordinator

B. Preparation of shared datasets / Preparation of the Intercomparison exercise
1. Timeframe: from ca October 2015
2. Organisation:
   – JRC
C. **Actual execution of the intercomparison**

1. **Timeframe:** in the course of 2016
2. **Prerequisites:**
   - Check of input data availability for each participant
   - Coordinate systems ...
   - Agreement on data treatment for the outcomes
     - Suggestions welcome
Scope of the Feasibility Study (✓ done)

- Evaluate the feasibility of the actual methodological intercomparison exercise
- Identification of candidate methods
- Requirements on shared datasets
- Assessment of the comparability of the different types of spatial representativeness results
- Investigate about the best way to compare the outcomes of the different spatial representativeness methods
- Identify the limitations to be expected
Feasibility Study and Survey

Nov. / Dec. 2014: Design of Questionnaires
Feasibility Study and Survey

✓ Nov. / Dec. 2014: Design of Questionnaires
✓ Jan. 2015: Review of Questionnaires

Many thanks to J. Geiger, A. G. Ortiz, G. Pirovano, F. de Leeuw, L. Malherbe, M. Ross-Jones, and W. Spangl!
Main comments / suggestions by the reviewers:

1. To focus strictly on spatial representativeness leaving out other aspects as station classification.

2. No changes in the main structure.

3. Some smaller changes to clarify questions and preselected answers.
Discussion about how to carry out the intercomparison exercise:

1. Need of a previous agreement on SR definition taking into account time scales?

2. Only compare methodologies based on same SR definition?

Finally decided that it would probably be necessary to accept that the pool of investigated methods will not necessarily share a strictly unique definition of spatial representativeness.
Feasibility Study and Survey

✓ Dec. 2014: Design of Questionnaires
✓ Jan. 2015: Review of Questionnaires
✓ Final version of questionnaire was sent to:
  - FAIRMODE members
  - AQUILA members
  - FAIRMODE national contact points
  - International experts
    (identified from literature study)
Feasibility Study and Survey

✓ Dec. 2014: Design of Questionnaires
✓ Jan. 2015: Review of Questionnaires
✓ March 2015: Final Collection of Replies
✓ June / July 2015: Evaluations and Report
Returns of Questionnaire

Prospective Participation for the Intercomparison Exercise

<table>
<thead>
<tr>
<th>Participation</th>
<th>Number of groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>18</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
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</tbody>
</table>

22 Replies

Interested in Participating

- Yes: 82%
- No: 18%
Suggestions for Shared Datasets

Example: 2012 IFDM Model results for Antwerp

- Annual average concentration, res≈20m (irregular grid)
- Hourly time series on previously specified points, e.g. monitoring stations, sampler positions. (8760 values, 140KB/pt)

The modelling domain can be adapted and extended.
Required Dataset Specifications

More detailed information about the group-specific requirements for the set of input data is needed.

Input Data Requirements

1. Air quality monitoring data
2. Data from sampling campaigns
3. Data air quality modelling
4. Emission inventories
5. Meteorological or climatological
6. Station classification
7. Other surrogate data
8. No answer
Thank you for your attention!

Now more details will follow about the outcomes of the survey and feasibility study.