**NIAM activity on PM2.5**

As one of our first activities in NIAM we would like to look at how countries are addressing PM2.5 pollution, including how they model it, how they assess the health impacts, and how this feeds into policy. As a first step we are gathering information on current work in this area towards organisation of a virtual meeting in November.

If you are interested in participating please register your interest with an e.mail to [h.apsimon@imperial.ac.uk](mailto:h.apsimon@imperial.ac.uk). And if you are already working in this area we shall be grateful if you can also send a response to the questions below which will help us in planning a focus on this topic.

1. **Modelling PM2.5**

If you model PM2.5 concentrations in your country:-

1. Do you use GAINS, or independent modelling- in which case please give brief details.

*- We use use a national model (FRES:* [*https://www.syke.fi/projects/fres*](https://www.syke.fi/projects/fres)*) that is similar to GAINS in structure*

1. What distance scales do you cover- e.g. European, national, city: and with what spatial and temporal resolution?

*- National scale. We have a 250 x 250m spatial and hourly temporal resolutions of for emissions. For concentrations we can model annual and monthly averages.*

1. What components of PM2.5 do you include- e.g. primary PM2.5, secondary inorganic aerosol, secondary organic aerosol, natural dust etc?

- Our own dispersion modelling only includes primary PM2.5, but we estimate emissions for all the precursors too.

1. What emissions data do you use e.g. a national inventory. Are there particular sources you think are uncertain, missing, or would like to discuss?

*- Our model is mainly for calculating emission scenarios, so we make our own emission estimates and try to make sure they are as much in sync with the national inventory as possible*

1. Have you undertaken validation of your model against measurements, and if so what measurements do you have available to use

*- We have: https://link.springer.com/chapter/10.1007/978-3-319-57645-9\_15 . There are 11 stations in Finland that measure annual PM2.5 concentrations*

1. What do you think are the most important uncertainties or aspects of PM2.5 modelling that you would like to discuss

*- In terms of modelling: Secondary organic aerosols (from wood combustion), in terms of health: the effect of chemical composition/size distribution to health impacts of PM2.5*

1. **Assessing health impacts**

The health impacts of PM2.5 are a major driver to reduce air pollution.

1. We are interested in how you use data on concentrations of PM2.5, either modelled or measured or both, to assess human exposure and health impacts?

*- Mostly modelled, since measurements are so scarce*

1. If you undertake such assessments of health impacts of PM2.5, do you follow WHO guidance and base this on total mass of PM2.5, or do you focus on particular components and/or differentiate relative toxicity?

*- We have followed WHO guidance and used only total mass of PM2.5, although we see problems with this approach*

1. What health impacts do you consider e.g. mortality, asthma etc; and what risk coefficients do you use?

*- WHO coefficients for mortality, asthma, bronchitis and hospital admissions*

1. Do you assess the economic costs of health impacts, and if so what do you include e.g. life years lost, hospital/medical costs, loss in productivity/working days lost etc.?

*- We have included all of the above to some extent*

1. **Policy applications**

We are also interested in the application of your work, particularly as input to development of policy.

1. How do you relate your work to environmental goals e.g. compliance with regulations, or comparison with WHO guidelines?

*- There aren’t much issues with compliance with regulations in Finland, and concentrations are mostly below WHO guidelines. Still, the ministry of the environment has been interested in more ambitious air quality goals, and the modelling has highlighted residential wood combustion as a source that needs extra attention.*

1. **Publications**

Have you published your work, in which case please give references is available?

*- Damage cost model for air pollution in Finland:* [*https://acp.copernicus.org/preprints/acp-2019-702/acp-2019-702.pdf*](https://acp.copernicus.org/preprints/acp-2019-702/acp-2019-702.pdf)

*- Health impacts of residential wood combustion in Finland:* [*https://www.mdpi.com/1660-4601/16/16/2920*](https://www.mdpi.com/1660-4601/16/16/2920)

*- Health impacts of ambient air pollution in Finland:* [*https://www.mdpi.com/1660-4601/15/4/736*](https://www.mdpi.com/1660-4601/15/4/736)

1. **Questions**

Are there particular aspects of questions that you would like NIAM to address on PM2.5, including at the virtual meetings proposed for November.

Please e.mail your response to Helen ApSimon: h.apsimon@imperial.ac.uk