



ADMLC and IAQM are hosting an in-person seminar

Seminar: Investigating the impact of applying different grid resolutions of NWP data in atmospheric dispersion modelling

09:30-14:00 BST Friday 18 October 2024

Address: UKHSA (Training Centre), Harwell Campus, Didcot, Oxfordshire, OX11 0RQ.

Directions: [Radiation Protection Services - Chilton office \(ukhsa-protectionservices.org.uk\)](http://ukhsa-protectionservices.org.uk).

Outline agenda:

9:30am	Tea & Coffee
10.00am	Welcome/intro – ADMLC Chair
10.10am	Findings of ADMLC study – CERC
11.10am	Findings of ADMLC study – UKHSA
11.30am	Tea & Coffee
12.00pm	New IAQM guidelines & the application of met data – Kieran Laxen
12.15pm	Regulatory perspective – Matthew Bevington
12.30pm	Discussion (inc consultants' application of met data & interpretation of the ADMLC study)
1.00pm	Sandwich lunch & informal discussion

There is no fee to attend this seminar. However, you must register to attend. Please request attendance by contacting the ADMLC Secretariat at: admlc@ukhsa.gov.uk. To help in the planning of the seminar please can you register by Friday 4th October.

Background information

Meteorological (met) station sites may be too far from, and situated in differing topography to, the release location(s) and thus met station derived data may be unrepresentative of a study area. The quality and availability of numerical weather prediction (NWP) model data is continuously improving. As a result, NWP model data is becoming more widely used as input to air dispersion modelling for regulatory air quality impact assessments, and for probabilistic accident consequence assessments in respect of radiological releases.

The resolution of NWP model data has been improving with the advances in predictive algorithms and computing power. For example, the Met Office Unified Model (UM) NWP data resolution was 60 km prior to 2004, then down to 12 km in 2004, 4 km in 2007 and 1.5 km in

2013. Similarly, data derived from other mesoscale models such as WRF and NEMS is commonly available at a range different resolutions, including from 1 km to 12 km, and coarser resolutions e.g. 31 km, from global models, for example, from Global Forecast System (GFS) and Integrated Forecast System (IFS) model, developed by the European Centre for Medium-Range Weather Forecasts (ECMWF).

Different NWP modelling approaches and spatial resolutions result in different degrees of representativeness of NWP met data at a local level. The effect of terrain on air flow may be considered in an NWP model, depending on the scale of terrain and NWP model resolution. Since some atmospheric dispersion models, e.g. ADMS, explicitly consider the impact of terrain effects on air flow, there is concern that double counting of the terrain effect for a regulatory air dispersion modelling assessment may occur.

Therefore the ADMLC funded an investigation into the consequence of using different spatial and temporal resolution of NWP met data on:

- (a) model predictions of annual mean concentration and high percentile hourly concentrations for a regulatory assessment.
- (b) model endpoints derived by way of probabilistic accident consequence assessments.

CERC and UKHSA worked collaboratively to address the needs of the ADMLC, producing a [report](#) which documents the study's findings and recommendations. Firstly, the seminar provides an opportunity for the authors to share these findings and recommendations. Secondly, the seminar provides an opportunity to discuss any potential issues raised in the context of the study. For example, are the recommendations likely to impact the application of meteorological data in assessments forming Environmental Permitting Regulations submissions (including in areas of complex terrain)?

If the topics summarised above are of interest to you and your employer, please join us for this seminar – your attendance and contributions would be very much welcomed.