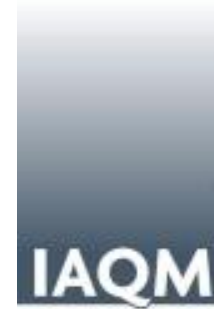


Atmospheric Dispersion Modelling Liaison
Committee (ADMLC)



Institute of
Air Quality
Management

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

UKHSA, Harwell, UK
Friday 18 October 2024

Simon Gant (ADMLC Chair, Health and Safety Executive)



Public Health
England

Protecting and improving the nation's health

Safety and Local Information

Centre for Radiation, Chemical and Environmental Hazards



IF YOU HEAR AN ALARM YOU MUST TAKE IMMEDIATE ACTION

FIRE ALARM

A Warbling Sound –

Leave the building and follow the signs to the assembly point at the front of the Training Centre

SITE INCIDENT ALARM

An intermittent noise from the klaxons like harsh car hooters. This requires no action from our building occupants

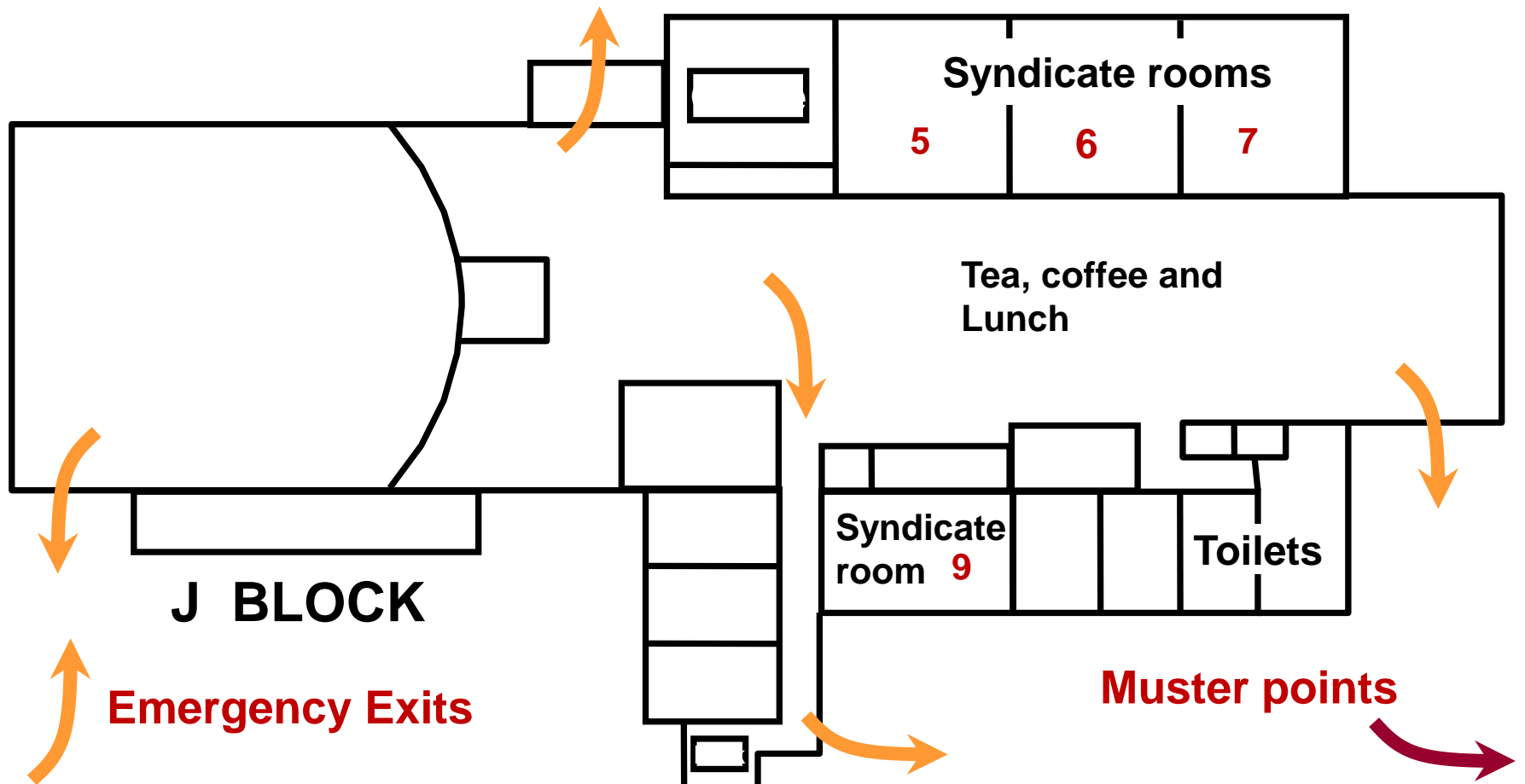
CAR PARKING

All vehicles are parked at owners risk. Normal precautions should be taken against loss or theft. Your vehicle registration number should be logged with Reception

BADGES

Badges should be worn at all times and returned to Reception when you leave

The Chilton Training Centre



Supplementary Information For Visitors

PLEASE TURN OFF ALL MOBILE PHONES & PAGERS

Messages can be left with Reception - 01235 825313. Messages for you will be pinned on the board adjacent to the servery

PLEASE NOTIFY RECEPTION BEFORE LEAVING (even temporarily)

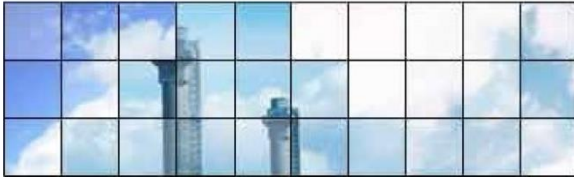
In the event of an emergency we need to know who is still in attendance

PLEASE DO NOT BRING FOOD OR DRINK INTO THE LECTURE THEATRE

This is for cleaning & hygiene reasons

SMOKING IS NOT PERMITTED ON PHE PROPERTY

PLEASE NOTE, NO PHOTOGRAPHY IS ALLOWED ON THE PREMISES



ADMLC Membership



Met Office



UK Health
Security
Agency





ADMLC Recent Work

- **January 2021:** “Guidelines for the Preparation of Short Range Dispersion Modelling Assessments for Compliance with Regulatory Requirements” – An Update to the ADMLC 2004 Guidance
<https://admlc.com/model-guidelines/>
- **July 2021:** Report published on “Dense-gas dispersion for industrial regulation and emergency response” by Rachel Batt (HSE)
 - Spreadsheet of datasets for model validation
 - Spreadsheet of previous incidents
 - <https://admlc.com/publications/>
- **September 2021:** Report published on “A Review of Approaches to Dispersion Modelling of Odour Emissions and Intercomparison of Models and Odour Nuisance Assessment Criteria” by CERC and ELLE <https://admlc.com/publications/>



ADMLC Ongoing Work

Review of methods used to assess the performance of atmospheric dispersion models

- Scope:
 - Literature review
 - Case studies
 - Guidance on application of model evaluation methods to different scenarios
- Contract awarded to CERC and Steven Hanna
- Timeline: results to be presented in 2025
- Ron Meris (DTRA) kindly offered to provide external peer review

ADMLC welcomes partnerships with other funding agencies or self-funding research organisations on topics of mutual interest



ADMLC Future Work?

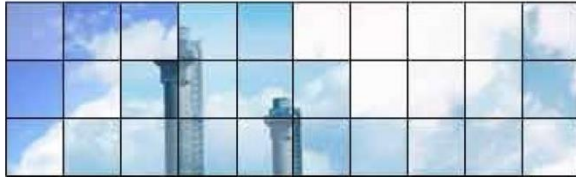
1. Impact of changing meteorology (due to global warming) on dispersion model predictions
2. Design of sensor networks to inform dispersion modelling

Further ideas welcome



ADMLC Website Updates

- **H1 Tool** <https://admlc.com/h1-tool/>
 - H1 (formerly D1) was the Environment Agency's software tool to calculate the stack height for satisfactory dispersion of various substances
 - Withdrawn in 2016 and not Environment Agency current guidance
 - Still a useful method for calculating effective stack heights
- **Safety and Reliability Directorate (SRD) Reports**
 - Historical reports produced by SRD (UK Atomic Energy Authority)
 - Examples:
 - The accidental release of anhydrous ammonia to the atmosphere – a systematic study of factors influencing cloud density and dispersion.
 - Discharge rate calculation methods for use in plant safety assessments.
 - <https://admlc.com/safety-and-reliability-directorate-srd-series-reports/>
- **Hosting datasets**
 - Jack Rabbit III and MODISAFE



ADMLC Webinars and Seminars

- **May 2021:** “Dispersion modelling and satellites” webinar
- **February 2022:** “Use of dispersion modelling for sensor network design to facilitate source attribution, emissions estimation and incident response” webinar
- **March 2023:** “Dense gas dispersion modelling in complex terrain, with a focus on carbon dioxide pipelines” webinar
- **October 2023:** “Dry deposition and surface chemical reactivity” seminar
- **December 2023:** “Modelling katabatic flows” webinar
- **February 2025:** “Modelling wildfires” seminar, Met Office, Exeter
- Recordings available: <http://www.admlc.com/events>



Impact of different resolutions of NWP data

Motivation

- NWP data is becoming more widely used as an input to dispersion modelling for
 - Regulatory air quality impact assessments
 - Probabilistic accident consequence assessments of radiological releases
- Resolution of NWP data can affect
 - Representativeness of meteorology
 - Influence of localized effects: terrain, land/sea breezes etc.
- How does the NWP resolution affect dispersion model predictions?
 - Is there an issue with double-counting of terrain effects with some dispersion models?
- Meeting aims: CERC and UKHSA to present detailed findings
 - Opportunity for consultants and regulators to discuss how the results should be used to inform future work



Seminar Programme

10:00	Simon Gant (HSE)	ADMLC Chair's welcome
10:10	James O'Neill (CERC)	Findings of CERC study
11:10	Peter Bedwell (UKHSA)	Findings of UKHSA study
11:30	Coffee/tea break	
12:00	Kieran Laxen (IAQM, APS)	New IAQM guidelines & application of met data
12:15	Matthew Bevington (NRW)	Regulator's perspective
12:30	Discussion	
12:00	Lunch	



Thank you

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

Speakers:

- James O'Neill (CERC)
- Peter Bedwell (UKHSA)
- Keiran Laxen (IAQM, APS)
- Matthew Bevington (NRW)

ADMLC Secretariat for organising and hosting the meeting

- Justin Smith, Peter Bedwell and Claire Delides (UKHSA)

Thanks also to all contributors for useful discussions



Thank you

We would welcome feedback: admlc@ukhsa.gov.uk

- What worked well?
- What could we improve?
- Future ideas for ADMLC webinars and seminars?