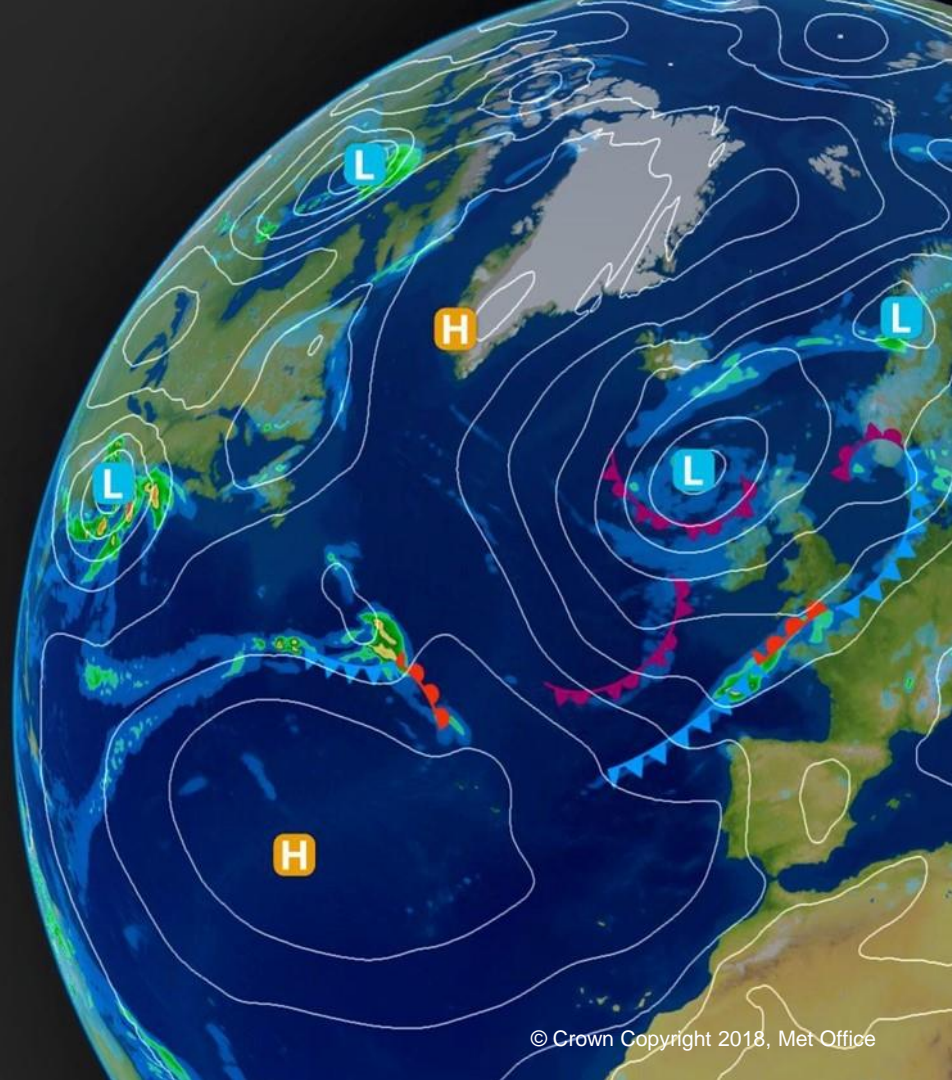


EMARC:

The UK Met Office Environmental
Monitoring and Response Centre

Gareth Powell
UK Met Office
7th January 2019



EMARC - Introduction

Environmental
Monitoring
And
Response
Centre



EMARC - Background

1986 – Chernobyl response – atmospheric dispersion forecast

UKMO developed Nuclear Accident Model (NAME)

1989 – Appointed Regional Specialist Meteorological Centre (RSMC) by IAEA and WMO

1990s – Appointed Volcanic Ash Advisory Centre (VAAC) by ICAO



IAEA
International Atomic Energy Agency



WMO



EMARC - Evolution

2001 – Foot and Mouth outbreak

2005 – Buncefield oil depot fire

2007 – Bluetongue outbreak

2007 – Summer floods

2009 – Winter floods

2010 – Eruption of Eyjafjallajökull



Government Review:

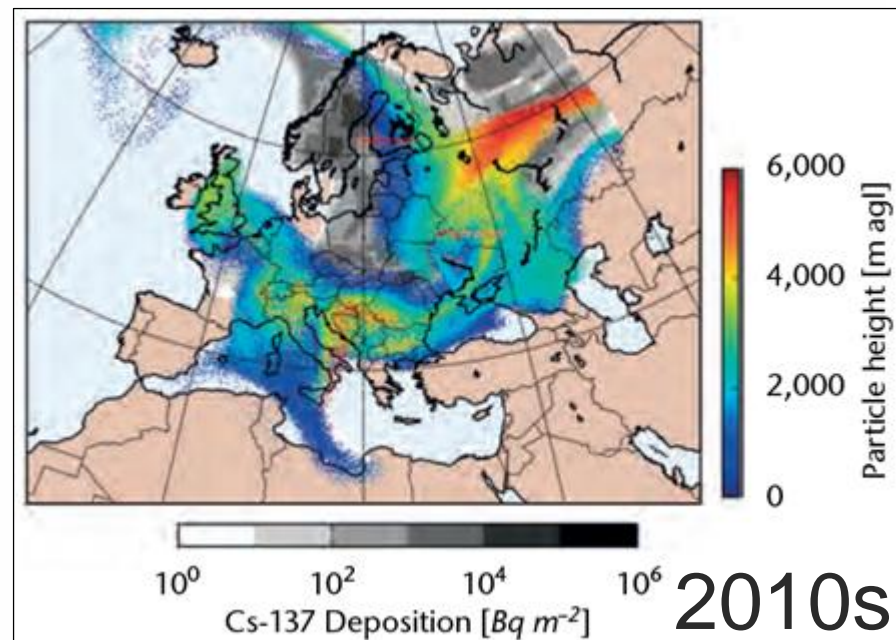
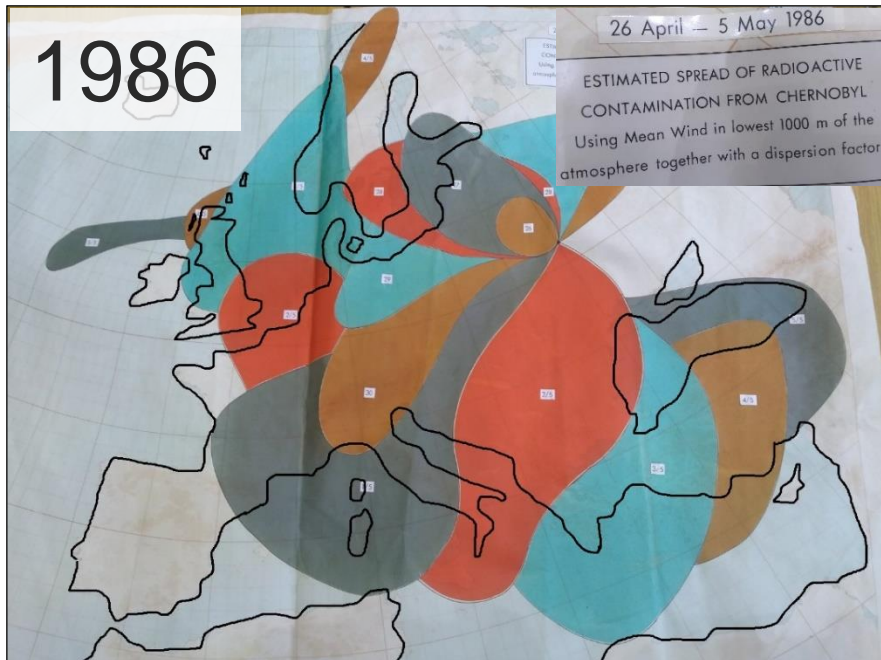
“... a more co-ordinated approach ... more actionable advice ...
... for a more effective response to natural hazards...”

Natural Hazards Partnership (NHP)

2011 – Partnership of 13 (now 17) public bodies established

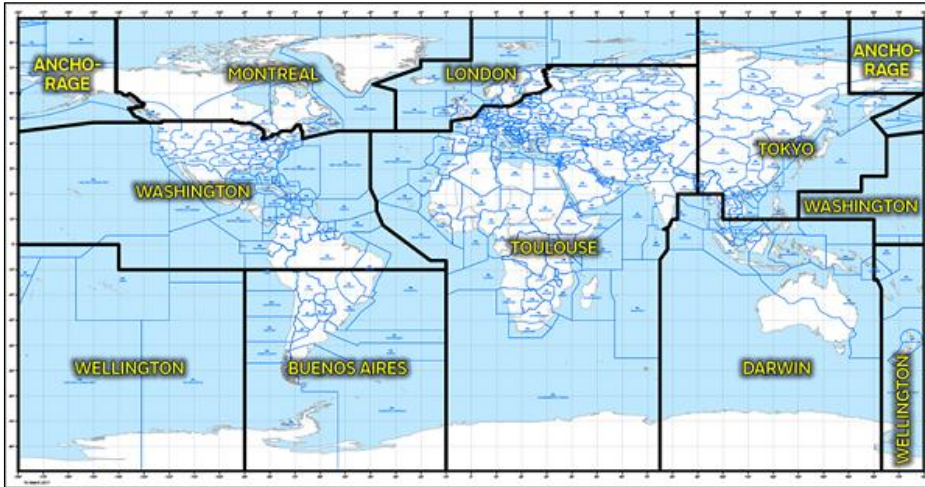


International Services - RSMC

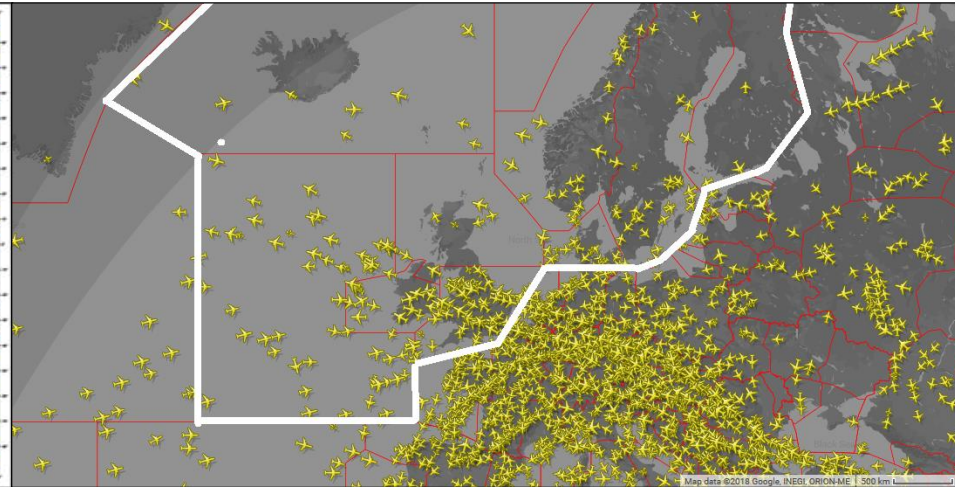


NAME is now “Numerical Atmospheric dispersion Modelling Environment”

International Services – London VAAC

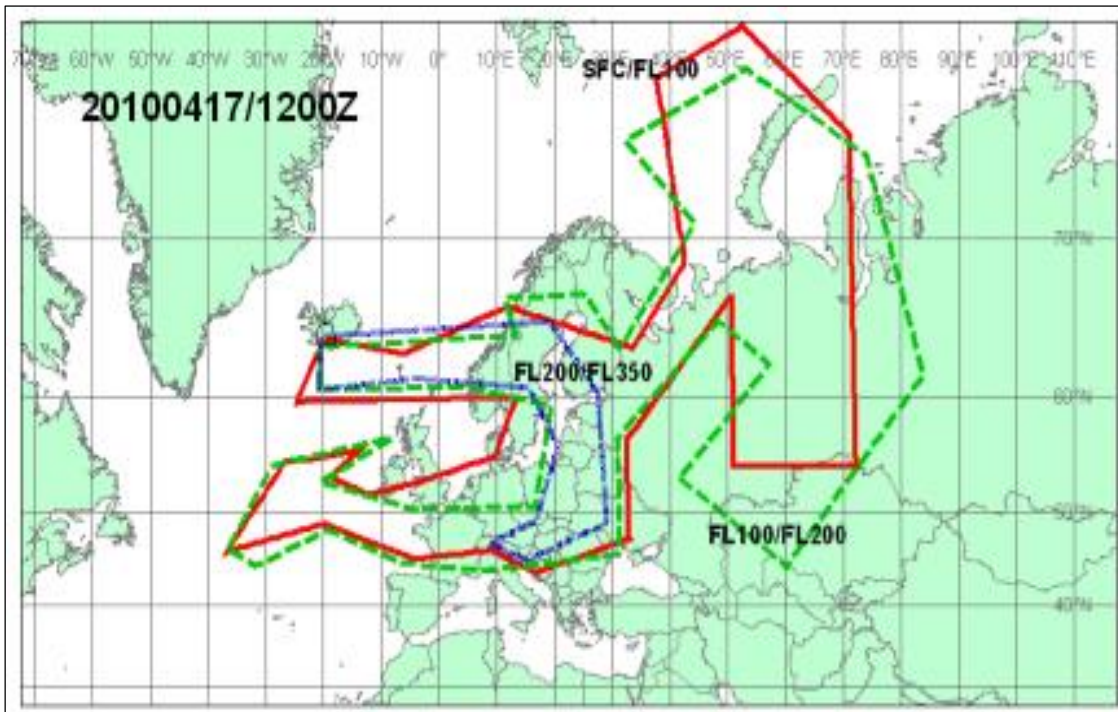


VAAC map as of 2018



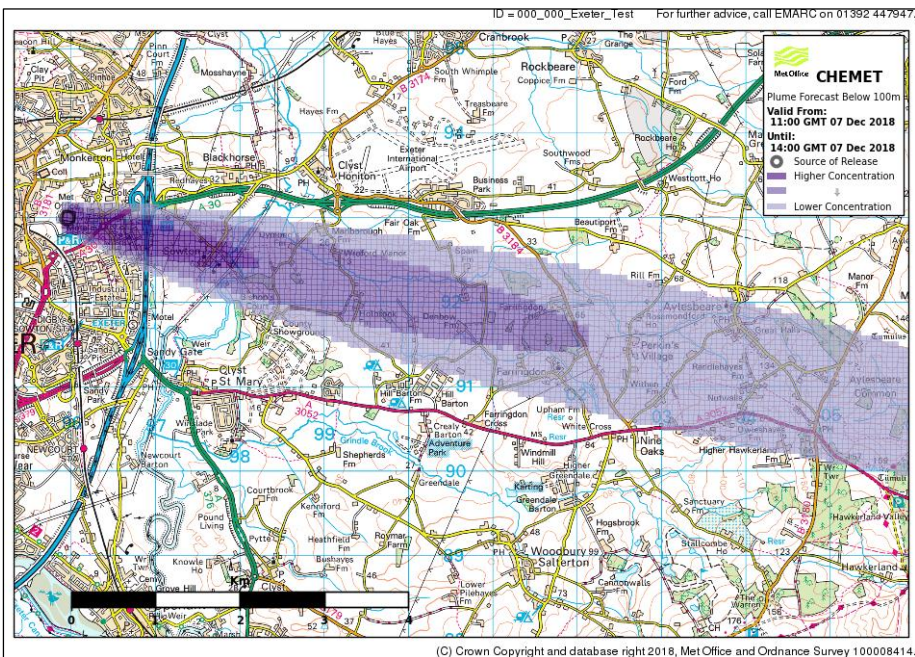
Airborne aircraft (from flightradar24.com)
at 1030 UTC 26th November 2018

International Services - VAAC

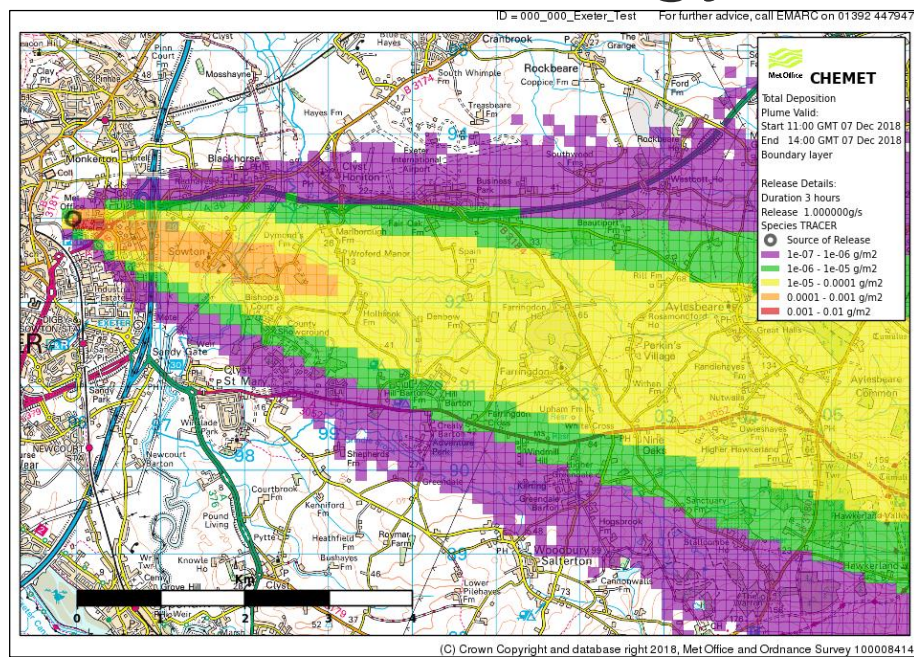


London VAAC
Volcanic Ash Graphics
17th April 2010

UK Services – CHEMical METeorology

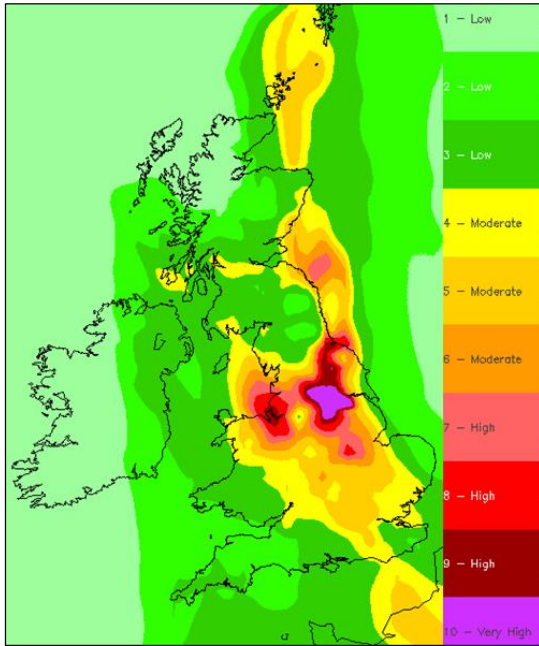


Basic low-level concentration plume



Detailed total deposition plume

UK Services – Air Quality (with DEFRA)

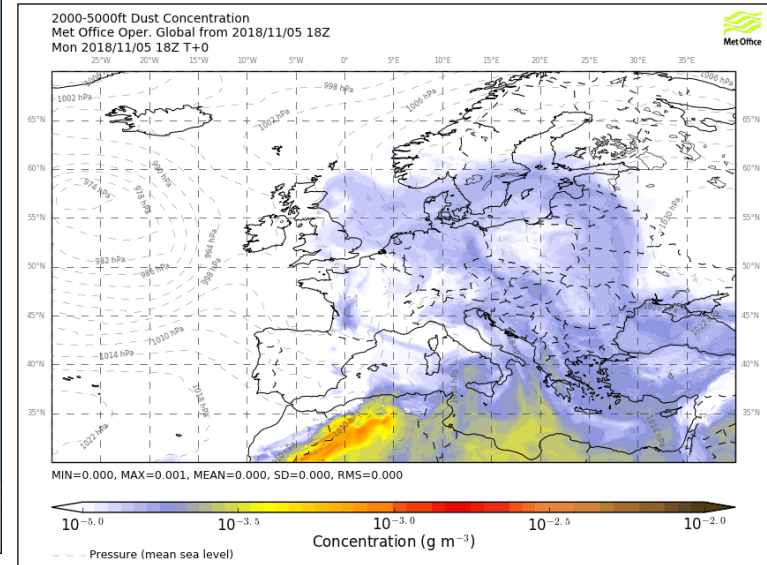


Air Quality Model



Air Quality Observations

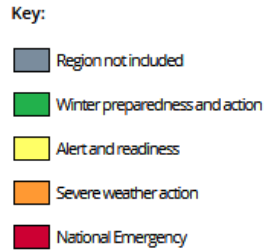
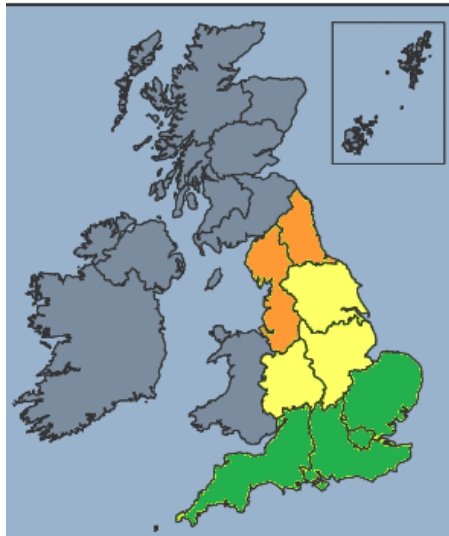
Examples from 5th November 2018



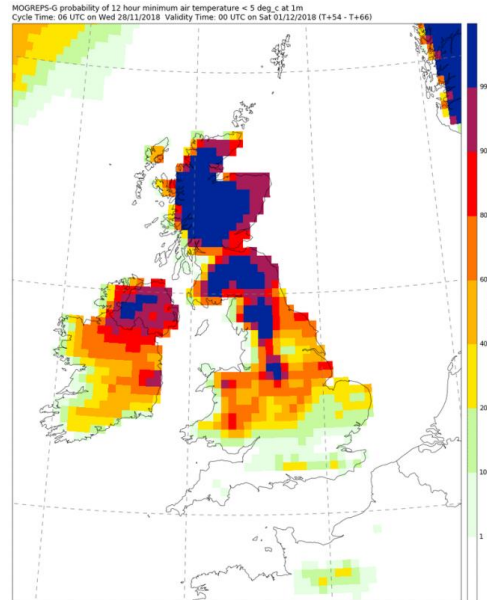
Dust model output

UK Services – Health alerts (with PHE)

Cold weather alert



Regional risk map for England



NWP ensemble for average temperatures below the cold threshold

Thresholds based on regional average temperatures vs. hospital admissions

UK Services – Daily Hazard Assessment

NHP Natural Hazards PARTNERSHIP
www.naturalhazardpartnership.org.uk

Daily Hazard Assessment

Update: 09:47 on Saturday, 26 December 2015

The Daily Hazard Assessment is intended to provide an 'at a glance' top level overview only. The links provided to the relevant Partner Organisations should then be used to obtain further and more detailed information as required.

Hazards Five Day Summary – FLOOD:- RED, RAIN:- RED, LANDSLIDE:- YELLOW, WIND:- YELLOW

FLOOD: England and Wales: The highest overall flood risk for England and Wales is now **HIGH**, with severe impacts expected in parts of Lancashire, West Yorkshire and North Yorkshire today (Saturday). Scotland: The river flood risk is **LOW** on Saturday (Boxing Day) for parts of the south and east. Some disruption may extend into Sunday in the east.

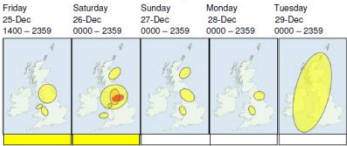
LANDSLIDE: Further rain falling on saturated slopes in the landslide regions of Northern England and Wales will lead to an increased likelihood of landslides on natural and man-made slopes.

RAIN: There are Yellow Heavy Rain events expected in southern Scotland, northern England and northern Wales on Christmas Day and Boxing Day, an Amber warning for Cumbria during Boxing Day. A RED warning has been issued for parts of Lancashire.

WIND: A very deep low to the west of Ireland on Friday is likely to give winds of 70mph in some areas, perhaps exceeding 80mph in places.

Hazards Five Day Summary Maps

Friday 25-Dec	Saturday 26-Dec	Sunday 27-Dec	Monday 28-Dec	Tuesday 29-Dec
1400 – 2359	0000 – 2359	0000 – 2359	0000 – 2359	0000 – 2359



These maps provide an 'at a glance' indication of the natural hazards that could occur over the next five days. The area covered by each ellipse is indicative only to alert the user to which

Partners: British Geological Survey, Centre for Environment & Technology, Environment Agency, FLOOD FORECAST CENTRE, Met Office, National Centre for Environmental Modelling, National Oceanography Centre, NERC, Ordnance Survey, Public Health England, SEPA, The Natural Hazards Partnership, UK SPACE.

NHP Natural Hazards PARTNERSHIP
www.naturalhazardpartnership.org.uk

Daily Hazard Assessment

Issued 13:57 on Monday, 12 November 2018

The Daily Hazard Assessment is intended to provide an 'at a glance' top level overview only. The links provided to the relevant Partner Organisations should then be used to obtain further

Hazards Five Day Summary: No Major Hazards Expected at time of issue

Hazards Five Day Summary Maps

Monday 12-Nov	Tuesday 13-Nov	Wednesday 14-Nov	Thursday 15-Nov	Friday 16-Nov
1400 – 2359	0000 – 2359	0000 – 2359	0000 – 2359	0000 – 2359



These maps provide an 'at a glance' indication of the natural hazards that could occur over the next five days. The area covered by each ellipse is indicative only to alert the user to which areas of the UK are at risk of a hazard. More detailed information will be found using the links provided. The highest level of alert will be shown, but each ellipse could indicate more than one hazard. For non-area specific hazards, the alert level is indicated by a coloured rectangle underneath the maps. Please see user guide on Hazard Manager for further detail.

Hazards Five Day Summary Detail

No Major Hazards Expected at time of issue.

Ongoing Issues

Nil.

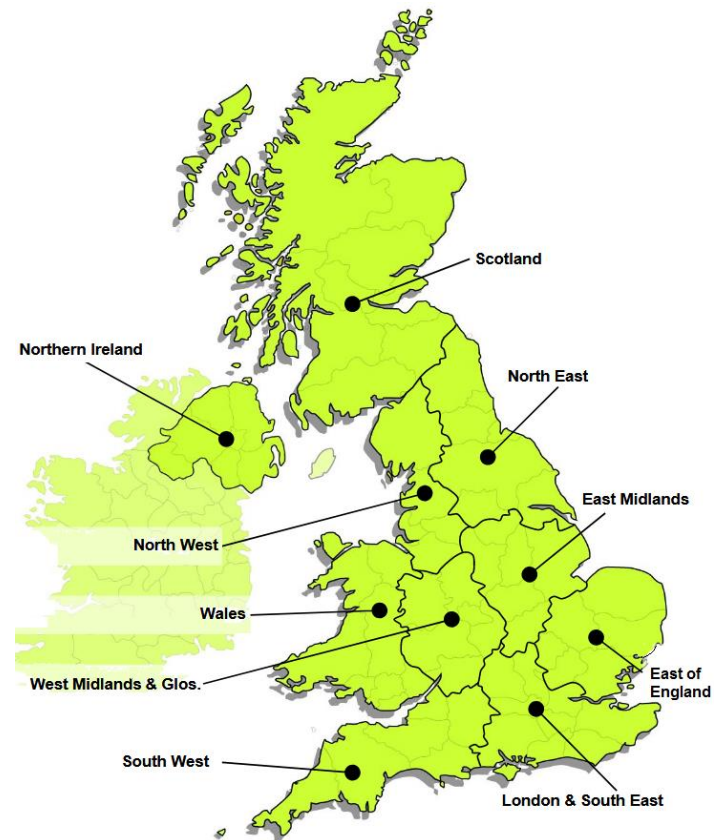
Summary of Recent Event/Hazards

Nil.

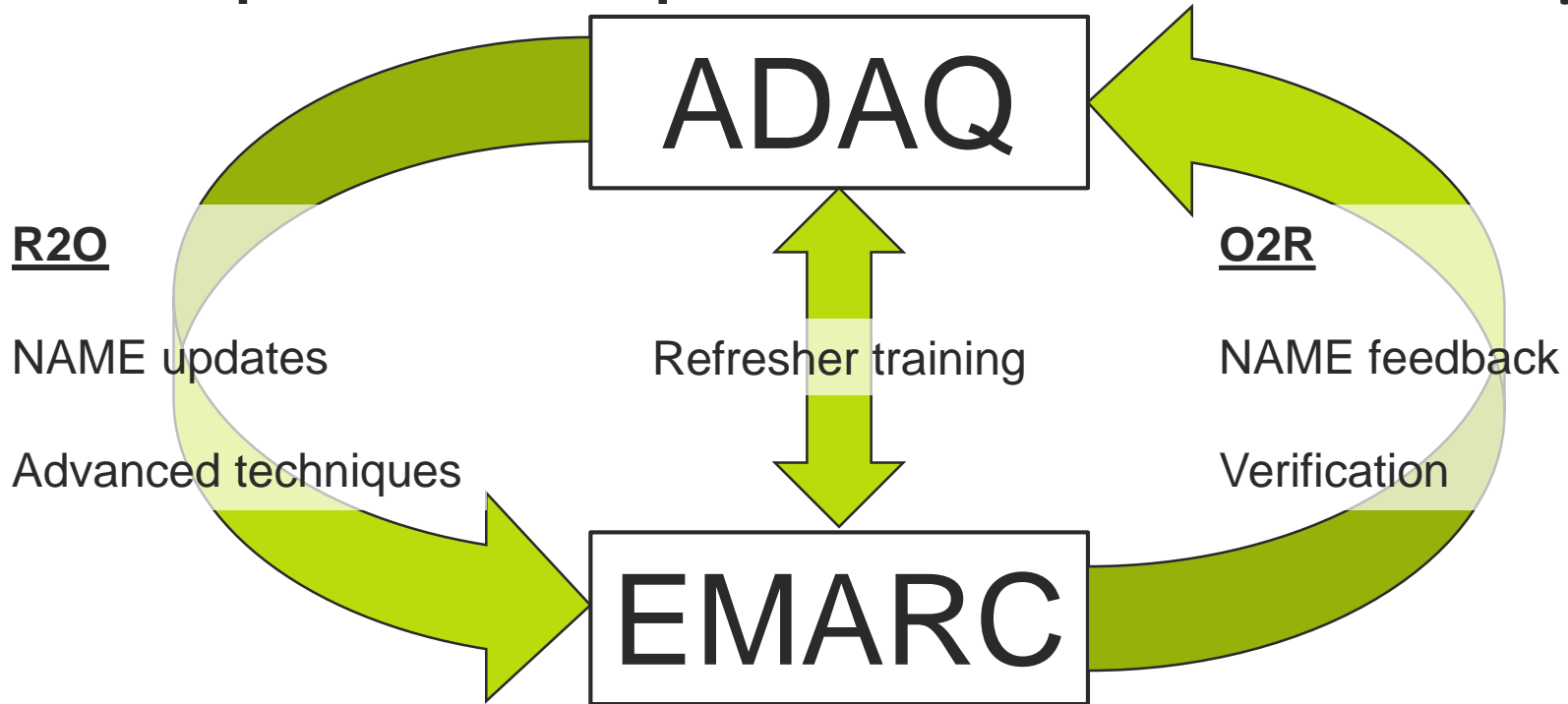
Partners: British Geological Survey, Centre for Environment & Technology, Environment Agency, HSE, Met Office, National Centre for Environmental Modelling, National Oceanography Centre, NERC, Ordnance Survey, Public Health England, SEPA, FLOOD FORECAST CENTRE, UK SPACE.

- Significant Weather (UKMO)
- Flooding (Flood Forecast Centre)
- Air Quality (DEFRA)
- Volcanic Ash (Iceland Met Office)
- Temperature health (Public Health England)
- Wildfires (Natural England / Natural Resources Wales)
- Space Weather (UKMO)
- Landslides (British Geological Survey)
- Drought (Environment Agency)
- Space object re-entry(!)

Civil Contingencies



Atmospheric Dispersion and Air Quality



Summary

Environmental Monitoring And Response Centre:

- Multiple natural hazards
- Range of scales
 - Domestic to international
 - Inconvenience to catastrophic
- Use coordinated approach & combined expertise
- 24x7 actionable advice to reduce impacts
- Our contribution to UK resilience
- Ready for international response

Any Questions?

Gareth Powell

gareth.powell@metoffice.gov.uk

emarc@metoffice.gov.uk

