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2010.04.21 - Þórdís Högnadóttir http://www.evropusamvinna.is/page/ies_Eyjafjallajokull_eruption

Open meeting on the Eyjafjallajökull eruption. Oxford, April 30, 2010.

Many thanks for your interest in this meeting; we have an excellent turnout, and it should be a great opportunity to make connections across the broad spectrum of disciplines represented at this meeting.

David Pyle,

Department of Earth Sciences, Oxford.

Logistics.

The meeting will be held in the Department of Earth Sciences, Parks Road, Oxford, OX1 3PR. Details on how to get here are on the web (http://www.earth.ox.ac.uk/about_us/contact_us).

There is no parking available at the department, and many of the pay and display parking spaces nearby (Keble Road, Norham Gardens) are time-limited. If you are planning to drive, I recommend using a Park and Ride facility as there is very limited parking in central Oxford. If you are coming by rail or coach, the department is a 10 minute walk from the bus and rail stations.

As a draft, I suggest the programme below; I would encourage anyone who wishes to bring something on a poster to do so (we can display 10 posters or so quite easily). I shall contact the presenters separately to suggest an appropriate time slot for presentations. Coffee and lunch will be available in the department, and there should be plenty of time to meet up over lunch. The meeting has to finish formally before 4pm, in time for our usual Friday seminar, but I have booked another room in the department for discussions to continue, and there will be a departmental Happy Hour at 5 pm, to which you are all welcome!

Meeting Programme.

Coffee from 11 am.

12.00 – 1.00 Introduction. David Pyle. Setting the scene: Thor Thordarson. Martin Menzies, Georgina Sawyer. Remote sensing and chronology: Oxford AOPP.
1.00- 2.00 lunch
2.00 - 3.00 Observations and Monitoring: David Rees, Richard Harding/Christine Braban, Gary Fuller, Giles Harrison, Steve Lane.
3.00 till 3.30 The future: Jess Trofimovs. Carina Fearnley. Steve Blake.
3.30 - 3.45 closing remarks John Rees. David Pyle.

Index.

People planning to attend the meeting.

Name	Institution	Email	Comments
Adetunji, Jacob	Univ Derby	J.Adetunji@derby.ac.uk	
Agnew, Judith	RAL	judith.agnew@stfc.ac.uk	See Charles Wrench
Aplin, Karen	Oxford Physics	k.aplin1@physics.ox.ac.uk	As part of a public understanding of science project, a net radiometer measuring down and up-welling broadband longwave and shortwave radiation is installed at the Marchlyn Mawr reservoir site at 600m altitude in North Wales. It should be possible to detect changes in the radiation balance from the ash cloud in the anticyclonic clear sky conditions that have prevailed over the UK since the eruption. Data analysis is ongoing to look for any effects of the eruption in the radiative measurements.
Atkinson, James	Leeds, Chemistry	ee06jda@leeds.ac.uk	Our research group is studying the ice nucleating abilities of mineral dusts in the atmosphere. This is performed by cooling 10-40um water droplets containing suspended dust and using optical microscopy to identify the time/temperature of freezing. We are getting a Bruker D8 XRD within the next couple of weeks that would be used to characterise the ash. There is a paper in the discussions phase on this subject (below) and another paper currently in review. Our intention with the ash would be to perform similar experiments; we have arranged for a sample from Iceland itself, but ideally need samples of airborne ash of various ages. We have also been studying ice nucleation by glassy aerosol (paper below). Murray, B. J., Wilson, T. W., Broadley, S. L., and Wills, R. H.:Heterogeneous freezing of water droplets containing kaolinite and montmorillonite particles, Atmos. Chem. Phys. Discuss., 10, 9695-9729, 2010. Murray, B.J., T.W. Wilson, S. Dobbie, Z. Cui, S.M.R.K. Al-Jumur, O. Möhler, M. Schnaiter, R. Wagner, S. Benz, M. Niemand, H. Saathoff, V. Ebert, S. Wagner and B. Kärcher, Heterogeneous nucleation of ice particles on glassy aerosols under cirrus conditions, Nature Geoscience, 3, 233 - 237, 2010. Other publications from our group are available here: http://www.chem.leeds.ac.uk/BJM/publications.htm

Blake, Steve	Open University	s.blake@open.ac.uk	Since the eruption started and air traffic was grounded, an important question has been: 'When will the eruption stop?'. I have attempted to answer this using historical data and early knowledge of the eruption. There is a 50% chance that the eruption will last 2 to 3.5 weeks. Stated another way, there is a 50 to 60% chance that the eruption will still be going on at the time of this meeting. Methods for refining these estimates will also be mentioned.
Braban, Christine	CEH Edinburgh, Penicuik	chri2@ceh.ac.uk	CEH is mostly interested from a deposition and effects in the UK perspective and it is involved in environmental monitoring across the UK for both its own research, for Defra and the other DA (see extended abstract, p 20)
Carboni, Elisa	Oxford, AOPP	elisa@atm.ox.ac.uk	Gaseous sulphur dioxide (SO2) emitted during the eruption can be tracked by IASI. We are working on a detection scheme for SO2 from IASI data. This detection index can be equivalent to a linear retrieval of the total column amount of SO2, however this is really depending on the assumed on So2 profile. We are going to work on a proper optimal estimation SO2 profile retrieval from IASI.
Day, Simon	Department of Earth Sciences, University College London	simonday_ucl@yahoo.co.uk	Initial SEM imaging of ash deposits opportunistically collected in the London area confirms the phreatomagmatic character of the ashfall deposited in SE England overnight 16/17 April, and also indicates the importance of particle aggregation in sedimentation of the very fine-grained components (< 1 micron). The importance of phreatomagmatism in generating ash plumes hazardous to aviation underlines the potential hazard from Iceland but also from recently-identified phreatomagmatism at various Atlantic Islands including the Canaries and Cape Verdes.
del Marmole, Mary Ann	Univ Ghent, Belgium	maryann.delmarmol@ugent.be	Explosive eruptions and air traffic accidents: The experience from Gallungung. Mary-Ann del Marmol (1), Jean-Paul Malingreau (2) 1. Mercator & Ortelius Research Centre for Eruption Dynamics, Geology Dept, Krijgslaan, 281 / S8 University of Ghent, 9000 Gent Belgium (email: maryann.delmarmol@ugent.be); (2) Joint Research Centre, The European Commission, Brussels, Belgium Between April 5, 1982 and January 1983, Galunggung (7.25S; 108.058E) produced multiple vulcanian ash clouds. Some of them reached an altitude of 12000 meters. There was, at that time, no awareness that volcanic ash could affect jet airplanes so that both domestic and international air traffic continued. In particular, on June 24 and 13 July 1982, a BA 747 and Singapore Airline jet airplanes both en-route to Australia encountered drifting ash clouds and caused 4 and 3 engines to

			fail, respectively. As pilots had no emergency procedures to handle such accidents, they had to improvise; they did so successfully using their planes as gliders, managing to restart engines at lower altitude and land safely. The character of the eruptions, ash emissions, ash dispersion and encounter details are briefly reviewed. These costly and hazardous near-crash accidents occurred 28 years ago. They stimulated a strong interest in the use of the thermal channels of the Geostationary and NOAA-AVHRR satellites for detection and characterization of volcanic ash emission and dispersion (see for ex.: Malingreau, J-P and Kaswanda. 1986, Prata, A.J. 1989, Sawada, Y. in Scarpa R. and Tilling,R.I. 1996). Such scientific and operational interest has however not been equally sustained around the world, with the effect that Europe was not fully ready to adequately deal with the recent air traffic situation linked to the eruption of the Volcan Eyjafjallajökull (63.63Nth; 19.62West).
Delmelle, Pierre	York	pd512@york.ac.uk	We have collected a set of ash, water and soil samples in the areas affected by the ongoing Eyjafjallajökull eruption. These samples will soon be analysed to investigate the scavenging by ash of S, Cl and F in the eruption plume, and to assess the effects of the ash deposits on soil and surface water chemistry. Fluoride is of particular interest as our preliminary measurements indicate high concentrations of this species in the ash leachates. We are hoping to return to Iceland in the near future to collect additional samples and establish a longer term monitoring strategy.
Donovan, Amy	Cambridge	ard31@cam.ac.uk	See Georgina Sawyer
Dudhia, Anu	Oxford, AOPP	dudhia@atm.ox.ac.uk	MIPAS is a limb-viewing infrared fourier transform radiometer on the Envisat satellite. In addition to its nominal role of measuring atmospheric temperature and composition, it is also sensitive to continuum-like emissions from clouds or other aerosols. Over the week following the eruption we have detected occurrences of unusually high cloud-like features in the UK-Iceland area. The plan is to analyse these spectra in more detail to determine whether this is cirrus or ash, and if there has been any penetration into the stratosphere.
Fearnley, Carina	Aon Benfield UCL Hazard Research Centre, Department of Earth Sciences, University College London	c.fearnley@ucl.ac.uk	http://www.ucl.ac.uk/news/news-articles/1004/10041901; http://www.ucl.ac.uk/news/news-articles/1004/10042202. My PhD research focused on volcano early warning systems, specifically looking at the standardisation of the USGS's volcano alert level system, which includes the development and adoption of the Alaska Volcano Observatory colour code warning system by the International Civil Aviation Organisation for use globally. During the last week I wrote a couple of articles on the effectiveness of the warning system and also a review of where there needs to be improvements (see links below) which I would like to build on in future research. I am submitting my thesis this summer and so am looking for post-doctoral opportunities, preferably to continue from my PhD research but focusing on the UK and International Institutional response to the Iceland 'Ash Crisis', and to evaluate the warning system and the implications of this event on international aviation protocols.

Fuller, Gary	King's College London	gary.fuller@kcl.ac.uk	Impact of the flight ban on air quality around airports. The flight ban provided a unique opportunity for a natural experiment to determine the impacts of airports on local air quality. A preliminary study has been undertaken looking at measured pollution cross sections through Heathrow and Gatwick on the prevailing wind direction. It has been possible to demonstrate that the airports have a clear measurable effect on NO2 concentrations and that this effect disappeared during the period of closure, leading to a temporary but significant fall in pollutant concentrations adjacent to the airport perimeters. (http://www.londonair.org.uk/london/asp/news.asp?NewsId=airportclosure). Having proven this simple methodology we aim to extend the analysis to assess air pollution impacts at other points around the airport perimeters and also to extend this analysis to other airports in the UK and abroad. Detection of volcanic ash using ground base measurements of PM10 and PM2.5. King's College London manage measurements of PM10 at over 100 locations in London and south east England (www.londonair.org.uk). Nationally PM10 concentrations are measured at 76 monitoring sites with around 10% of monitoring sites also make measurements of PM2.5. Past natural events have had impacts on ground level concentrations including Saharan dust outbreaks, wild fires and the Ukrainian dust storm of 2007. Although the volcanic dust events did not lead to breaches of the EU Limit Value concentrations for PM10 detailed analysis of these measurements and analysis of the chemical composition of collected filters may be able to support analysis of the ground level impacts of the volcanic ash event.
Galmarini, Stefano	European Comission	stefano.galmarini@jrc.ec.europa.eu	I work for the EC and have been involved in model evaluation for nuclear applications; ENSEMBLE community ensemble.jrc.ec.europa.eu
Garland, Wendy	British Atmospheric Data Centre	wendy.garland@stfc.ac.uk	The BADC has set up a dedicated dataset for the event to collate and help to distribute NCAS findings to the wider atmospheric community. It was set up at the request of the NCAS community and an additional section was created for EUFAR (EUropean Facility for Atmospheric Research - ie European airbourne research community). Preliminary data and metadata from UK groundbased instruments (mainly lidars) and several aircraft flights measuring the ash plume are currently available. BADC and NEODC together have obtained supporting datasets that will be of use to the academic community to analyse the volcanic plume data including Met Office synoptic and instrument data, ECMWF, Metop IASI data - all significantly quicker than is normally available. Please see http://badc.nerc.ac.uk/data/eyjafjallajokull_apr2010/ for further details. In addition, a new web tool (available soon) will provide an interactive time line showing where and when observations took place with quick look plots of these observations to assist in those wishing to find out more about the volcanic ash plume as it passed over the UK. This tool was developed rapidly by a dedicated team within the BADC and NEODC, in response to the need of the NCAS community to pull together a widely dispersed network of observations within a cohesive environment in response to the event.
Harding, Richard	Centre for Ecology and Hydrology	rjh@ceh.ac.uk	CEH, in collaboration with Defra and SEPA, have enhanced monitoring activities to assess possible deposition products. Enhanced sampling of vegetation and soil is taking place at the Environmental Change Network (ECN) sites. There is particular interest in fluoride deposition and possible

	(CEH), Wallingford		harmful effects. In addition to the ongoing measurements of aerosol mass and inorganic aerosol chemical composition at our EMEP site at Auchencorth, we have been making more detailed measurements of submicrometer aerosol size-distribution and chemical composition with our aerosol mass spectrometer at CEH. So far there is no evidence of the plume reaching the ground. For example, concentrations of SO2, aerosol sulphate and PM2.5 are within the normal range. This is consistent with SEPA reporting no elevation in SO2 in Shetland.
Harrison, Giles	Reading, Meteorology	r.g.harrison@reading.ac.uk	See Joseph Ulanowski
Jenkins, Susanna	Cambridge Architectural Research / University of Cambridge	susanna.jenkins@gmail.com	Our interests at this stage are twofold: 1) We are looking to investigate agricultural and infrastructure impacts in Iceland following the eruption, and 2) We are interested in exploring the wider implications of an eruption at Eyjafjallajökull or Katla for Europe, potentially through probabilistic modelling, i.e. considering the range of outcomes including the best, worst and most-likely scenarios.
Kinnersley, Rob	Environment Agency	rob.kinnersley@environment-agency.gov.uk	From Environment Agency's Evidence Directorate
Lane, Christine	Oxford, RLAHA	christine.lane@rlaha.ox.ac.uk	RESET project: microanalysis of tephra
Lane, Steve	Lancaster	s.lane@lancaster.ac.uk	Aggregation of Volcanic Silicates; Detection of Airborne Volcanic Silicate Particles and On-board Ash Detection and/or Logging
Lantukh, Ali	ESRC	Ali.Lantukh@esrc.ac.uk	Research development officer at ESRC working on the new joint NERC-ESRC theme action
Le Blond, Jenn	Cambridge/NHM	jl490@cam.ac.uk	Analysis of volcanic ash for health hazard assessment; see Claire Horwell, and p24.
Leigh, Sasha	Natural Environment Research Council	snbl@nerc.ac.uk	
Menzies, Martin	Royal Holloway	m.menzies@es.rhul.ac.uk	The NERC-funded RESET Consortium is studying the records of volcanic ash dispersal across Western Europe during the Holocene. See extended abstract, p 25.
Muller, Jan-Peter	MSSL/UCL	jpm@mssl.ucl.ac.uk	

Oramas Dorta, Delioma	Smith School, Oxford	delio79@gmail.com	
Palmer, Martin	NOC, Southampton	M.Palmer@noc.soton.ac.uk	See Jess Trofimovs
Parsons, Barry	Oxford	barry.parsons@earth.ox.ac.uk	
Parton, Graham	BADC and RAL, STFC	graham.parton@stfc.ac.uk	I'm responsible for ECMWF and Met Office datasets held at the British Atmospheric Data Centre and will be attending to see what data provisions would assist the work of the research community. Already BADC and NEODC have put in place activities in response to the research community including near real time ECMWF and Met Office data provisions.
Peters, Dan	Oxford, AOPP	dpeters@atm.ox.ac.uk	We have measured the spectral refractive optical properties of two volcanic ash aerosols in an optical aerosol cell at the NERC funded MSF. Subsequent analysis the spectral refractive index of the ash was derived. This data has been applied to existing Oxfords satellite analysis with improved retrievals over that using the historic data published by Volz. If we can obtain a representative sample of the Eyjafjallajökull ash, we can apply this method to this eruption. This will increase the accuracy of the satellite retrievals which depend on having accurate optical properties data. In addition we expect to apply this data to the RACHEL lidar that captured the volcanic ash cloud by extending the measurement range into the UV. If this data is obtained in a timely manor we can improve the work of other groups stuides of this eruption and the wider community via per-reviewed publication. Our method is unique and we are unware of any other group with this ability to measure directly the refractive index the volcanic ash cloud. Ideally we would like to obtain SEM/TEM images to establish the particle shape at the same time to aid radiative transfer models of the ash (our method is insenstive to shape effects but reterivals and other instruments such as lidar would directly benifit from this package of data).
Petrie, Anita	CEH Wallingford	anit@ceh.ac.uk	
Povey, Adam	Oxford, AOPP	Povey@atm.ox.ac.uk	A prototype 4-channel Raman lidar system is currently stationed at the Chilbolton Observatory and has been operating continuously since 1400UT April 15th. This observed the initial appearance of the ash cloud at 1230UT April 16th, its mixing with the planetary boundary layer over the following few days, and the clear skies after the passing of a weak frontal system on the morning of April 20th. We are currently working on cleaning up the data to produce reliable time series for the evolution of the boundary layer during this time and in the longer term will analyse the data using an optimal estimation retrieval scheme that will be developed. There is also the possibility of retrieving aerosol properties directly by combining the measurements of numerous lidars at different wavelengths stationed at Chilbolton.

Pyle, David	Oxford	david.pyle@earth.ox.ac.uk	
Rees, David	Managing Director, Hovemere Ltd	walnut1@easynet.co.uk	Meteorological aspects of Aviation Safety: an update
Rees, John	NERC Theme Leader	jgre@bgs.ac.uk	
Sawyer, Georgina	Cambridge, Geography	gms26@hermes.cam.ac.uk	Ground based remote sensing of gas composition and fluxes, in Iceland
Sayer, Andy	Oxford, AOPP	sayer@atm.ox.ac.uk	The group is involved in aerosol and cloud retrievals from the imaging radiometer AATSR aboard Envisat. We have acquired AATSR data in near-real time and are performing aerosol retrievals, as well as creating false-colour and brightness temperature difference images, over Europe from early April onwards. We are also using this as an opportunity to test how well various assumed aerosol models fit measurements in the ash plume. We are able to provide maps of aerosol optical depth, effective radius, and Angstrom exponent with associated uncertainty estimates.
Smith, Diana	Open University	dmsbears42@talktalk.net	
Smith, Kevin	STFC RAL, Molecular Spectroscopy Facility	kevin.smith@stfc.ac.uk	
Smith, Victoria	Oxford, RLAHA	victoria.smith@rlaha.ox.ac.uk	RESET project: microanalysis of tephra
Sword-Daniels, Victoria	UCL	ucesvls@ucl.ac.uk	I am researching in the field of volcanic ashfall impacts, and looking at how critical infrastructure is affected by ashfall. I am looking at physical and social impacts and disruptions, and planning to look at the interdependencies and interconnections between them. I plan to focus on the knock-on affects of critical infrastructure disruptions, interfacing sectors, and possible mitigations and adaptations. I am interested in the follow-up to the Iceland eruption and determining whether any critical infrastructure has been affected that ties in with my existing case studies.
Streeter, Richard	Edinburgh	r.t.streeter@sms.ed.ac.uk	See Andy Dugmore

Thomas, Gareth	Oxford, AOPP	gthomas@atm.ox.ac.uk	
Thordarson, Thor	Edinburgh	tthordar@staffmail.ed.ac.uk	
Trofimovs, Jess	National Oceanography Centre, Southampton	J.Trofimovs@noc.soton.ac.uk	I am submitting a NERC urgency grant to undertake a research cruise that will sample the seafloor between southern Iceland and northern UK. The aims are to sample and eruption of Eyjafjallajökull and to recover deeper (older) cores that characterise the ash fallout deposited during the current potentially preserve a record of Icelandic eruptive events that have reached the UK
Ulanowski, Joseph	University of Hertfordshire	Z.Ulanowski@herts.ac.uk	In situ measurements of the ash layer using aerosol particle counters that University of Hertfordshire developed last year for atmospheric mineral dust measurements, together with an electric charge sensor developed at Reading. The particle counter provides a vertical profile of the size distribution.
Wadge, Geoff	ESSC Reading	gw@mail.nerc-essc.ac.uk	Improving source parameterisation of ash dispersion models. The VAACs use default settings for the ash source in their dispersion models at the outset of eruption. Improved parameterisation from more realistic models and observations could be achieved , even over short time periods.
Watson, Matt	Bristol	Matt.Watson@bristol.ac.uk	Remote sensing of volcanic plumes; member of scientific advisory group
Westbrook, Chris	University of Reading	c.d.westbrook@reading.ac.uk	We have sampled the volcanic ash using lidar measurements at the Chilbolton Observatory in Hampshire. Depolarised returns allow unambiguous identification of the ash layer, whilst backscatter and Doppler observations show the descent and mixing of the ash into the boundary layer. We have made a crude estimate of the average particle size using backscatter measurements at 3 wavelengths: this was estimated to be ~ 2 microns.
Witt, Melanie	Oxford, Earth Sciences	Melanie.witt@earth.ox.ac.uk	Measurements of aerosol and ash fallout. We have been collecting size-segregated filter samples of Oxford air/aerosol over the course of the event, and aim to characterise particles for grain size and composition by SEM, EPMA and for trace constituents by microfluorescence spectroscopy. We plan to collaborate with colleagues with appropriate samples by analysing Hg in plant s affected by the plume, near to the source; and would be interested to analyse total gaseous mercury in situ onboard sampling aircraft, as this will be a particularly sensitive chemical indicator of the location of any gas plume. MLI Witt et al 2010, Aerosol trace metals, particle morphology and total gaseous mercury in the

			atmosphere of Oxford, UK, Atmospheric Environment, 44, 1524-1538 RS Martin et al 2009, Environmental effects of ashfall in Argentina from the 2008 Chaiten volcanic eruption, Journal of Volcanology and Geothermal Research 184, 462-472
Willis, Paul	AEA Technology		Operation of Defra & Devolved Administrations UK air quality monitoring networks. Both near real-time (Ozone, NOx, SO2, PM, HC) & sampler based (Acid dep. PAH, NH3). Web-based reporting of monitoring data – www.airquality.co.uk , www.scottishairquality.co.uk, www.welshairquality.co.uk, www.airqaulityni.co.uk Daily air quality forecasts for human health impact. Tracking the plume and possible grounding over the UK. See images on p 27
Witham, Fred	Bristol	fred.witham@bristol.ac.uk	
Wrench, Charles	STFC-RAL/Chilbolton Observatory	charles.wrench@stfc.ac.uk	At the STFC-Chilbolton Observatory in Hampshire we make atmospheric measurements with three zenith pointing lidars – these measurements are being made 24/7. Lidar wavelengths are 355nm, 905nm, & ~1.5microns. With these lidars we measure co & cross pol. backscatter, and Doppler velocity. Data was collected from Day 1 of the eruption. In addition we operate a Cimel sunphotometer that collected AOD, and also retrieved aerosol particle sizes from almucantar scans performed during the day when the skies were free of cloud. This data is available via the AERONET website. Data images have been forwarded to the Met Office throughout the last two weeks. The data will also be placed in a special area being established on the BADC.

Unable to attend, but with a continuing interest in the events

Allen, Grant	Univ Manchester	Grant.Allen@manchester.ac.uk	At Manchester, we have been heavily involved in operating aerosol instrumentation and analysing the data from several instruments onboard the ARSF Dornier and FAAM BAe-146 aircraft which have flown a number of sorties into the plume under civil contingency during the flight ban. Analysis of those data is maturing yet ongoing. We have also been tasked with providing a definitive report to the CAA on our ash mass loading and sizing measurements by next Friday
Barclay, Jenni	UEA	J.Barclay@uea.ac.uk	I would be interested in interdisciplinary work looking at issues relating to decision-making management and communication around the 'crisis' moment. This would particularly look at the role that mediators played in forming and fixing public opinion and ultimately the management of the crisis.
Baxter, Peter	Cambridge	pjb21@medschl.cam.ac.uk	Advising on health impacts
Bird, Deanne	Risk Frontiers, Macquarie University	deanne.bird@gmail.com	Have recently published a couple of papers investigating the social dimensions of volcanic hazards, risk and emergency response procedures in Iceland. Bird, DK; Gisladottir, G; Dominey-Howes, D. 2010. Volcanic risk and tourism in southern Iceland: Implications for hazard, risk and emergency response education and training. JOURNAL OF VOLCANOLOGY AND GEOTHERMAL RESEARCH 189 (1-2):33-48 and Bird, DK; Gisladottir, G; Dominey-Howes, D. 2009. Resident perception of volcanic hazards and evacuation procedures. NATURAL HAZARDS AND EARTH SYSTEM SCIENCES 9 (1):251-266
Brown, Andy	Met Office	andy.brown@metoffice.gov.uk	
Brown, Sarah	DEFRA secretariat	sarah.brown@DEFRA.gsi.gov.uk	
Calkins, Julie	York	jac517@york.ac.uk	
Castruccio, Angelo	Bristol	Angelo.Castruccio@bristol.ac.uk	see Alison Rust
Coe, Hugh	Univ Manchester	hugh.coe@manchester.ac.uk	See: Grant Allen
Dominey-Howes, Dale	Univ New South Wales	dale.dh@unsw.edu.au	See: Deanne Bird

Dugmore, Andy	Edinburgh	andrew.dugmore@ed.ac.uk	The incorporation of the E2010 tephra layer into the stratigraphic record and its social and environmental impact Andy Dugmore, Anthony Newton, Richard Streeter, Kirsty Maclean (University of Edinburgh), Mike Church (University of Durham), Martin Kirkbride (University of Dundee), Ian Simpson, Rebecca Barclay (University of Stirling) and Icelandic collaborators at the University of Iceland and the Institute of Archaeology Iceland. We will be studying the transformation of the E 2010 tephra layer as it is incorporated into the stratigraphic record, its social and environmental impacts. This will build on a long-running programme of tephra studies within southern Iceland and applications of tephrochronology in environmental archaeology and geomorphology. We are currently studying long term population and landscape change in Eyjafjallasveit and Skaftartungar (around Eyjafjallajökull and east of Mýrdalsjökull in the primary areas of E2010 fallout) to date we have recorded over 400 stratigraphic sections with over 6,000 identified tephra deposits of historical age (Richard Streeter current NERC-funded PhD; Andy Dugmore, Mike Church, Martin Kirkbride, Anthony Newton, Ian Simpson and colleagues; Leverhulme Trust and NSF-funded human ecodynamics project). We have produced a model of tephra impact based on the effects of the Hekla 1947 fallout on Eyjafjallajökull (Kirkbride and Dugmore 2003; Journal of Glaciology 29,166,420-428) and we now plan to test this model by observing the effects of the 2010 on both Eyjafjallajökull itself and the neighbouring outlet glaciers of Mýrdalsjökull. Landscape and social impacts will be assessed in a development of our long term collaboration with both the Institute of Archaeology, Iceland and the University of Iceland. In the context of our past studies and our in-depth knowledge of local glacier history and Holocene soil stratigraphy this work will assess the incorporation of the E2010 tephra layer into the stratigraphic record and its impacts (ongoing and future NSF programs; current University of Edinburgh field school programme, NERC-funded PhD, Kirsty Maclean; University of Stirling PhD / research apprentice programme, Rebecca Barclay; future NERC applications).
Ernst, Gerald	University of Ghent	plumeman2000@yahoo.co.uk	
Fillingham, Jan	NCEO	jan.fillingham@nceo.ac.uk	
Gadian, Alan	Leeds	alan@env.leeds.ac.uk	Meteorological modelling, for trajectories. This is very important and has not been addressed, in much of the current analysis. I intend that we do a suite of sensitivity studies over the next year, to find the limits to the low resolution trajectory analysis. The flow in early stages was dominated by the high pressure. The (rare?) presence of the high pressure meant that the vertical mixing was not significant, until the air reached Scandinavia, and this was then more interesting.

			I have a web page with some WRF model runs to look at the dispersion and trajectory analysis, which is available http://homepages.see.leeds.ac.uk/~lecag/Eyjafjallajokull/ There are more interesting solutions apparent, but locked into HECToR currently, whilst the UK's supercomputer is repaired. We produced real time trajectory analyses, which moved the plume well North of Scotland for many days. However it did correspond very well with observations from satellite. At resolutions of <3km, we are confident we can get the meteorological vertical velocity distributions accurately. Using models like WRF CHEM, will produce good chemistry, washout and rain out, but without the vertical velocities resolution; the vertical velocities represented by broad parameterisations over large grid cells. Computer technology only permits small domains, or low resolution runs with WRF CHEM. The advantage of using regional models such as WRF, is that they can resolve the meteorology at high resolution well, but of course, they have no chemistry. We were completing high resolution runs on HECToR was working, with the data now locked in the supercomputer, whilst they try to overcome the system errors. Cray have offered to carry out these high resolution back computations, and they are feasible on any decent HPC facility. In conclusion, I should like to propose that a family of models should be registered (with names of collaborators) and used for future events. We are now in a position to produce a forecast, rapidly, for any similar type event. WRF-chem at low resolution model and wrf at high resolution to check the dynamics is feasible and part of what I would propose. The Met Office NAME model, as being arguably the world number one model in this field, has a huge contribution to this suite, but does not allow a two way nesting facility, and by necessity, again, lacks some of detail, An optimal approach is to use as many of the advanced tools as possible. Finally, enabling observations, remote sensing data and model data to be co-ordinated is critical. Thought needs to be given to the way in which observing systems need to be operated: e.g. Doppler lidar and wind profiler vertical velocity profiles can be obtained providing the appropriate scanning procedures are implemented.
Gilbert, Jennie	Lancaster	j.s.gilbert@lancaster.ac.uk	See Steve Lane
Golding, Brian	Met Office	brian.golding@metoffice.gov.uk	
Højgaard, Bartal	Jarðfeingi	bartal.hojgaard@jf.fo	Collecting ash on the Faroes. See p 22, and Simon Passey.

Horwell, Claire	Durham	claire.horwell@durham.ac.uk	Coordinating UK ash sample analysis for health and environmental impact assessment. See ash measurement protocol, p 24
Ilyinskaya, Jane (Evgenia)	Cambridge, Geography	ei213@cam.ac.uk	Gas, ash and aerosol sampling in Iceland, since the start of the eruption
Kelley, Simon	Open University	s.p.kelley@open.ac.uk	We had an idea that might run alongside others which was to put up a virtual microscope of ash samples (and ultimately rock thin sections) for others to see but also for outreach and educational purposes but also so people could very quickly see differences for different sources. http://projects.kmi.open.ac.uk/microscope/version2/zoom2p/
Kilburn, Chris	UCL	c.kilburn@ucl.ac.uk	See Carina Fearnley
Loughlin, Sue	BGS	sclou@bgs.ac.uk	Head of BGS Volcanology, delivering science advice to the Government
Lynch, Edward	Galway	e.lynch9@nuigalway.ie	Observations of volcanic ash from Galway
Maclennan, John	Cambridge, Earth Sciences	jcm1004@cam.ac.uk	
Malamud, Bruce	Kings, London	nh-malamud@kcl.ac.uk	Leading several EGU events, 2-7 May, 2010. a) Eyjafjallajökull - eruption, plume, and consequences (Tues 4 May 2010: 18:30-20:00 (1 hr talks, 30 minute panel discussion); Wednesday 5 May 2010: Poster session; Thursday 6 May 18:30-20:00 (1.5 hr talks). (b) Responding vs Reacting: Understanding the Impacts and Implications to Public and Private Risk Communities from the Eyjafjallajökull Volcanic Eruption.Thursday 6 May 2010: 12.15-13.15, Room 1 (200 people): splinter meeting panel session
Martin, Rob	QMUL	r.s.martin@qmul.ac.uk	Ground based remote sensing of gas composition and fluxes, in Iceland
Murray, Benjamin	Leeds, Chemistry	B.J.Murray@leeds.ac.uk	See James Atkinson
Mobbs, Stephen	Director, NCAS, Leeds	stephen@env.leeds.ac.uk	Assisting the Facility for Airborne Atmospheric Measurements (FAAM) in obtaining analyses of the volcanic ash samples collected by the NERC Dornier aircraft and the Met Office/NERC FAAM aircraft
Oppenheimer	Cambridge	co200@cam.ac.uk	Ground-based remote sensing observations in Iceland; see Sawyer, Ilyinskaya, et al.

, Clive			
Parker, Miles	DEFRA	miles.parker@DEFRA.GSI.GOV.UK	Defra has been working closely with colleagues from other government departments and the scientific community to monitor the volcanic ash situation. A network of experts, from a range of disciplines with scientific, technical and policy backgrounds, has been established and engaged in regular teleconferences. The network has shared ideas and expertise regarding the implications of the volcanic ash for; water quality, air quality, animal health and welfare and crops and the best practice for monitoring during this situation. In addition to existing air, and water sampling protocols a vegetation sampling strategy has been put in place. Early results show that the quality of the environment has not been compromised.
Passey, Simon	Jarðfeingi (Faroese Earth and Energy Directorate)	sp@jardfeingi.fo	Working with Bartal Højgaard and Uni Árting (p22); We have been attempting to collect ash samples falling on the Faroes from the recent Icelandic eruption. We managed to collect a small amount of ash in a bucket over 24 hrs; over the first weekend it snowed so we collected block samples, which we have been filtering and again we have got small amounts of ash.
Phillips, Jeremy	Bristol	J.C.Phillips@bristol.ac.uk	Expertise in tephra dispersal from wind bent plumes which may be of interest for source conditions for meteorological models
Pyne-O'Donnell, Sean	Bergen	Sean.Pyne-Odonnell@geo.uib.no	Ash (microtephra) glass shards from the April 2010 eruption of Eyjafjallajökull have been identified in Bergen, Norway. Ash traps (25 µm sieves) were placed beneath roof gutter outlets (15th April) and collected next day after a night of persistent rain. Approximately 2cm3 of dark grey sediment was collected, sieved at 80 µm to remove coarse particles and then microscopically examined for ash. The 25 µm fraction revealed the presence of numerous yellow-brown coloured volcanic glass shards of intermediate type appearance (~58% SiO2: Nordic Volcanology Center, 2010), and average size of ~50 µm. No shards were retrieved from the >80 µm size fraction. Shard morphology is vesicular with numerous microlitic inclusions (see photomicrographs, p 26). Other mineral components were also present in the traps, though whether these derive from the eruption plume or the local igneous and metamorphic geology of the Bergen region is uncertain.
Rimmer, John	Manchester	john.s.rimmer@manchester.ac.uk	Spectrophotometric measurements of total column ozone, total column sulphur dioxide, and aerosol optical depth at 320nm in the UV. See p 28.
Rust, Alison	Bristol	Alison.Rust@bristol.ac.uk	We went to Iceland to sample and observe the lava flows (before the vent shifted and ash became a problem) and we plan to return for more fieldwork. We are collaborating with Armann Höskuldsson to understand changes in rheology and lava emplacement dynamics.
Rycroft,	Managing	michaelrycroft@btinternet.com	Surveys in Geophysics publishes overview papers of interest to a broad range of geophysicists and

Michael	Editor, Surveys in Geophysics.		geoscientists - please see www.springer.com/10712 for further details.
Rymer, Hazel	Open University	h.rymer@open.ac.uk	New mass increase beneath Askja volcano, Iceland - a precursor to renewed activity? Hazel Rymer (i), Corinne Locke (ii), Benedikt G. Ófeigsson (iii), Páll Einarsson (iii) and Erik Sturkellc, (iv) i. Dept Earth & Environmental Sciences, The Open University, Walton Hall, Milton Keyes, MK7 6AA, UK ii. Geology and Environmental Science, The University of Auckland, Auckland, New Zealand iii. Nordic Volcanological Center, Institute of Earth Sciences, University of Iceland, Reykjavik, Iceland iv. Department of Earth Sciences, University of Gothenburg, Gothenburg, SwedenI have a paper in press (Terra Nova) about the new mass increase beneath Askja volcano, north of Eyja and NERC money to go back in the summer to re-measure. I plan to extend the network down to Katla and Eyja. Askja is an active central volcano located on the NS trending en echelon rift zone marking the mid-Atlantic plate boundary in North Iceland. Between 2007 and 2009, we observed a gravity increase at the centre of the caldera. This contrasts with net gravity decreases recorded between 1988 and 2007 interpreted previously in terms of magma drainage. The recent gravity increase is rapid but similar in terms of lateral extent to the preceding decrease. This gravity increase corresponds to a sub-surface mass increase of 0.68 x 1011 kg at about 3 km depth. It is possible that the new gravity increases observed at Askja reflect accumulation of magma beneath the caldera and thus may herald a new phase in the activity at this volcano which last erupted in 1961.
Saunders, Roger	Met Office	roger.saunders@metoffice.gov.uk	Coordinating satellite observations for the Met Office
Slingo, Julia	Met Office	julia.slingo@metoffice.gov.uk	
Smellie, John	Leicester	jls55@leicester.ac.uk	Expertise in glaciovolcanism
Smith, Graham	Defence Science & Technology Secretariat, Ministry of Defence		
Smyth, Tim	Plymouth Marine Laboratory	tjsm@pml.ac.uk	Over the past 10 years I have been collecting sun photometer data at Plymouth. During the volcanic ash event the skies were particularly clear in the southwest allowing the column integrated turbidity and aerosol size distribution to be determined. The data are available in real-time from the web site: http://www.westernchannelobservatory.org.uk/sunphotometer/pom/ Particularly marked are the data from 18th April
Sparks, Steve	Bristol	Steve.Sparks@bristol.ac.uk	Member of science advisory group.
Stevenson,	None	Johnalexanderstevenson @yahoo.co.uk	In March, I submitted a Royal Society of Edinburgh Fellowship application for a 5-year project at

John			Edinburgh University looking at the generation and dispersal of silicic tephra from Icelandic eruptions. If funded, I will carry out fieldwork to determine the total grainsize distribution from the deposits of a number of large explosive eruptions, and labwork to understand how fine ash is produced. I will use tephra dispersal models (e.g. TEPHRA) to characterise the plumes from which these tephras were deposited. These characteristics can be used as inputs for particle tracking models (e.g. NAME, PUFF). This work will build on my previous work on subglacial rhyolite and andesite eruptions and skills in programming and GIS. I would like to find potential collaborators for the particle-tracking part of the project.
Tsanev, Vitchko	Cambridge	vip20@cam.ac.uk	Ground-based UV and optical remote sensing of the ash cloud, etc.
Tuffen, Hugh	Lancaster	h.tuffen@lancaster.ac.uk	1. Carry out thermogravimetric analysis on Eyjafjallajökull ash to determine its volatile contents and extent of hydration by meltwater, to track degassing during the eruption. We have already carried out many analysis on ashes from explosive subglacial eruptions in Iceland. [Hugh Tuffen, Jo Denton at Lancaster] 2. Geochemical monitoring of meltwater at Sólheimajökull. In 2009 we have collected meltwater to characterize its stable isotope chemistry (including sulphur and oxygen), which provides a useful baseline. These isotopes reflect geothermal processes occurring in the Katla caldera (e.g. the temperature of rock-water interaction) and meltwater transport to the glacier snout (closed or open system). We propose to regularly analyse meltwater, in collaboration with Icelandic colleagues, to assist the monitoring effort at Katla, which is critical in the coming years as an eruption is highly probable. [Peter Wynn and Hugh Tuffen]
Walker, Joanne	Oxford, AOPP	walker@atm.ox.ac.uk	
Webley, Peter	Univ Alaska, Fairbanks	pwebley@gi.alaska.edu	I run the Puff model for volcanic ash clouds. We have been tracking and detecting ash clouds for many years here in Alaska. http://puff.images.alaska.edu/ I am also part of the remote sensing group who deal with analyzing data for the detecting of volcanic ash clouds. We are in the process of aiming to implement a real time application of determining volcanic ash masses from satellite data and also are able to use satellite data to determine the altitude of ash clouds. We do this routinely as part of AVO and work with the VAAC in Anchorage. Below is a list of topics that need to be addressed to really help in the forecasting of ash, the airborne concentration and then ashfall. 1. We need to implement a real time volcanic ash concentration and total mass product that can be used during eruptions. 2. We need to allow the VAAC's access to other volcanic ash dispersion models to determine the accuracy of their own. Maybe ensemble forecasting if they do not know the source information. 3. Have the ability to compare the model results to satellite data in real time and allow the model to forecast from an airborne volcanic ash clouds rather than from the source.
Wilson, Marjorie	Leeds	B.M.Wilson@leeds.ac.uk	Member of science advisory group set up to support the Chief Scientist, John Beddington

Extended abstracts, images and other information.

Christine Braban. Volcanic Ash: Centre for Ecology and Hydrology capability

Based on document prepared by Bridget Emmett for Defra, 19th April 2010 with input from Heath Malcolm, Eiko Nemitz, Phil Rowland, Don Monteith, Richard Shore, Brian Reynolds, Christine Braban and Chris Evans

CEH analytical capability for F in waters, soils and vegetation

CEH has a validated method to determine F- by ion chromatography in aqueous media. This method is susceptible to interferences from low molecular weight organic acids but it has an LOD of 15ug/L.

We have methods to determine fluoride in soil and plant material although these have not been used for 20 years when we were involved in the analysis of samples from the Aluminium smelter on Anglesey. Our current head of CEH Central Chemistry Facility developed these methods and they are well established for herbage. CEH still have the reference samples in store and therefore we would expect to be able to validate the method within a couple of weeks (i.e. within time for fresh samples to be collected, dried and ground). We would need to purchase some new electrodes and set the system up on and ion-selective meter.

- Detection limit would be in the region of 1 ug/g- this is based on the lowest standard and taking a sample mass of 10g air dried herbage sample.
- Throughput is of the order of 25 samples / day – it is a relatively slow and labour intensive process.
- Turnaround time based on giving this work top priority over other work is 5-10 working days – assuming receipt of a dried and ground sample ready for processing. The actual analysis will take 4 days: day 1 registration and prep, day 2 ashing and dissolution and day 3 measurement; day 4 processing and reporting. Days 5-8 repeats for over-range samples etc.

Air quality and bulk deposition

Hg and Heavy metals: Latest continuous mercury data from Auchencorth (SE Scotland) from Friday morning 16th April which includes the concentrations at 5 minute intervals for the last week indicate there was no noticeable increase in Hg concentration, although if the plume is still at a high altitude, you would not expect to see a signal at ground level. We will not have data for the other metals for a few weeks. There are the metals network bulk deposition samples some of which are sampled weekly and some 4-weekly that we could use to analyse for fluoride. There are weekly samplings from Auchencorth and Banchory, and 4-weekly samples from Inverpolly in N Scotland.

Inorganic ion composition of rain, air and aerosol composition:

Within the UKEAP monitoring network the following measurements are being made:

- Daily rain samples (Defra currently deciding whether to analyse April samples for fluoride currently)
- Fortnightly bulk rain chemistry at 38 sites. At 8 sites this has been increased by Defra to weekly for the duration of the volcanic plume event (AEA carryin gout sampling and analysis). Fluoride analysis will be carried out at these sites)
- Monthly average SO_2, HCl, NH_3, NO_2 gas and aerosol composition measurements at 30 sites including one on Shetland.

Other atmospheric monitoring: ECN sites bulk deposition filter paper are being analysed for mineralogy of particulates by Macaulay .

An aerosol mass spectrometer has been running at CEH Edinburgh since the plume was identified as an issue. No evidence of plume has been detected to date (not surprising given plume height. Local bonfire was though)

Soil and Herbage samples

- We have a range of vegetation samples archived from various long term field sites and monitoring programmes which cover different habitat types. These could be used as baseline for a resampling programme however many protocols demand washing of the vegetation prior to analysis which would remove particulates and therefore their value here is unknown at present.
- There are a >3000 archived topsoil samples from Countryside Survey 2007 which could be analysed for total fluoride. See above for turnaround time etc
- There are ca. 300 current-year shoot vegetation samples for heather and moss from the 2007 Countryside Survey archived which could be used as a baseline with open-access squares used for re-sampling.
- Unfortunately vegetation samples are not routinely stored in ECN but soil samples are available and ECN staff are already sampling all grassland vegetation when present.

Freshwaters

Intensive sampling is underway for a range of CEH catchments to identify potential acidification episodes in freshwaters. We have 20-30 year records for a wide of lakes and rivers in acid sensitive areas plus intensive 7 hourly sampling in some catchments (e.g. Plynlimon which illustrate the dynamism of the signal) which should provide a good baseline record.

Future sampling can be discussed with CEH staff.

Collecting ash samples from the Eyjafjallajökull eruption (April 2010) on the Faroe Islands

BARTAL HØJGAARD[1] AND UNI ÁRTING[1]

[1]Jarðfeingi, Brekkutún 1, P.O. BOX 3059, FO-110 Tórshavn, Faroe Islands
bartal.hojgaard@jf.fo and uni.arting@jf.fo

ABSTRACT
Ash samples have been collected by the Faroese Earth and Energy Directorate on the Faroe Islands following the renewed eruption of Eyjafjallajökull on 14 April 2010. The directorate was unprepared for the eruption, but bulk ash samples have been collected for further studies.

Time constrained samples
Since the renewed eruption started on 14 April 2010 areal (0.053 m^2) bulk samples have been collected in Hoyvík, Streymoy, using the simplistic method of positioning a standard bucket in a relatively open location over a set period of time (Fig.1; cf. Alaska Volcano Observatory).
The first test sample was collected over a 24 hr period (12:50-12:50 UTC) from 15 to 16 April that provided ~50 mg of ash (Fig. 1). This however, gives a preliminary estimate of an average ash fall of ~39 mg/m^2/hr in Hoyvík.
This method was repeated the following week with varying results, but mainly providing very small amounts of ash that were difficult to accurately measure (<0.01 mg).

Fig 1. Views of the sample container positioned in the car park of the Faroese Earth and Energy Directorate in Hoyvík, Streymoy, Faroe Islands and the first sample collected from the Eyjafjallajøkull eruption. This sample weighs ~50 mg.

Unconstrained Time Samples
The first weekend after the eruption (from the 17 April), snowfall occurred across the Faroe Islands. Large blocks of snow with a set area of 1600 cm^2 and depths of between 10 and 32 cm were collected (Fig. 2), melted and then filtered to collect the ash contained within them. This method allowed larger amounts of ash to be collected, typically over 2 g. The limitation of this method is that the snow fall is not accurately time constrained, but does provide larger bulk samples. A number of localities have been sampled in this manner and are currently being filtered. The melt water is being retained for future studies to test for the presence of leachates.

Fig 2. Collecting a 40x40x30cm blocks of newly fallen snow at Sornfelli and Eiðisskarð, Streymoy, Faroe Islands.

Grain Size Analysis

Preliminary grain sizes have and are still being measured using a polarizing microscope (Fig. 3). The initial results show that both fine and coarse ash particles have been detected up to 1.5 mm across. The ash particles are angular, reddish brown glass but individual crystal grains, most likely plagioclas, have also been observed.

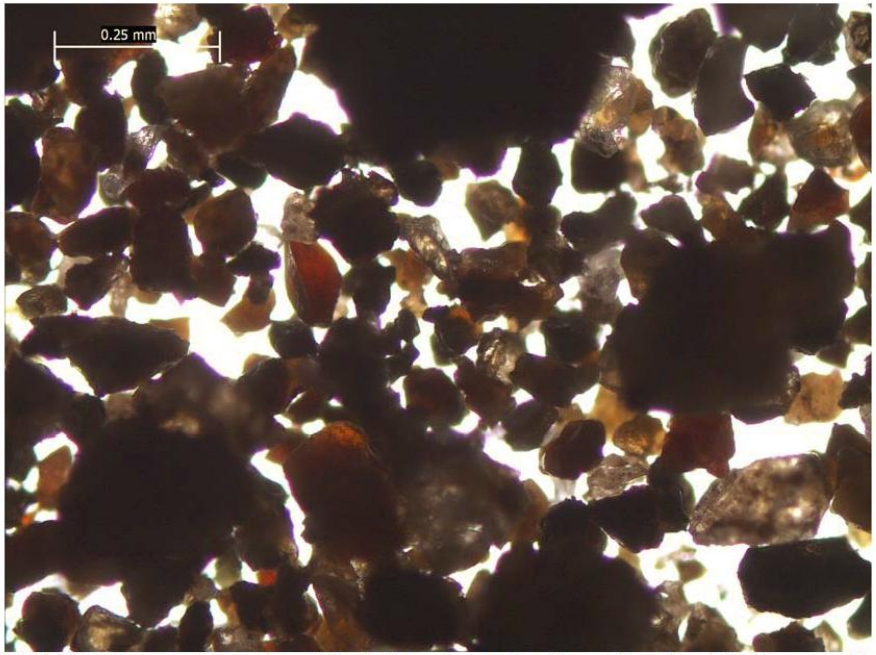


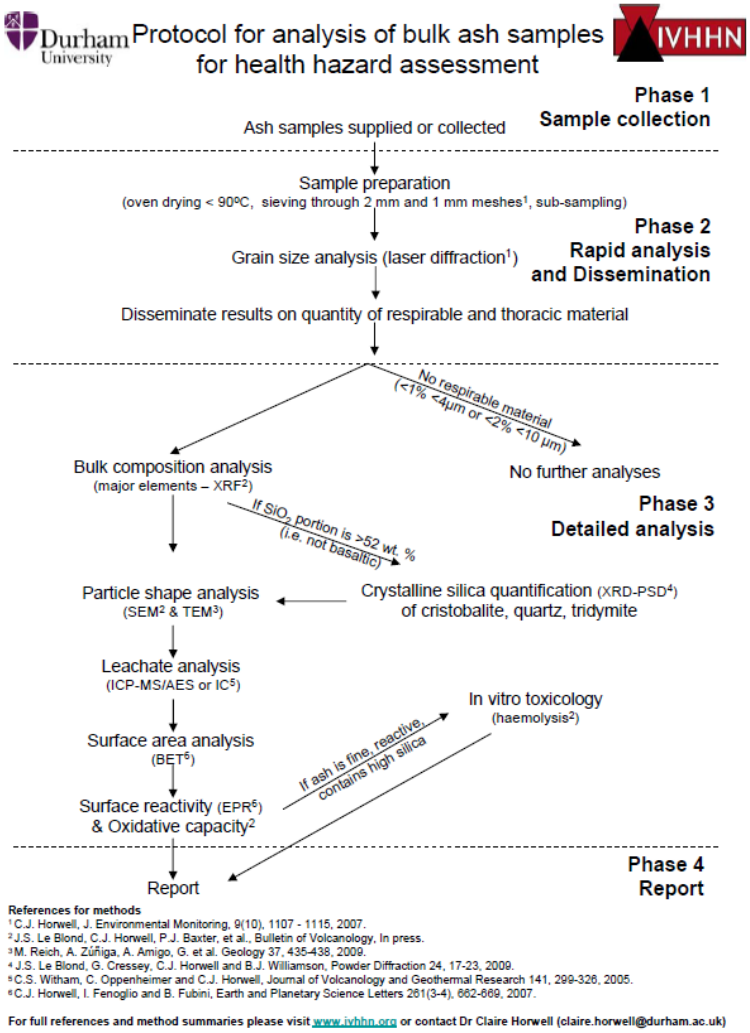
Fig 3. Fine to coarse glassy ash particles in the snow sample collected from Sornfelli, Streymoy, Faroe Islands.

Further Work

- Continuing to collect bulk ash samples from the snow samples
- Undertaking preliminary grain size analyses
- Providing samples for collaborative studies

Claire Horwell, Institute of Hazard, Risk and Resilience, Department of Earth Sciences, Durham University.

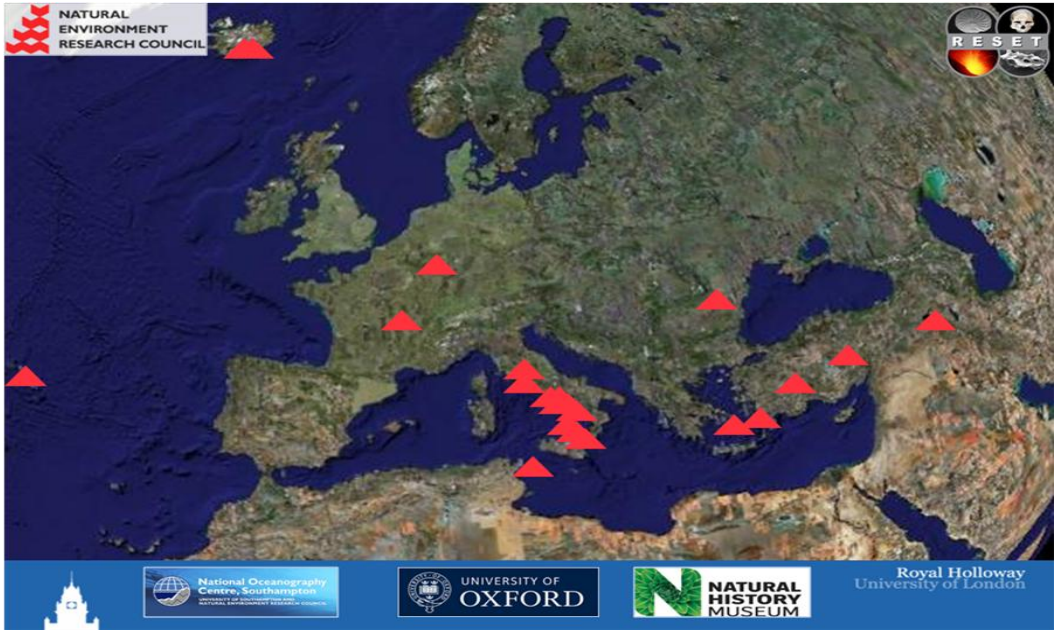
Protocol for analysis of bulk ash samples for health hazard assessment.



Martin Menzies and the NERC RESET Consortium, RHUL.

European tephrochronology - matching the provenance of proximal and distal volcanic glasses using EMPA & LA-ICPMS data

RESET WWW site : http://c14.arch.ox.ac.uk/reset/ http://c14.arch.ox.ac.uk/rhoxtor/embed.php?File=index.html



In the context of the last 100ka western Europe offers a unique opportunity to use recurrent explosive volcanic activity and widespread tephra dispersal as a basis for evaluating the temporal and spatial relationships between the migration of ancient modern humans (AMH) and abrupt environmental transitions (AETs). Tephras in (a) archaeological sites hold the key to AMH migration patterns and (b) lacustrine, marine and ice core constrain AETs. Major explosive eruptions have been targeted across western Europe for the characterization of proximal juvenile components (table 1). Juvenile (magmatic glass) compositions are forthcoming from (a) pumice or scoria clasts in pyroclastic fall deposits (b) pumice or fiamme in proximal pyroclastic flow deposits, (c) glass adhering to entrained xenoliths, and (d) cryptotephras at distal sites (i.e., < 100 microns). SEM, EMPA & LA-ICPMS techniques (e.g., Tomlinson et al 2010a,b) are applied to all proximal and distal juvenile class with SIMS utilized where particles are too small/thin. The provenance of the distal cryptotephras is paramount and is defined by matching the geochemistry of distal juvenile clasts with the RESET geochemical database for proximal European tephras. Once diagnostic chemistries are matched, $^{40}Ar/^{39}Ar$ ages (K-rich phenocrysts) from proximal sites link the continental-lacustrine-marine archives. This time lattice is refined with the addition of temporal detail from varve counting (lacustrine), ^{14}C, U-Th dating (archaeological sites), & biostratigraphy (marine).

Tomlinson, E. Thor Thordarson; Wolfgang Mueller; Matthew F Thirlwall, Martin A Menzies (2010a) Micro analysis of tephra by LA-ICP-MS - strategies, advantages and limitations assessed using the Thorsmork ignimbrite (Southern Iceland)} *Chemical Geology (submitted)*

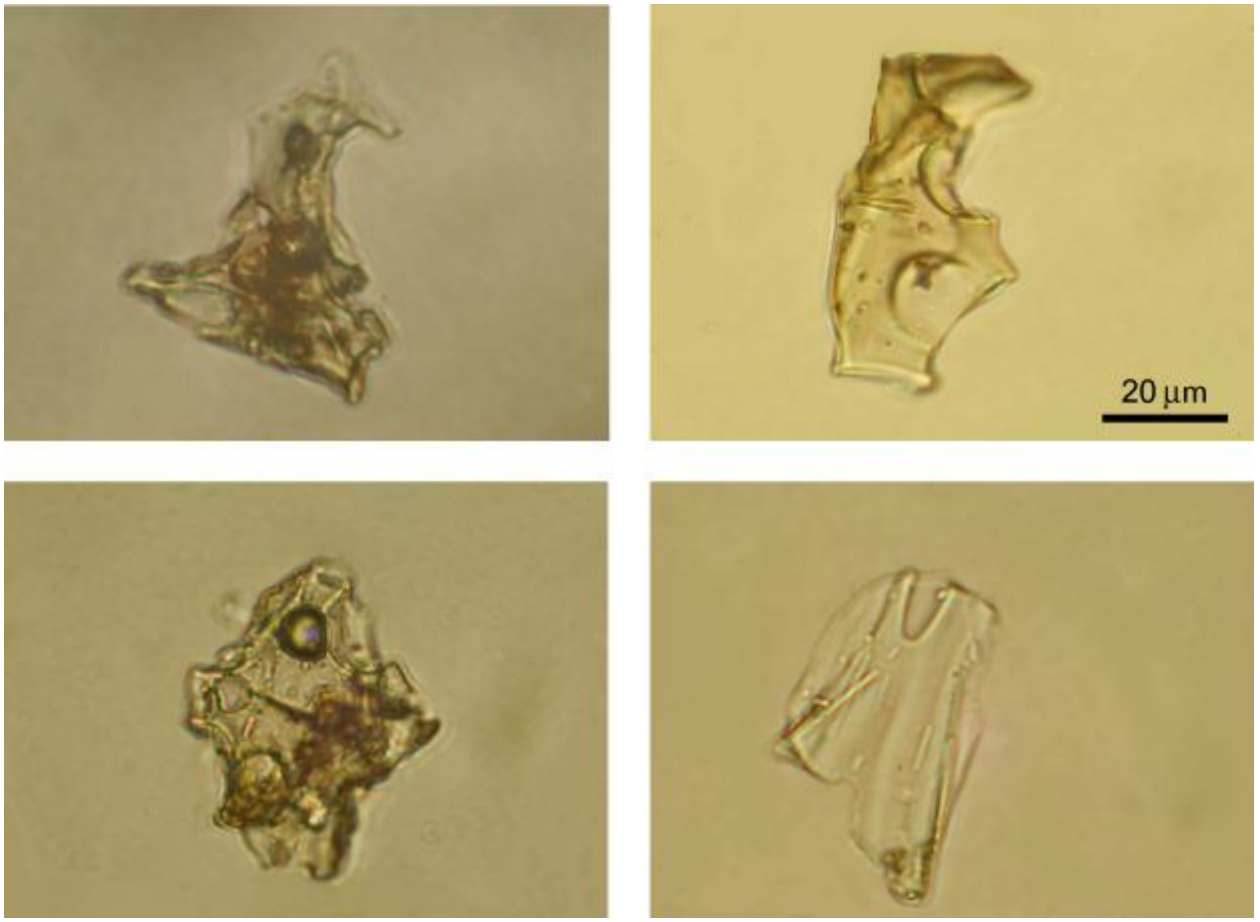
Tomlinson, E., Thordarson, T., Lane, C., Manning, C., Blockley, S., Muller, W., and Menzies, M.A. (2010b) The Solheimer ignimbrite (Katla, southern Iceland) and the source of the "Vedde Ash" stratigraphic marker tephra. *Geology (submitted)*

Table 1 – Targeted proximal tephras whose geochemistry and age are being re-investigated by RESET.
Data will be stored at http://c14.arch.ox.ac.uk/rhoxtor/embed.php?File=index.html.

AGES	VOLCANO/TEPHRA		
9,560 BP	Ulmener Maar, Germany	35,083-34,194 BP, 36ka	Pollara Italy
8,300 BP	Dikkarrin & Perikarini, Turkey		Pepperino Albano, Italy
10,000 (K-Ar)	Nemrut, Turkey		Taurano/Schiava, Somma-Vesuvius, Italy
	Solheimer, Iceland	36.6-39.3ka	Upper/lower pumice, Nisyros
11,769-12,761BP	Pomici Principali, Italy	39ka	Campanian Ignimbrite, Italy
12.9ka	Laacher See, Germany		Alban Hills, Italy
13ka (36Cl 14C)	Kara Gullu, Turkey	45-50ka (K-Ar)	Pre-CI, Italy
	Pollara 1, Italy		Green Tuff, Italy
	Lower Brown Tuff, Italy		Schiaponne, Italy
14.9ka	Neapolitan Yellow Tuff, Italy	71-87 ka, 51-57 ka	Chiummano, Italy
13.4-15.8ka	Tufi Biancastri, Italy		Upper Scoriae, Santorini
18ka	Guneydag, Turkey	54.2-58ka (K-Ar)	Upper Scoriae, Santorini
	Pollara, Italy	69ka	MEGT, Italy
19ka	Korudag Maar, Turkey	70ka	Alban Hills, Italy
17,788-16,252 BP	Biancavilla, Italy	73ka	Kogidag, Turkey
18,989-18,654 BP	Verdoline, Italy	75.3ka (K-Ar)	Thorsmork, Iceland
	Ante Biancaville, Utaly	79.3ka (K-Ar)	Petrazza, Italy
21 ka	Cape Riva, Santorini	80 ka	Pantelleria, Italy
22,557-20,972 BP, 18.5ka	Pomici Di Base, Italy		Nemrut, Turkey
25,490-24,700 BP	Tufi Biancastri, Italy		

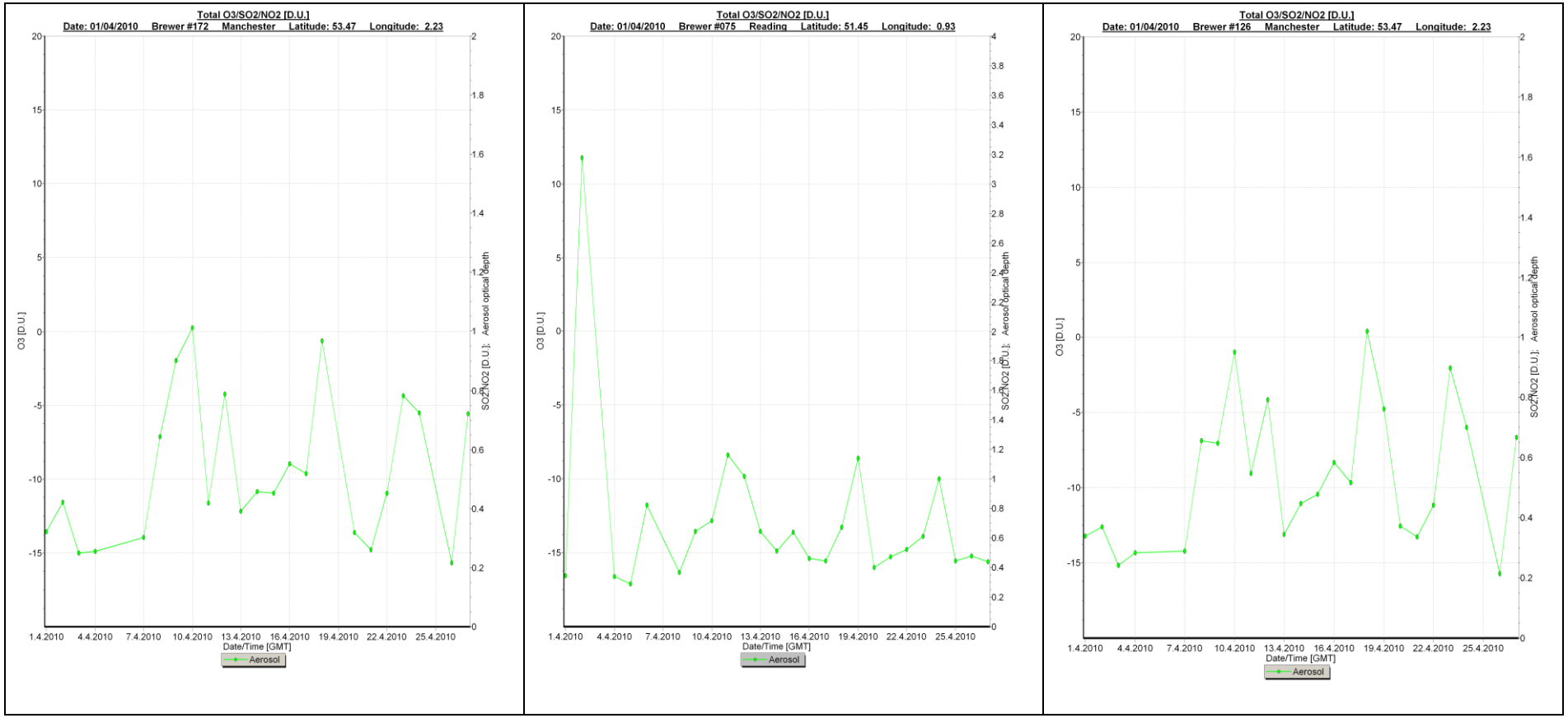
Sean Pyne-O'Donnell (*sean.pyne-odonnell@geo.uib.no*), Eyjafjallajökull 2010 ash deposition in Bergen, Norway

Department of Earth Science, University of Bergen, Allégaten 41, NO-5007 Bergen, Norway



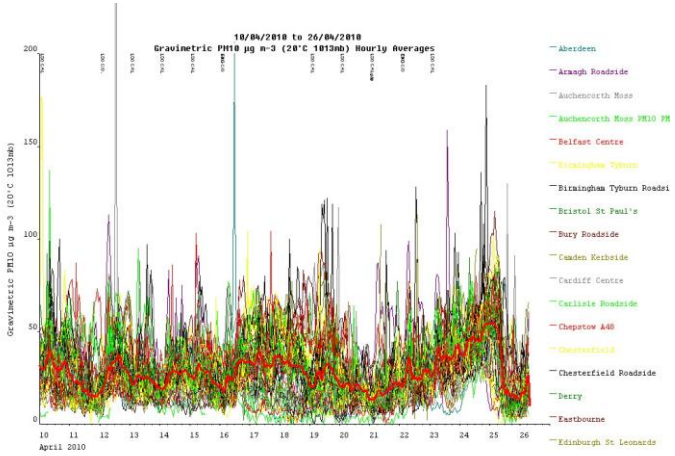
John S Rimmer, Spectrophotometric Observations
University of Manchester, SEAES, Oxford Rd, Manchester, M13 9PL

We have three Brewer spectrophotometers which are constantly monitoring total column ozone, total column sulphur dioxide, and aerosol optical depth at 320nm in the UV. Brewers 126 and 172 are co-located in Manchester and Brewer 075 is sited at Reading University. During the event, we were unable to detect any increase in SO2 above the normally expected baseline from any of our instruments. We did find elevated levels of aerosol optical depth at 320nm. The attached plots are the average daily values of AOD320 over the current month of April. Note the similarity of the plots for the co-located instruments Br172 and Br126. In particular the peaks on the 10th, 18th and 23rd April. Looking at the data from Br075 in Reading (~200 mile south), the plot is again similar to the Manchester data but all three peaks are displaced one day later. This monitoring forms part of the 'Baseline Measurement and Analysis of UK Ozone and UV' program funded By DEFRA.

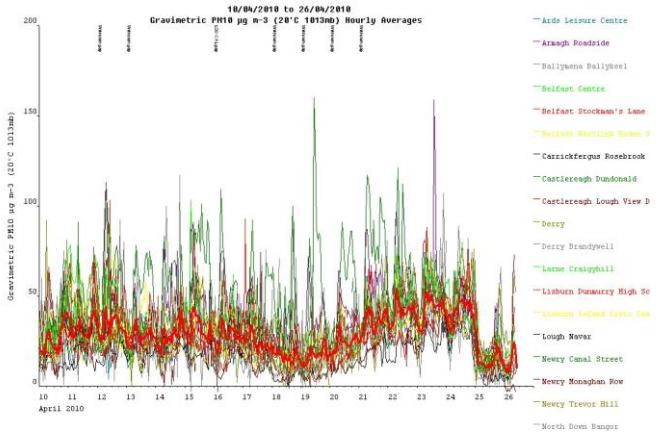


Paul Willis, Knowledge Leader Air Quality, AEA Group, Harwell, Didcot, Oxfordshire , OX11 0QJ

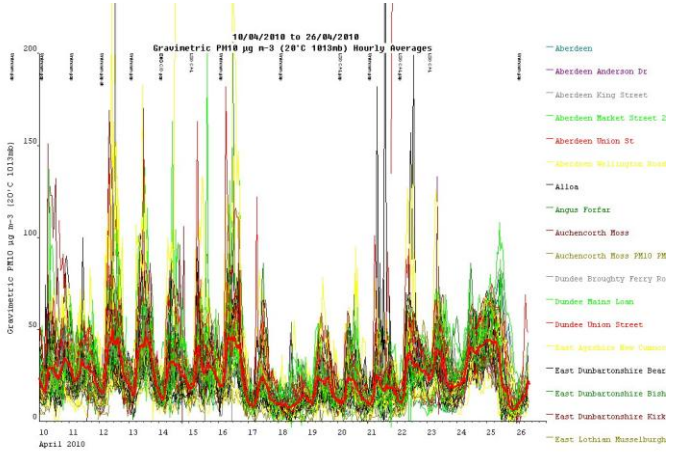
Pollutant plots from Air Quality Monitoring Networks; the thick line is the average concentration for all sites in that particular network.



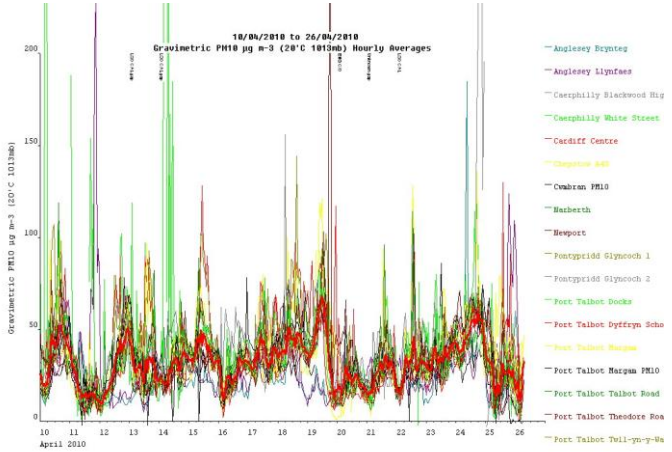
UK Automatic and Rural Network PM10



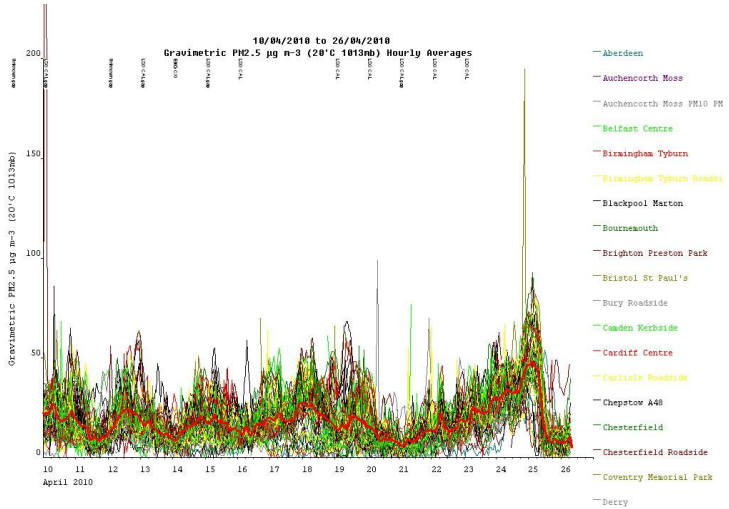
Northern Ireland PM10



Scotland PM10



Wales PM10



UK Automatic and Rural Network PM2.5

Resources relating to the 2010 eruption of Eyjafjallajökull

Observations and measurements.
The **Nordic Volcanological Observatory** have done a fantastic job of keeping the world informed about the latest observations, analyses and results of ongoing work during the eruption. http://www.evropusamvinna.is/page/ies_Eyjafjallajokull_eruption

Real time information on seismicity around Eyjafjallajökull and links to other meteorological data are all available from the **Icelandic Meteorological Office** http://en.vedur.is/earthquakes-and-volcanism/earthquakes/myrdalsjokull/

Remote sensing data (ash, SO_2) have been collected together by Simon Carn (scarn@mtu.edu, Michigan Tech), and made available on the **IAVCEI Remote Sensing Commission** website. http://sites.google.com/site/iavceirscweb/eruptions/eyja

The British Atmospheric Data Centre have made a considerable amount of data available to registered users
http://badc.nerc.ac.uk/data/eyjafjallajokull_apr2010/

Ash advisories and plume dispersion models.
The Met Office Volcanic Ash Advisory Centres (VAAC) http://www.metoffice.gov.uk/aviation/vaac/index.html
PUFF volcanic ash tracking model for Eyja http://puff.images.alaska.edu/index.shtml
FLEXPART dispersion model output (courtesy of NILU, Norway) http://transport.nilu.no/products/eyjafjallajokull
Aarhus University plume dispersion model: http://www.dmu.dk/International/Air/Models/volcanicplume/
Fall3D model simulations (Barcelona Supercomputing Center, Spain):
http://www.bsc.es/projects/earthscience/nube2010