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Toward an integrated Volcanic Ash Observing System in Europe

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Volcanic ash from the Icelandic eruption of Eyjafjallajökull in April and May of 2010 resulted in the decision by many northern European countries to impose significant restrictions on the use of their airspace. The eruption, extent and persistence of the ash revealed how reliant society now is on a safe and efficient air transport system and the fragility of that system when affected by the impact of complex natural hazards.

As part of an EC framework programme, the 2011-2013 WEZARD (WEather HaZARD for aeronautics) consortium conducted a cross-industry volcanic ash capability and gap analyses, with the EUMETNET (network of 29 National Meteorological Services) led Work Package 3 focussing on a review of observational and monitoring capabilities, atmospheric dispersion modelling and data exchange. The review has revealed a patchwork of independent observing capabilities for volcanic ash, with some countries investing and others not at all, and most existing networks focus on space-based products. Existing capabilities do not provide the necessary detail on the geographical and vertical extent of volcanic ash and associated levels of contamination, which decision makers in the aviation industry require in order to decide where it is safe to fly.

A resultant high priority was identified by WEZARD Work Package 3 for an enhanced observational network of complementary monitoring systems needed to initialise, validate and verify volcanic ash dispersion model output and forecasts. Thus a key recommendation is to invest in a major pre-operational demonstrator "European volcanic ash observing network", focussing on distal monitoring, and aiming to a) fill R&D gaps identified in instrumentation and algorithms and b) integrate data, where possible in near-real-time, from a range of ground-based, airborne and space-based techniques.

Here we present a key WEZARD recommendation toward an integrated volcanic ash observing system in Europe, in context with other related projects and initiatives. We will also look to highlight the work underway by VAACs (Volcanic Ash Advisory Centres) and aviation regulatory authorities within the IAVWOPSG (International Airways Volcano Watch Operations Group) to develop the 'agreed in situ and/or remote sensing techniques' that underpin the newly approved definition of 'Discernible ash'.