Geophysical Research Abstracts
Vol. 17, EGU2015-5553, 2015
EGU General Assembly 2015

Results of airborne measurements in the plume near and far from the 2014 Bardarbunga-Holuhraun eruption.

Gylfi Arnason (2), Jonas Eliasson (3), Konradin Weber (1), Christoph Boehlke (1), Thorgeir Palsson (2), Olafur Rognvaldsson (4), Throstur Thorsteinsson (3), Ulrich Platt (5), Lukas Tirpitz (5), Roderic L Jones (6), and Paul D Smith (6)

(1) University of Applied Sciences Düsseldorf Germany, (2) Reykjavik University Reykjavik Iceland, (3) University of Iceland Reykjavik Iceland, (4) Belgingur Ltd. Reykjavik Iceland, (5) University of Heidelberg Heidelberg Germany, (6) Cambridge University Cambridge United Kingdom

The Volcanic Ash Research (VAR) group is focused on airborne measurement of ash contamination to support safe air travel. In relations to the recent eruption, the group measured ash and several gaseous species in the plume 10-300 km from the volcano. The eruption emitted ash turned out to be mostly in the fine aerosol range (much less than 10 micrometers in diameter). Our highest measured concentrations were lower than 1 mg/m3 indicating that commercial air traffic was not threatened (greater than 2 mg/m3) by the ash contamination. But we measured sulfur dioxide (SO_2) up to 90 mg/m3, which presented a potentially dangerous pollution problem. However, airborne measurements indicate that the sulfur concentration decays (probably due to scavenging) as the plume is carried by the wind from the volcano, which limits the area of immediate danger to the public.
Here we present size distribution for particulate matter collected during flights, near and far from the crater at various times. The particle data is then compared with simultaneously collected sulfur dioxide data and the rate of decay of is estimated. Sulfur and particle concentration variations with height in the far plume are presented. Some airborne measurements for H2S, NO, NO_2 and CO_2 will also be presented. This includes correlation matrices for simultaneous measurements of these gases and comparison to National Air Quality Standards and background values.