

Observations and simulations of severe turbulence in the wake of SE-Iceland

H. Ágústsson (1,2), H. Ólafsson (2,3,4), Ó. Rögnvaldsson (1,3)

(1) Institute for Meteorological Research, Reykjavik, Iceland, (2) University of Iceland, Reykjavík, Iceland, (3) Bergen School of Meteorology, Geophysical Institute, University of Bergen, Norway, (4) Icelandic Meteorological Office, Reykjavík, Iceland

On 18 November 2008 a commercial aircraft encountered severe turbulence while flying in westerly flow across the wake of SE-Iceland and descending from 8.000 ft down to the ground. The situation is reproduced with the WRF model at horizontal resolutions down to 1 km.

The simulations show a Type 1 rotor (Hertenstein & Kuettner, Tellus 2005), which is in agreement with the vertical profile of wind and temperature. Very strong shear-turbulence is reproduced in the lee-wave and inside the rotor. The lee-waves and the turbulence patterns are not stationary and as the upstream vertical windshear increases, the lee-wave becomes less steep, but the turbulence increases.

From a forecasting perspective, this event could have been foreseen quite accurately, but not with the NWP tools that are currently in use for aviation forecasts. Their resolution is typically of 9 to 27 km and even more, and that is simply not adequate. This event underlines the urgency of delivering products from fine-scale simulations over complex terrain to pilots.