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The environmental and health effects of the 2014-2015 Holuhraun eruption (Iceland)

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The 2014–2015 Bárdarbunga-Veidivötn fissure eruption at Holuhraun (Iceland) produced about 1.5 km3 of lava in 6 months and was one of the largest effusive eruption world-wide in over 200 years. The daily volcanic sulfur dioxide (SO_2) emissions exceeded daily SO_2 emissions from all anthropogenic sources in Europe in 2010 by at least a factor of 3 (up to 100 kt/d). This was the first time that an event of this type and scale was observed using modern scientific techniques and revealed previously unknown processes in volcanic plume dynamics, and un-assessed environmental and health effects.

In this talk we will summarise the multitude of environmental effects caused by the volcanogenic emissions from this eruption, including an assessment of the near- and far-field impacts on air quality, human health and low-level cloud properties. We will also discuss volcanic sulfate deposition across Greenland and Northern and Central Europe from this eruption and its implication for our interpretation of records of large fissure eruptions in geological archives such as ice cores and sediments.