



Ground based measurements of the gas emission from the Holuhraun volcanic fissure eruption on Iceland 2014/2015

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The since 31 August 2014 ongoing volcanic eruption at Holuhraun on Iceland is by far the strongest source of sulfur dioxide in Europe over the last 230 years with sustained emission rates exceeding 100 000 ton/day. This gas emission severely affects local population and has become a concern also for air traffic. The eruption has in December continued at constant pace for 3.5 months. Three scenarios are envisaged for the future; (1) the eruption stops, (2) the fissure extends under the Vatnajökul glacier and (3) Bardarbunga volcano erupts. The two later scenarios will cause increased gas emission, severe ash emissions and extended flooding.

Under the scope of the EU-project FUTUREVOLC, a project with 3.5 years duration, aiming at making Iceland a supersite for volcanological research as a European contribution to GEO, we are developing a version of the Scanning DOAS instrument that is adapted to high latitudes with low UV radiation and severe meteorological conditions.

Since the first day of the eruption several of these novel instruments has been monitoring the SO₂ emission from the eruption. Data from our instruments are still after 3.5 months the only sustained ground-based monitoring of this gas emission. A lot of work is however needed to sustain this operation at a very remote site and under severe field conditions. At the same time the very high concentrations in the gas plume, in combination with bad meteorological conditions require the development of novel methods to derive reliable flux estimates.

In this presentation we will discuss the instrumental issues and present the latest version of the emission estimates made from our measurements.