



## **Volcanic emissions constrained by satellite data: inverse and dispersion modelling of SO<sub>2</sub> and fine ash for a few recent eruptions**

Nina Iren Kristiansen (1), Eldbjørg Moxnes (1), Andreas Stohl (1), Sabine Eckhardt (1), Fred Prata (1,2), and Lieven Clarisse (3)

(1) Norwegian Institute for Air Research (NILU), Atmosphere and Climate Change Department, Norway (nik@nilu.no), (2) Nicarnica Aviation, Kjeller, Norway, (3) Spectroscopie de l'Atmosphère, Service de Chimie Quantique et Photophysique, Université Libre de Bruxelles (ULB), Brussels, Belgium

Accurate estimates for the releases of gases and ash from volcanic eruptions are crucial for aiding aviation, for assessing potential climate impacts from large eruptions and other impacts from eruptions such as on air quality. Inverse modelling approaches can provide detailed emission estimates (as a function of height and time) and different techniques are currently being developed specifically for volcanic emissions by several groups worldwide. The core idea is to use satellite data to constrain the emissions by comparing the observations with an ensemble of modelled test emissions. Emission estimates for SO<sub>2</sub> and/or fine ash from inverse modelling for the 2007-Jebel at Tair (Red Sea), 2008-Kasatochi (Alaska), 2010-Eyjafjallajökull (Iceland) and 2011-Grimsvötn (Iceland) eruptions will be shown. Dispersion modelling using the estimated emissions show good agreement with other observation data. Some of the key advantages and limitations of the method will be highlighted.