

Riccardo
Biondi

Università degli Studi di Padova, Dipartimento di Geoscienze, Padova, Italy

Pierre-Yves Tournigand, Vrije Universiteit Brussel, Department of Geography, Brussels, Belgium

Mohammed Hammouti, National Research Council of Italy, Institute of Environmental Geology & Geoengineering, Laboratory of Risk analysis and emergency management – LARGE, Milano, Italy

Valeria Cigala, Ludwig-Maximilians-Universität München, Munich, Germany

Elzbieta Lasota, Institute of Geodesy and Geoinformatics, Wrocław University of Environmental and Life Sciences, Wrocław, Poland

Lieven Clarisse, Spectroscopy, Quantum Chemistry and Atmospheric Remote Sensing (SQUARES), Université Libre de Bruxelles, Brussels, Belgium

Hugues Brenot, Royal Belgian Institute for Space Aeronomy (BIRA-IASB), Brussels, Belgium

Fred Prata, AIRES Pty Ltd, Mt Eliza, Victoria, Australia

Gottfried Kirchengast, Wegener Center for Climate and Global Change (WEGC) and Institute of Physics, University of Graz, Graz, Austria

Andrea K. Steiner, Wegener Center for Climate and Global Change (WEGC) and Institute of Physics, University of Graz, Graz, Austria

Poster

Explosive volcanic eruptions can generate ash and SO₂ clouds reaching the stratosphere and dispersing on a global scale. These volcanic events are at the origin of many hazards such as aircraft engine damages, ash fallouts, acid rains, short-term climate changes and health threats. Monitoring volcanic clouds altitude and dispersion over time is thus of primary importance to mitigate these hazards. When it comes to global monitoring satellite techniques have proven to be the most efficient at tracking volcanic aerosols in the atmosphere. However, satellite data are scattered amongst the different institutes and agencies acquiring and processing them, and their retrieval is time-consuming.

Here we present a multi-sensor archive collecting spatial and temporal information about volcanic SO₂ clouds generated by the 11 largest eruptions in between 2006 and 2016. We archived and collocated the SO₂ vertical column density estimations from three different satellite instruments (AIRS, IASI and GOME-2), the Global Navigation Satellite Systems (GNSS) Radio Occultations (RO), and the aerosol type from the Cloud-Aerosol Lidar with Orthogonal Polarization (CALIOP). We also provide information about the cloud-top height from three different algorithms including the bending angle anomaly due to the presence of the cloud. The dataset is gathering 206 days of SO₂ data, collocated with 44180 backscatter profiles and 64764 radio occultation profiles.

This new archive allows an easy access to the datasets according to the users' needs and its applications will impact many fields of volcanology and atmospheric physics, such as volcanic clouds dispersal numerical modelling and climate impact of volcanic aerosols. The data described here are published with a DOI at <https://doi.org/10.5880/fidgeo.2020.016>.

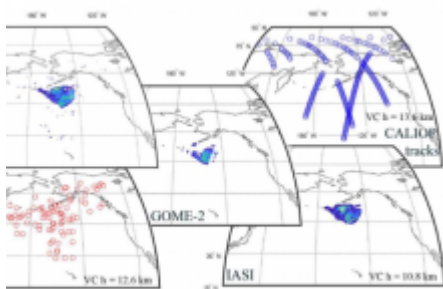


Figure 1: Data collocation and data use for the Kasatochi 2008 eruption

Poster PDF

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Meeting name

8th International Radio Occultation Working Group Meeting - IROWG-8

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