



New constraints on volcanic CO₂ emissions from Java, Indonesia

Mike Burton (1), Manuel Queisser (1), Fabio Arzilli (1), Antonio Chiarugi (2), Alessandro La Spina (2), Francesco D'Amato (3), Silvia Viciani (3), Gayatri Marliyani (4), and Ferian Anggara (4)

(1) University of Manchester, School of Earth, Atmospheric and Environmental Science, Manchester, United Kingdom (mike.burton@manchester.ac.uk), (2) Istituto Nazionale di Geofisica e Vulcanologia, Italy, (3) Istituto Nazionale di Ottica, Italy, (4) University of Yogyakarta, Indonesia

We conducted a week-long airborne campaign to measure volcanic gas emissions from volcanoes on Java, using an innovative new in-situ gas sensing instrument. This instrument uses UV LEDs and tunable diode lasers to measure H₂O, CO₂, SO₂, HCl and HF at frequencies up to 5 Hz. We measured a total of 15 volcanic plumes, and report here on the composition and flux of gases from these sources. We use these results together with a new thermodynamic model of volatile recycling in subduction zones to reveal the relationship between the down-welling carbonates in the slab subducting under Java and the gas emissions from Javanese volcanoes and mud volcanoes in the back-arc.