

In-situ Volcanic Plume Monitoring at Solfatara Volcano and Vulcano Island, Italy with Small Portable Mass Spectrometer Systems designed for Field Deployment and Unmanned Aerial Vehicles (UAV)

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The development and application of small Unmanned Aerial Vehicles (UAV) with their increasing capacity of carrying a different variety of sensor packages and technologies is having a strong impact in the way researchers can explore locations and collect real time harsh environment data; for example: in situ and proximal remote sensing measurements of volcanic plumes and eruptive activity, in ways that they were not possible before.

The present talk provides an overview of the development and field-deployment of 2 small portable MS based systems designed to be either hand/backpack carried into the field or else deployed onboard unmanned airborne platforms to perform volcanic gas plume research and in-situ volcanic monitoring in general. In conjunction with orbital assets it also provides calibration and validation of satellite remote sensing instruments to improve models of volcanic plume transport and composition.

The two systems were field deployed into Solfatara Volcano, Naples and Vulcano Island, Italy to ground test their performance in preparation of flight testing schedule for next year on board Italian National Geophysics and Vulcanology Institute (INGV) drones.