

Magellan Plus Workshop Series Programme

Workshop

Volcanic, tectonic and hydrothermal processes in an island-arc caldera environment

Development of an IODP Drilling Proposal at Santorini-Kolumbo Marine Volcanic System

21-23 November 2017, Athens, Greece

This workshop will assemble a core working group to initiate a proposal for drilling at Santorini-Kolumbo marine volcanic field in Greece. Santorini is one of the most explosive arc calderas in the world, the iconic Late Bronze Age (LBA) eruption being the most recent of many plinian eruptions over 350 ky. Well dated deep-sea ash layers from many of these eruptions form excellent time-stratigraphic markers in marine sediments. The post-LBA Kameni Volcano inside Santorini caldera has been constructed over the last 3600 years, with the last eruption in 1950. Bradyseismic unrest in 2011-2012 inside the caldera has been attributed to shallow injection of magma, reminding us of the risk of future eruptions at this major tourist destination. The Kolumbo underwater volcano, 7 km NE of Santorini, has a 1.5 km diameter crater and formed during up to five eruptions, the latest in 1650. It has an active hydrothermal field, with polymetallic sulphide and sulphate chimneys discharging CO₂-rich fluids. Drilling on and around the volcanic system would enable better understanding of the eruptive histories of these hazardous volcanoes, the dynamics and products of submarine explosive activity, caldera formation in a subduction setting, environmental impacts of the LBA eruption, links and feedbacks between tectonics and volcanism, shallow hydrothermal systems and massive sulphide deposits, and microbial ecosystems at arc calderas. The initiative will build on large existing datasets, including a detailed knowledge of the eruptive history of Santorini and its deep-sea ash layers, multiple sub-seafloor seismic reflection profiles obtained in several campaigns since 2006, high-resolution swath bathymetry, submarine sampling by ROVs of volcanic products, hydrothermal deposits and bacterial mounds, and a high-resolution, active seismic tomography experiment carried out at Santorini-Kolumbo in 2015.

Registration: Researchers interested in participating in the workshop are invited to submit an expression of interest and a short CV by 20 June 2017 to tim.druitt@uca.fr. Applicants will be accepted on the basis of their research relevant to the workshop goals, and will be informed of the outcome by early July.

Organisers:

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