

Report on fieldwork in the Aeolian Arc, Italy

Silicic volcanism defines the recent volcanic activity in the Aeolian Archipelago, Italy. On Lipari and Vulcano, well-exposed obsidian lava flows and pumiceous pyroclastic deposits occur. The purpose of my PhD is to address magmatic and post-magmatic processes of silicic volcanism on Lipari and Vulcano.

During May and June 2011, accompanied by my supervisory team Dr Ralf Gertisser and Dr Brian O'Driscoll, and my field assistant Miss Leanne Patrick, I visited the islands to collect obsidian samples, take structural recordings on the lava flows, log the Fiume Bianco-Gabellotto pumice sequence and take in-situ x-ray fluorescence geochemical measurements.

One of the aims of my project is to investigate emplacement mechanisms and post-emplacement deformation of younger obsidian lavas on Lipari. Well-preserved textural and structural complexities in the Rocche Rosse obsidian lava flow can serve as a record for magmatic flow and deformation. Structures such as oblique folds (right), curvilinear folds and sheath folds have potential to yield insights into lava flow and emplacement mechanisms. These deformational complexities, syn- and post-emplacement, may tie-in with major and trace element concentrations in the flow, showing localised and larger scale trends in emplacement.



Using a field-portable X-ray fluorescence (FP-XRF) instrument, I was able to take in-situ geochemical measurements (left) at spatial resolutions of centimetres to metres in scale. This will allow for detailed geochemical and structural mapping of the entire 2 km lava flow, which will show whether there is a relationship between observed and recorded structural characteristics of the flow, and chemical zonation.

During fieldwork, XRF readings were taken on the obsidian flow. Structural recordings were also taken (planar and linear) on the flow. These were also divided and subdivided for local and regional trends, geochemical comparisons and flow segregation. Accompanied by detailed observations, field sketches, sampling and photographs, this dataset forms an integral part of my PhD project.

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