



1. Research activity

This PhD project will mainly focus on characterizing the proximal pyroclastic deposits of the three major active and dangerous volcanoes of Central Anatolia Volcanic Province (CAVP): Hasandağ, Erciyes stratovolcanoes and Acıgöl caldera.

The goal of the PhD project is to complete the tephrostratigraphic framework of the Easternmost part of Europe and reconstruct the recent explosive volcanic history of the CAVP region. For this reason, Middle Pleistocene-Holocene pyroclastic deposits are going to be identified in the field, stratigraphically logged, mapped, and sampled for laboratory analyses. To characterize the geochemistry of these deposits, first the major element composition of volcanic glass is going to be obtained using Wavelength Dispersive Spectrometer- Electron Microprobe (WDS-EMP), and the trace element composition is going to be obtained with Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS). To estimate the ages of the related explosive eruptions, we will use two different radiometric dating methods: radiocarbon (for <45 ka eruptions) and Ar-Ar and (for > 45 ka). To interpret of the eruption dynamics, volcanic ash morphology analyses are going to be performed with two- dimensional (2D) and three-dimensional (3D) analysis methods using various programs and devices. To study physical volcanology (e.g., isopleth maps and granulometry), magnitude and volume estimations will be done.

A new geological map will be made, including newly differentiated pyroclastic deposits. In addition, a database of volcanic glass chemistry (major and trace elements) of CAVP pyroclastic deposits will be established and published, allowing future tephrochronological correlations to be easily made. Detailed physical volcanology studies will provide to create plume modelling. Volcanic eruption dynamics of specific eruptions will be determined by volcanic ash morphology studies. Once this work on proximal CAVP deposits will be done, tephrochronological correlations to distal records will be possible in order to synchronise paleoenvironmental/paleoclimatic records, as well as archaeological sites. Moreover, thanks to complete the volcanic history of the area and estimations of the eruption magnitudes, a better volcanic hazard assessment of the CAVP will be possible.

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2. Research products

Abstracts

Özsoy R., Aydar E., Ersoy O., 2021. Origin of Çardak Tephra SW, Turkey. Mediterranean Geosciences Union (MedGU), 25- 28 November 2021, Istanbul, Turkey

Sunye- Puchol I., Mollo S., Smith V., Higham T., Aydar E., Miggins D., **Özsoy R.**, 2021. PÜSKÜRÜM project: Characterisation of late Pleistocene pyroclastic deposits in Central Anatolian Volcanic Province; reconstructing the recent explosive volcanic history and synchronising distal sedimentary records. Mediterranean Geosciences Union (MedGU), 25- 28 November 2021, Abstract, Istanbul, Turkey