

## High porphyritic calcalkaline basalts from the Cenozoic Capo Marargiu Volcanic District (Sardinia, Italy)

V. TECCHIATO<sup>1\*</sup>, M. GAETA<sup>1</sup>, S. MOLLO<sup>2</sup>, C. PERINELLI<sup>1</sup>  
AND P. SCARLATO<sup>2</sup>

<sup>1</sup>Dipartimento di Scienze della Terra, Sapienza Università di Roma, P.le A. Moro, 5, 00185 Rome, Italy  
(\*correspondance: vanni.tecchiato@uniroma1.it)

<sup>2</sup>Istituto Nazionale di Geofisica e Vulcanologia, Via di Vigna Murata 605, 00143 Rome, Italy

We present results from a textural and geochemical study conducted on hypoabissal rocks belonging to the Capo Marargiu Volcanic District (CMVD; Sardinia, Italy). These calcalkaline rocks represent the shallow crystallization region (~200 MPa) of a volcanic edifice built up during the Oligo-Miocene subduction-related magmatism of Sardinia.

The stratigraphy of CMVD consists of: (i) andesitic domes, (ii) andesitic lava flows, domes, dikes, and (iii) welded ignimbrites. The andesitic domes at the base of the stratigraphic sequence are intruded by metre-sized dikes of “low porphyritic basalts” (LPB; ~20 vol.% of phenocrysts) that, in turn host decimetre-sized enclaves of “high porphyritic basalts” (HPB; ~50 vol.% of phenocrysts)

HPB and LPB exhibit phase assemblages of Plg + Cpx + Amph + Mt + Ol and Plg + Cpx + Mt ± Amph ± Ol, respectively. HPB also show Mg-rich compositions (~10 wt.% MgO) with respect to LPB (~5 wt.% MgO). In general, clinopyroxene phenocrysts are normally zoned, with Mg#<sub>90-70</sub>. Plagioclase shows An<sub>96-50</sub> core-to-rim compositions. Amphibole megacrysts (up to 2 cm in length) of Mg-hastingsite have oxidized reaction rims. Olivine is replaced by secondary hydrous minerals due to the exsolution of volatiles at the final stage of crystallization.

Results from mineral-melt equilibrium modelling suggest that HPB formed during the solidification of an ascending primitive magma (Mg#<sub>57</sub>) and testify to the early evolutionary stage of a dome-forming process before the extrusion of more differentiated andesitic-to-dacitic products.