Near-vent processes of the 273 ka Poris eruption (Tenerife): ignimbrite sedimentation, hybrid deposition and phreatomagmatism

The proximal succession of the 273 ka Poris eruption in the Diego Hernandez wall of Las Cañadas, Tenerife, records opening, main, and waning stages of explosive activity. Stratigraphic and geochemical correlations show varying processes between proximal and distal regions. The new proximal history adds to and complements the established distal counterpart.

An opening Plinian phase was followed by generation of pyroclastic density currents that initially were blocked by a pre-existing wall. Flow-top stripping led to reworking of pumice falls and deposition of fine ash with accretionary lapilli. Phreatomagmatic explosivity then created erosive currents rich in fine lithics, and was followed by interplay between fallout and PDCs, generating a hybrid pumice block tuff lithofacies that geochemically correlates with a distal Plinian layer. A main phase of PDC activity is recorded by 9 m of massive lapilli tuff with evidence of widespread scour and bypass and was followed by caldera collapse, recorded proximally as a lithic boulder layer marking bypass to distal slopes, where lithic breccia was deposited. A 10 m thick pumice breccia rich in banded pumice blocks records eruption waning and the tapping of a petrogenetically distinct magma.

Further investigations of phreatomagmatism and sedimentation in the DH wall will inform the debate regarding the structural evolution of Las Cañadas.