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Early evolution of the Palaeogene Mull volcano: an integrated volcanological, geochemical and geochronological study

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The British Palaeogene Igneous Province (BPIP) has long been an area of interest, both for British volcanology and in the context of the early opening of the North Atlantic. Previous work has focused on the Mull lavas (e.g. [4]) and other BPIP igneous centres, such as Arran [2],[3]. However, since the Mull Memoir was published by Bailey et. al. [1], little research has been conducted on the early evolution of the Mull central complex, the focus of this study.

During fieldwork, stratigraphic relationships between intrusive and extrusive deposits have been examined in detail, and new models have been developed for the caldera infill sequence. These models detail a change from basaltic to silicic activity and evidence at least two stages of caldera collapse. Major and trace element analysis elucidate processes such as magma mixing and crustal contamination and determine links between sub-surface magma conduits and erupted deposits. Geochemical fingerprinting will investigate the nature of the basement rocks, through which magmas have evolved.

An updated volcanological and petrological model is presented of the early evolution of the Mull central complex. The results of this study expand our understanding of the BPIP and have implications for our understanding of explosive volcanism, particularly in young and evolving environments.

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