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The Neogene Torfufell Central Volcano: A gem in Northern Iceland

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Central volcanoes in Iceland are characterized by colorful silicic rocks which stand out in an environment dominated by basalt lavas. Extinct central volcanoes of Neogene age represent fossil anaologues of their active counterparts, and glacial erosion has provided insight into their interior structure and associated ancient geothermal activity.

The present project involves mapping of the previously uncharted Neogene (ca. 5-6 Ma) Torfufell Central Volcano in the southernmost part of the Eyjafjarðardalur Valley in Northern Iceland. The general aim is to understand the stratigraphy and improve the knowledge of the volcano's genesis and subsequent geological history. Focus is set on delivering better knowledge on rate of accumulation, absolute lifespan and chronological evolution of the central volcano.

Preliminary results indicate that the centre of the volcano is located in the northern part of Mt. Torfufell itself and that the domain of the volcano, which comprises its felsic and intermediate extrusive and intrusive rocks, is ca. 86 km2. The geological mapping indicates volcanic quietness after eruption of thin aa lavas and prior to eruption of rhyolitic lavas. After the formation of a rhyolitic mountain, it was then buried under basaltic lavas which are considered to originate from other volcanic systems. Glacial erosion did not reach the deep roots of the volcano, but provides insight into lavas and shallow intrusions. A number of spectacular phenomena, which are promising as future tourist attractions, have been discovered in the research area, including rhyolitic sills, filled volcanic conduits, well preserved aa lavas, remains of fossilized trees from the late Miocene forests in the area, and an ignimbrite layer, evidence of explosive eruption resulting in pyroclastic flow.