

Recent unrest (2021-2023) at Askja volcano, Iceland

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Unrest began in July 2021 at the Askja volcano in the Northern Volcanic Zone of Iceland. Its most recent eruption, in 1961, was predominantly effusive and produced ~0.1 km³ lava field. The last plinian eruption at Askja occurred in 1875. Geodetic measurements between 1983-2021 detail persistent subsidence of the Askja caldera, decaying in an exponential manner. At the end of July 2021, inflation was detected at Askja volcano, from GNSS observations and Sentinel-1 interferograms, which continued until September 2023. The inflation episode can be divided into two periods. An initial period until 20 September 2021 when geodetic models suggest transfer of magma (or magmatic fluids) from within the shallowest part of the magmatic system, potentially involving silicic magma. A following period when one source of pressure increase at shallow depth can explain the observations, modeled as a sill with uniform opening.