The combined effects of the Mid Atlantic Rift and the Iceland hot spot give rise to vigorous volcanic activity in Iceland. A common sign of volcanic unrest is increased seismicity, which is well detected at most volcanoes by the national seismic network, SIL. High-precision mapping of VT events at several agitated volcanoes has been used to track magma movements from depth and up to the surface.

At Eyjafjallajökull volcano several magmatic intrusions have been mapped during the last 18 years, finally leading to the 2010 eruption of the volcano. At neighbouring Katla volcano, showing unrest during 1999-2005, most of the detected activity concentrates at shallow depths under geothermal areas, while deeper seismicity, tracking the causative intrusions has hitherto not been well enough recorded. Improved instrumentation at Katla in 2010 is expected to enable better resolution of deep activity. Seismicity at most volcanoes in the western part of Vatnajökull ice cap has increased since 2005. At Grímsvötn caldera and at the Skaftarkatlar ice cauldrons, the activity is shallow, while farther west near Hamarinn, the detected seismicity extends down into the middle crust. Bardarbunga, to the north is presently showing the greatest rise in seismicity, located in the middle crust and restricted outside and NE of the caldera rim, suggesting an intrusion into the associated fissure swarm. A data set from a temporary network at Hekla volcano is analyzed to search for possible undetected seismicity at the seismically “quiet” volcano. Interpretation of the seismic data is supported by GPS displacement observations.