

Seismicity in Iceland: 1994–2007

Steinunn S. Jakobsdóttir

Physics Department, Icelandic Meteorological Office, Bústaðavegur 9, Reykjavík, IS-150, Iceland ssj@vedur.is

Abstract — *Since the end of 1993, the digital, automatic seismic system, known as the SIL-system, has acted as the national seismic network in Iceland. The number of stations in the network has increased gradually over the 14 years from 1994 to 2007. The detection capability of the system has increased at the same pace, especially along the volcanic zones. The general seismicity of Iceland, as monitored by the growing network, is presented in this paper. The main activity is, as expected, along the plate boundary, but seismicity has also been observed at intraplate locations. Instead of setting a lower limit to the size of earthquakes to be considered in this paper, changes in the sensitivity are discussed along with the seismic activity. Several major events have been observed during the observation period. In June 2000, two magnitude 6.6 earthquakes occurred in the South Iceland Seismic Zone, followed by a few earthquakes larger than magnitude 5. A few episodes caused by magma injections were recorded and four volcanic eruptions monitored. In addition to the large earthquakes in June 2000, seven earthquakes larger than magnitude 5 occurred in this period, two in Bárðarbunga in the years before the 1996 Gjálp eruption, two near the triple junction between the Reykjanes Peninsula, the Western Volcanic Zone and the South Iceland Seismic Zone, two in the Tjörnes Fracture Zone and one on the Reykjanes Peninsula. Intraplate earthquakes were recorded in the northwestern part of Iceland, Vestfirðir, in 1994 and 2006, and in Guðlaugstungur, between Langjökull and Hofsjökull, in 2004. Additionally, earthquakes are located near Surtsey every year. Two episodes of activity have been recorded in the Esjufjöll central volcano in the southeastern part of Vatnajökull, and several swarms have been detected under Öraefajökull. All the main ice caps cover seismically active central volcanoes, explaining the high seismicity beneath them.*