



## **A new high-rate continuous GPS network in Iceland for crustal deformation research**

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A significant expansion of the current continuous GPS network in Iceland is well underway. The goal of the project is to introduce a new type of crustal deformation monitoring in Iceland by installing 25-30 new continuous GPS stations, with a sampling rate of 1 second or higher in selected areas of the country. In total, there will be about 50 CGPS stations in Iceland at the end of the project. Many of the existing continuous GPS stations will also be upgraded to allow high sampling rates. High-rate GPS observations have been used successfully to study dynamic earthquake rupture processes, for example the Denali earthquake in Alaska and the 2003 Tokachi-Oki earthquake in Japan. New stations have been installed in seismically active areas in the South Iceland Seismic Zone, the Reykjanes Peninsula and in Northern Iceland. We will also study volcanic processes by installing high-rate GPS stations near the three most active volcanoes in Iceland: Hekla, Grímsvotn, and Katla. These volcanoes have been active recently or are currently showing signs of unrest. Continuous GPS and recent campaign GPS measurements indicate rapid uplift (up to 2 cm/yr) over a wide area in central Iceland. The new network already installed in central Iceland will obtain more detailed information on the rate and extent of the uplift. Implementing the 1-Hz technology in Iceland enables studies of both the dynamic as well as slower-rate processes related to earthquake and volcanic activity. The high level of volcanic and

earthquake activity in Iceland makes it an ideal site for this project. In addition, these new continuous GPS stations will double the number of continuous GPS stations in Iceland, improving constraints on the plate spreading in Iceland, as well as increasing our understanding of volcanic and tectonic interaction.