THE KERLINGAR FAULT, NORTH EAST ICELAND, A HOLOCENE NORMAL FAULT EAST OF THE DIVERGENT PLATE BOUNDARY

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Abstract

The Kerlingar fault is located in the easternmost part of the deformation zone of the Northern Volcanic Rift Zone; about 14 km east of Grímsstaðir, NE Iceland (Figure 1). The total length of the fault is at least 30 km, although its surface manifestation is divided into at least 7 segments. It is an eastward-dipping normal fault, with a throw of ~4 m, as measured in Holocene deposits. The general orientation of the fault is ~NNW, and it is gently curved so the northern end is more westerly oriented than the southern part. Very few earthquakes have been detected in this area in the last decades. Our calculations indicate, however, that the maximum size of an earthquake originated at this fault might be about M_{ω}=6.7. The role of this fault is unclear. It is unusually long, and has an orientation and dip direction that differs from other structures in the area. The fault is located north of the Kverkfjöll fissure swarm. We suggest that the existence of the fault may be in some relation to its location at the end of the fissure swarm, or that it is in some way related to stress transfer in relation to activity of the Húsavík fault zone, as the fault is located in direct continuation of that fault zone.

Figure and Tables

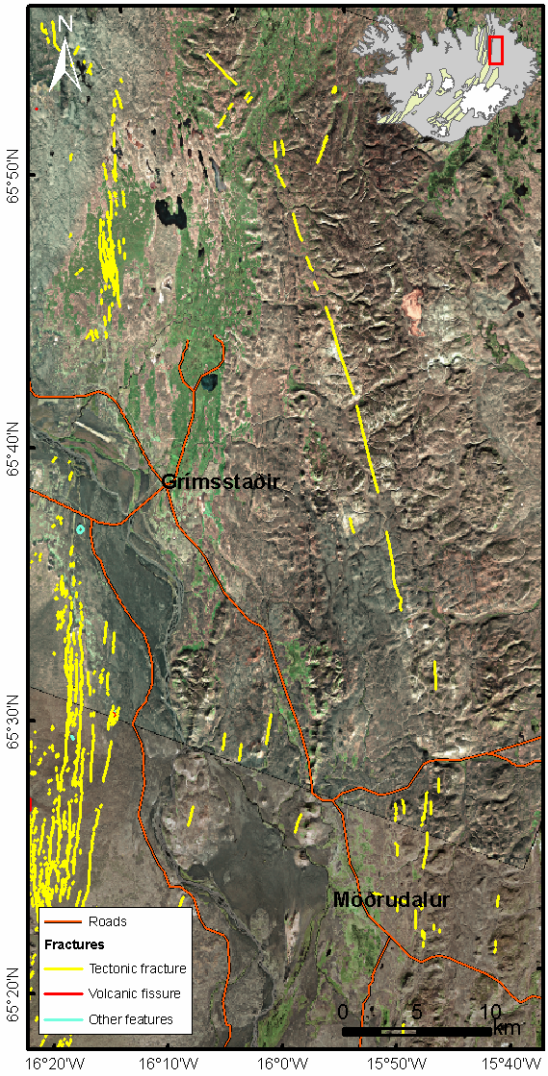

Figure 1: The Kerlingar fault, east of Grímsstaðir. The background is from SpotImage©.