



## **Fault interaction in the South Iceland Seismic Zone: The May 2008, M6.3 earthquake**

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Fault interaction and dynamic triggering of  $M > 5$  earthquakes at distances up to 80 km is a known characteristic of faulting in the South Iceland Seismic Zone (SISZ). The most recent event in the present major earthquake sequence, which has been on-going since 2000, is no exception. The event, which occurred in the western part of the SISZ on May 29 2008 was generated by slip on two parallel, N-S oriented vertical strike-slip faults, 4 km apart, with a combined magnitude of M6.3. The earthquake was felt over most of SW Iceland and strongly felt in near-by towns, Hveragerdi and Selfoss, where 30 houses were damaged beyond repair. Livestock were killed by collapsing barns, but no serious human injuries occurred. The closest seismic stations became saturated a few seconds into the event, but at 46 km distance an un-clipped peak ground velocity of 3 cm/s was recorded. The event was well recorded on the continuous GPS network, with maximum horizontal displacement of 19 cm measured 2.5 km SE of the eastern, Ingolfsfjall fault.

Faulting initiated on the eastern, 10-km-long Ingolfsfjall fault and triggered slip on the western, 19-km-long Kross fault. Slip on a 10-km-long, E-W oriented fault farther west, which was active at the end of a 4-year-long seismic swarm in 1998, may have contributed to the event. So far however, aftershocks on the E-W fault have not been found in the data until 53 minutes after the main event, suggesting it did not participate in the event. Several thousand aftershocks were generated by the three faults, most of which were located on the Kross fault. Details of the fault structures are mapped through relative location of these aftershocks. They reveal two parallel, N-S oriented and roughly 8-km-deep, vertical faults and one 7-km-deep E-W oriented vertical fault. Seismic data from the first few seconds are analyzed to search for the onset of slip on the Kross fault. An overview of the evolution of faulting and fault patterns of the previous earthquakes in the sequence is also presented.