

## **The Hverfjall fissure eruption, northern Iceland**

Hannes B. Mattsson(1) and Ármann Höskuldsson(2)

(1) Nordic Volcanological Center, Institute of Earth Sciences, University of Iceland, Askja, Sturlugata 7, IS-101 Reykjavik, Iceland (hannesm@hi.is),

(2) Institute of Earth Sciences, University of Iceland, Askja, Sturlugata 7, IS-101 Reykjavik, Iceland.

The Hverfjall eruption occurred ~2500 BP in the southern part of the Krafla fissure swarm in northern Iceland. Detailed fieldwork and stratigraphic mapping conducted during the summer of 2005 show that the eruption occurred along a NNE-SSW trending fissure and that activity at least two vents were overlapping.

The initial activity was concentrated at Hverfjall in the southern part of the fissure, which was at that time covered by a shallow lake and deposits generated during that phase are mainly of phreatomagmatic fallout origin. As the eruption progressed a new vent opened up at Jarðbaðshólar (located approximately 3.5 km NNE of Hverfjall). The Jarðbaðshólar vent was situated on land and formed a scoria cone with associated lava flows. Activity was presumably ongoing at the Hverfjall vent during this time. After the cessation of activity at Jarðbaðshólar the focus shifted once again back to Hverfjall. However, the Hverfjall deposits formed after the Jarðbaðshólar scoria cone are almost exclusively base-surges (with minor fallout). The change from fallout to base-surges is probably the result of lowering of the eruption rate at Hverfjall (as two active vents were drawing from the same magma reservoir simultaneously).

The base surge deposits are found both north and south of the Hverfjall crater and can be traced as far as 5 km from the vent (and up to ~100 m uphill on Námafjall). The base-surge deposits display a “drying-up” with distance from the vent. The surges display wet features within a radius of approximately 2 km from the vent (plastering, accretionary lapilli, and soft sediment deformation). Surges found at distances exceeding 2 km from the vent all display dry features such as strongly grain-segregated layers.