



Local VLP signals registered by broadband seismometers at Myrdalsjokull glacier, south Iceland: Observations and tilt analysis

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For decades long period (lp) events have been recorded in the western part of the Katla volcano in South Iceland. The volcano is covered with the ice cap Myrdalsjokull which is the fourth largest glacier on the island. The events show a clear seasonal and climate related correlation where their number increases in the fall as well as during years of warmer climate. In addition they can be divided in groups of similar waveforms. Recent analysis of new broad band seismic data collected in the spring of 2007 suggests that the lp events originate in a steep outlet glacier. The outlet glacier is partly discontinuous as it encompasses an at least 100 m high escarpment. Here, inevitably, big blocks of glacial ice fall and land on the outlet glacier below the escarpment. We believe that the lp seismic events are caused by the impact and the associated glacier rumbling. Here we report for the first time repeating very long period (vlp) near field seismic signals of glacial origin. The events are only observed in the near field of the ice fall and should hence not to be mistaken for surface waves. The vlp events occur simultaneously with some of the largest lp events. The vlp signals are analysed and modelled in terms of displacement and tilt caused by the mass displacement when the ice blocks fall down the escarpment. When the vlp signatures from different events are compared they turn out to be similar but not identical. The vlp events are only observed in association with lp events from two of the four groups of similar lp events. Preliminary results suggest that the vlp signals are approximately symmetrical in time and that the permanent displacement is very small.