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The Fimmvörðuháls flank eruption 2010 Iceland, complex emplacement of basaltic lava flow onto ice and snow.

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Just before midnight on 20th of March an eruption began in the region between the two glaciers Eyjafjallajökull and Mýrdalsjökul in south Iceland and in the first hour of 21 March a reddish glow was visible on the east flank of Eyjafjallajökull. Surveillance overflight revealed a 300 m long, north-trending fissure featuring a curtain of 15 discrete lava fountains. The fissure was located at the crest of the Fimmvörðuháls mountain pass, directly above the popular nature reserve of Thórsmörk. In early stages of the eruption, the lava flowed towards the northeast, cascading into the gorge of Hrunagil. Then continued its advance down the gorge towards the outwash plain of the Krossá River. For the first three days of the eruption observations were confined to surveillance by air, but on 24March the weather was favourable for on-site field observations. At that time only 4 vents where active on the fissure, with lava fountains reaching heights of $\sim$100 m. Lava continued to flow to the northeast until 26 March lava advancing on top of the fresh winter snow without any vigorous interaction detectable between the two. During this period, observations showed that the lava did not evoke any substantial melting of the substrate snow. After few days, radiation heat transfer at active flow fronts resulted in non-contact melting of the snow a few meters ahead of the lava forming meters high banks along the side and in front of the advancing lobes. Explosive interaction (i.e. rootless eruptions) between the lava and meltwater occurred where the lava cascaded into the Hrunagil gorge and within the main lava field northeast of the craters, producing a plume of steam and ash. On 27 March, the northeast lava field had build up to the extent that lava began to advance to the northwest. As the eruption progressed and the flow field thickened, the snow beneath the lava began to melt, as indicated by sagging of the lava in certain sectors of the flow field. Occasional rootless eruptions where observed within the field on 27 and 28 March, when individual events lasted for 10 to 15 minutes and sustaining a steam-rich ash plume rising several hundred meters above the eruption site. On 31 March, a new northwest-trending fissure formed from the northern end of the initial vent system, situated west of the water divide and thus directing the flow of lava to the northwest. Here in terms of the advancing lava, the course of events was identical to that observed at the beginning of the eruption; the lava advanced over the snow with minimal interaction and melting, but as it reached Hvannargil it spilled into the gorge and generated occasional rootless eruption. Few days later the heat from the lava began to melt the underlying snow with corresponding sagging of the lava field.