

Glaciation events in the Pliocene – Pleistocene volcanic succession of Iceland

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Abstract — *The primarily volcanic succession of rocks in Iceland was accumulated during the Miocene to Holocene Epochs at the divergent plate boundary between North America and Eurasia. The present paper reviews the evidence for distinct changes in sedimentary and volcanic facies during the Middle and Late Pliocene and the Pleistocene related to recurrent expansions of glaciers. The preservation of an exceptionally long and well preserved record of Northern Hemisphere terrestrial glaciations in Iceland is related to the climatically sensitive geographical location and to frequently extruded lava flows which hamper the erosion of underlying sediments. Explosive volcanism contributes to high sedimentation rates and produces extensive time markers. Recent advances in the interpretation of diamictites and volcanoclastic deposits intercalated between primary volcanic products and between a variety of sediments have contributed to the establishment of a coherent regional overview of the glaciation history of Iceland. Palaeomagnetic studies of the volcanic sequence enable correlation between sections at reversal levels, and absolute radiometric dating efforts during the last few decades have added to the reliability of the chronology. The oldest regional glaciation of Iceland occurred at close to 2.5 Ma, but the glaciers began to expand periodically from local mountainous massifs at 3.8 Ma. Miocene glaciation as early as 7 Ma was apparently confined to high mountains in the southeastern part of Iceland. Instances of early Pleistocene and Pliocene interglacial sediments on Tjörnes and Snaefellsnes, both marine and terrestrial, give insight into the climatic significance of the glaciation events in Iceland.*