



Estimated bedrock topography and ice thickness of the Renland Ice Cap, East Greenland

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The Renland Ice Cap in East Greenland (71.30°N, 26.72°W) is a separate ice cap located on a high mountain plateau in the Scoresbysund Fjord, with the highest elevation of 2340 m. In 1988 a 324.35 m long ice core was drilled near summit on the eastern dome of the ice cap. The recovered ice core contains a climate record reaching back to the Eemian. In the spring 2015 a new ice core (584 m) was drilled on Renland during the RECAP project.

Knowledge of the basal topography of the Renland Ice Cap is very limited. However, old airborne radar surveys show that the bedrock topography is very mountainous. Knowledge of the bedrock topography and ice thickness was needed to locate the best possible drilling site for the new ice core. An iterative inverse method was used to present a modelled estimate of the subglacial topography and ice thickness of the Renland Ice Cap based on the knowledge of the surface topography and climate forcing. The modelled estimate showed initially twice as large ice thickness as expected, but having improved the surface topography with data from the field work on Renland Ice Cap, the modelled ice thickness are in the same order as radar measurements shows.