In this paper, we analyze the direction-of-arrival (DOA) of the ice-sheet data collected over Jakobshavn Glacier with the airborne Multichannel Radar Depth Sounder (MCRDS) during the 2006 field season. We extracted weak ice–bed echoes buried in signals scattered by the rough surface of the fast-flowing Jakobshavn Glacier by analyzing the DOA of signals received with a five-element receive-antenna array. This allowed us to obtain ice thickness information, which is a key parameter when generating bed topography of glaciers. We also estimated ice–bed roughness and bed slope from the combined analysis of the DOA and radar waveforms. The bed slope is about 8° and the roughness in terms of rms slope is about 16°.
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