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Radar data offer insights into the state of the Greenland Ice Sheet in the 1970s

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Ice-penetrating radar is a well-established tool for imaging the interior and the bed of an ice body. The data provide information on ice thickness, but also contain information on englacial stratigraphy, ice flow dynamics and conditions at the interface between ice and the bedrock.
During the past two decades, the Greenland Ice Sheet has been extensively measured by radar instruments. However, a large radar dataset has so far been overlooked due to its inaccessibility to modern analysis techniques. This dataset was acquired in the 1970s in a large-scale project that ran over multiple years and covered more than 170,000 km of radar flight lines. While the ice thickness information from the data has subsequently been digitized, the data itself is presently only available as35-mm films, micro-fiche copies of the films and enlarged positives.
Here we present the first results from an effort to digitize this unique and rare dataset. We demonstrate how the data may contain valuable information on the state of the Greenland Ice Sheet in the 1970s, a period where observations from the centre of the ice sheet are scarce.