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Snow accumulation on the East Antarctic plateau: Results from the EAIIST (East Antarctic International Ice Sheet Traverse) project

Content

The EAIIST project was a land vehicle traverse that explored a 680 km transect of the East Antarctic Plateau between Dome C and the South Pole. One of the scientific goals of EAIIST was to determine the spatial variability of accumulation for sites characterized by very low snow accumulation and unique morphological features (e.g., megadunes, wind glazed areas, surface cracks, etc.). To achieve this goal, five sites were studied in depth along this traverse, with two to five ice cores drilled to depths of 18, 48, and/or 180 meters at each site. These cores represent between ~300 to 5000 years of accumulation, and, although the data are still being processed at the time of writing, the data collected during EAIIST and our later laboratory analyses of the cores will reveal different facets of the snow accumulation record. First, based on well-dated volcanic horizons, a comparison will be made between different volcanic horizon proxies obtained with our continuous flow analyser (CFA) system (sulfate, sulfur, electrical conductivity) at three sites to assess potential signal or stratigraphic biases. After establishing the most robust volcanic profiles, we will track the continuity of accumulation between Dome C and the different sites using radar isochrones collected during the traverse. Finally, the full synthesis of our field and laboratory results will reveal how accumulation for much of the East Antarctic Plateau has varied over time and space, especially at odd hyperarid sites such as the megadunes and wind glazed areas.

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