

**INVESTIGATING THE CRYOSPHERIC EVOLUTION OF THE CENTRAL ANTARCTIC PLATE (ICECAP): INTERNATIONALLY COORDINATED LONG-RANGE AEROGEOPHYSICS OVER EAST ANTARCTICA'S DOMES A AND C AND THE AURORA SUBGLACIAL BASIN.**

D. Blankenship<sup>1</sup>, J. Brozena<sup>2</sup>, M. Siegert<sup>3</sup>, M. Peters<sup>1</sup>, L. Lawver<sup>1</sup>, G. Catania<sup>1</sup>, I. Dalziel<sup>1</sup>, V. Childers<sup>2</sup>, A. Payne<sup>3</sup>, J. Bamber<sup>3</sup>, N. Young<sup>4</sup>, R. Warner<sup>4</sup>, C. Wilson<sup>5</sup>, D. Damaske<sup>6</sup>, V. Damm<sup>6</sup>, J. Dowdeswell<sup>7</sup>, A. Shepherd<sup>7</sup>, R. Alley<sup>8</sup>, D. Pollard<sup>8</sup>, R. DeConto<sup>9</sup>, H. Conway<sup>10</sup>

<sup>1</sup>University of Texas at Austin, Austin, TX, United States, <sup>2</sup>Naval Research Laboratory, Washington, DC, United States, <sup>3</sup>University of Bristol, Bristol, United Kingdom, <sup>4</sup>Australian Antarctica Division, Hobart, Tasmania, Australia, <sup>5</sup>University of Melbourne, Melbourne, Victoria, Australia, <sup>6</sup>Federal Institute for Geosciences and Natural Resources, Hanover, United Kingdom, <sup>7</sup>University of Cambridge, Cambridge, United Kingdom, <sup>8</sup>Pennsylvania State University, University Park, PA, United States, <sup>9</sup>University of Massachusetts - Amherst, Amherst, MA, United States, <sup>10</sup>University of Washington, Seattle, Washington, United States

The subsurface character and boundary conditions of the East Antarctic Ice Sheet (EAIS) remain largely unknown although they are critical to ice sheet modeling and our understanding of the EAIS's role in global climate and sea level change. These data can only be acquired by long-range airborne surveys requiring a level of international collaboration and commitment of resources that has been unavailable for over 25 years. We propose to deploy a multi-instrumented long-range aerogeophysical aircraft, during the period of the IPY, over the inaccessible interior of East Antarctica. Scientists from the US, UK, Germany, and Australia will manage our proposed survey collaboratively with the advice of an International Steering Committee (ISC) implemented via SCAR's Antarctic Climate Evolution research program. Funding targets for this project include the US NSF and the UK NERC. The surveys will be accomplished over two field seasons using a US Naval Research Laboratory P-3 Orion aircraft operating out of McMurdo Station. The survey targets will be focused on regions critical to understanding the history and future of ice sheet dynamics. The region of our proposed ice penetrating radar, lidar, gravity and magnetics survey include the Aurora Subglacial Basin as well as most of the Gamburtsev, Vostok and Belgica subglacial highlands underlying Domes A and C. These highlands support an extensive network of subglacial lakes and have been the nursery for ice sheets since the early Oligocene. The specific objectives of this survey will be: 1) to provide bedrock elevation, ice sheet thickness, surface elevation, surface accumulation, englacial structure, basal melt rates and thermal structure necessary for modeling ice sheet (and subglacial lake) evolution and future change; 2) to constrain geothermal flux and determine the location, properties and connectivity of the sedimentary and hydrological units critical to understanding ice sheet evolution (and subglacial habitats); 3) to characterize subglacial lithology, crustal boundaries and crustal rebound for the central Antarctic Plate; and 4) to identify glacial geomorphology and map structure indicative of tectonic processes.