

Foreword

It is now more than a decade since the twenty-first Chinese National Antarctic Research Expedition (21st CHINARE) reached the highest point of the Antarctic Ice Sheet on 18 January 2005, around the 20th anniversary of China's involvement in polar scientific research. This marked the ongoing evolution of the CHINARE program in the Antarctic to one with a greater research focus, and with an increased involvement in international scientific collaboration. In this and subsequent issues of *Advances in Polar Science*, that decade of scientific achievement will be recognized by a number of thematic papers reviewing the outcomes from research at Dome A and along the traverse route between there and the coast.

Dome A (or Dome Argus) is at a surface elevation of over 4 km. The location and elevation of this highest point on the ice sheet was first determined by the East Antarctic inland traverses of the Union of Soviet Socialist Republics (USSR) during the 1957–1958 International Geophysical Year (IGY). It was more accurately mapped, and named, during the extensive airborne surveys of Antarctic surface and sub-ice topography made by the US National Science Foundation–Scott Polar Research Institute–Technical University of Denmark (NSF-SPRI-TUD) in the late-1960s and the 1970s. The 21st CHINARE party was the first to reach the precise location of the ice sheet summit, determined by differential GPS survey to be at 80° 22' 00" S, 77° 21' 11" E, and 4093 m above sea level. The party reached this point after 25 days travelling from the Chinese coastal station, Zhongshan, 1228 km to the north, and following a number of earlier CHINARE exploratory traverses southward from Zhongshan which commenced in the 1996/97 austral summer.

Subsequently, Kunlun research station, 7.3 km southwest of Dome A and at 4087 m above sea level was constructed and officially opened on January 27, 2009. This, the highest research station in Antarctica is presently occupied only in summer. The intermediate summer station, Taishan Station, which is 522 km south of Zhongshan and 600 km north of Kunlun, was constructed at an elevation of 2621 m above sea level and officially opened on February 8, 2014.

Scientific research in many disciplines has been undertaken in the Dome A region. Major focuses have been on glaciological dynamics and the mass budget of the interior ice sheet; the meteorology and climate of the high inland Antarctic plateau; recovery of a very old ice core (perhaps more than one million years) from near Dome A for studies of past climate and atmospheric composition; investigation of the topography and geological structure of the sub-glacial Gamburtsev Mountains; and astronomical observations (including the use of remotely operated telescopes) from the high, cold and clear location at Dome A. The region between Dome A and Prydz Bay, more than 1200 km to the north, was also the location for the major Chinese-led contribution the International Polar Year 2007-2008, PANDA (Prydz Bay, Amery Ice Shelf and Dome A Observatories).

The results from these and other scientific programs at Dome A will be reviewed in this and subsequent issues of *Advances in Polar Science*.

Guest Editors for APS Dome A Thematic Papers:

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