

**CORNER REFLECTOR APPLICATION AND SURFACE CHANGE ANALYSIS IN GROVE MOUNTAINS, EAST ANTARCTICA**

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Grove Mountains, covered by ice snow and bare peaks, is located in inland areas of east Antarctica, 400km away from the Chinese Zhongshan Station. With the special terrain and the meteorolite enrichment, it is also the typical and important test site for the dynamic change research of the ice surface environment. Based on the presentation during last SCAR Open Science Conference, this paper will present the new research progress in the Grove Mountains.

In 2000, the field surveying of the core area was finished with GPS and total station. Subsequently, Synthetic aperture radar interferometry (InSAR) was utilized to generate digital elevation model (DEM) with ERS-1/2 tandem SAR data. Meanwhile, DEM can also be obtained with the Icesat data. Moreover, InSAR has been proposed as a useful technique for DEM generation, topographic mapping, and surface change detection in Antarctica. Differential InSAR can detect the deformation and movement in cm level, and even in mm level. For further study, Corner Reflector (CR) were designed and then installed in the Grove Mountains during the 22nd CHINARE 2005/2006 summer expedition. Based on Corner Reflectors, which will be light pixels in the SAR image, DEM can be generated with higher precision, and ice flow velocity can be obtained. During the field survey, surveyor's poles were set up along some ice streams. With two-stage GPS observation, the ice flow velocity is calculated, which are valuable reference to check the satellite data and other technologies. This paper will discuss the Corner Reflectors Application in the Antarctic, such as physical characteristics of the ice snow, DEM generation and the determination of the ice flow velocity, etc. Multi DEM will also be compared and analysed to detect the ice surface change.

Basing on the study of Grove Mountains, more new technologies and satellite data shall be adopted to detect the ice surface change, and the approach can be applied extensively to other Antarctic inland areas.