

MASSFLUX INVESTIGATIONS ON SHIRASEBREEN, DRONNING MAUD LAND, ANTARCTICA

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The Alfred Wegener Institute for Polar and Marine Research (AWI) operates since 1985 ski equipped aircraft (Dornier 228/101) for scientific and logistic purposes in the Arctic and the Antarctic. The aircraft can be equipped with many different instruments for geophysical measurements as well as for investigations of the Earth's atmosphere. In austral summer 2005/06 the long and fruitful cooperation with the National Institute for Polar Research (NIPR) Tokyo has been continued by conducting the first season for the joined interdisciplinary research programme ANTSYO in east Dronning Maud Land, near the Japanese wintering base Syowa. This first season was dedicated to geophysics, mapping ice thicknesses, magnetics and gravity covering Shirasebeen and its drainage basin as well as the adjacent sea for the subprogrammes WEGAS and DISTINCT. The next survey is dedicated to atmospheric sciences

The mass balance of Antarctica varies a lot across the whole continent. While some areas show evidence of a clear deficit in mass balance, for instance the Antarctic Peninsula, the difference between accumulation and ablation in other areas seems to be small and even the sign is not evident. While ice thickness and surface velocities can be determined by means of remote sensing, radio-echo sounding and satellite picture interferometry, accumulation and ablation have to be measured in-situ using snow pits, firn/ice cores, and depth sounders under ice shelves or in ice sheets. Remote sensing techniques can be easily applied for large areas while in-situ measurements will always be restricted to isolated point measurements and therefore are of limited areal density.

In our contribution we will focus on the mass flux of Shirasebeen determined from recent data analysis of our radio-echo sounding flight and satellite picture interferometry. A detailed ice thickness map, covering more than 160000 km² of the drainage basin of Shirasebeen accomplish the presentation.