

GIANT-LISSA

Geodesy for Ice in Antarctica and Lithospheric and Intraplate Structure and Seismicity in Antarctica

Duration of the project:	Research budget:
	Campaign budget:

CAMELBEECK Thierry, ROB
VAN CAMP Michel, ROB
FRANCIS Olivier, ULuxemburg (LUX)
VAN DAM Tony, ULuxemburg (LUX)

<http://homepage.oma.be/lombardi/>

Antarctica is deforming due to past ice sheet load changes (last glacial maximum ~20,000 years ago) and to present-day rapid ice mass change. Measurements of surface deformations, gravity changes and investigation of the lithosphere rheology may allow to gain insight into the long-term viscoelastic (Glacial Isostatic Adjustment) and the short-term elastic (ice loss, atmospheric pressure) response of the Antarctica continent.

The GIANT project (Geodesy for Ice in ANTArctica) is a collaborative project between the Royal Observatory of Belgium and the University of Luxembourg. The aim of the project is to assess the mass balance of the Antarctic ice sheet, in the vicinity of the new Belgian Princess Elisabeth station (PE) by a combination of GPS and absolute and relative gravity measurements. While GPS data provide a measure of movements due to the elastic rebound of the continental lithosphere as a result of ice load change, gravity

measurements, which estimate the mass changes, are necessary to separate the lithospheric movements induced by the post-glacial adjustment and by the present-day ice mass changes.

The LISSA project (Lithospheric and Intraplate Structure and Seismicity in Antarctica) is conducted by the Royal Observatory of Belgium. The aim of the project is to shed light into the poorly known deep structure of Antarctica and to study the intraplate seismicity through the detection of local earth and ice-related seismic events some of which may be associated to the melting of the ice sheet. The seismic instruments will improve the poor coverage of seismic stations in Antarctica and the collected data will contribute to the worldwide earthquake catalog.