

Physics seminar

Monday, 3rd May 2010 at 15h00
Campus Limpertsberg, Room BS 2.04

Jan Wuite
Postdoc at the Laboratory for Geophysics

"ICE MASS CHANGES IN GREENLAND"

The contribution of ice sheets is one of the largest uncertainties in predicting sea level rise. The mass balance and equilibrium state of an ice sheet is a complex function of external climate forcing and internal dynamical processes. During the last two decades scientists have witnessed large and rapid changes on Greenland's largest outlet glaciers. This suggests that the ice sheet is able to respond to environmental changes on short time scales. Monitoring these changes and fluctuations has therefore become a key focus for climate scientists. The most efficient way to assess contemporary ice mass changes on a large and remote ice sheet such as Greenland is to use remote sensing. Modern geodetic techniques that measure the mass balance of the Greenland Ice Sheet, such as time variable gravity (e.g. GRACE), must be corrected for postglacial rebound (PGR). PGR is the visco-elastic response of the earth to changes in ice loading caused by melting of the great ice sheets after the last glacial maximum.

The Geophysics Laboratory from the University of Luxembourg collaborates with researchers from the USA and Denmark in a project called GNET. The main goal of GNET is to determine PGR adjustments necessary to correct satellite measurements. As part of GNET more than 30 continuously operating GPS receivers have been placed at the edge of the Greenland Ice Sheet. The instruments can measure the vertical uplift rate of the earth's crust very precisely. We analyze the GPS data and combine this with in-situ gravity measurements to separate changes in crustal uplift resulting from PGR and present day ice mass changes. The results of this study will contribute to better estimates of the current mass imbalance of the Greenland Ice Sheet and its contribution to global sea level rise.

Next Physics Seminar

Monday, 21st June: Marc STEICHEN, Postdoc at the Laboratory of Photovoltaïcs
at Kirchberg, 15h00 "Electrodeposition of chalcopyrite semiconductor thin films from ionic liquids"