

# BELISSIMA

## Belgian Ice Sheet – Shelf Ice Measurements in Antarctica

Duration of the project:	Research budget:
	Campaign budget:

**PATTYN Frank, ULB**  
TISON Jean-Louis, ULB  
MATSUOKA Kenichi, NPI (NO)  
HUBBARD Bryn, UAberystwyth (UK)

<http://ulbonice.blogspot.com/>



The melting of continental ice (glaciers, ice caps and ice sheets) is a substantial source of current sea-level rise, and one that is accelerating more rapidly than was predicted even a few years ago. Indeed, the most recent report from Intergovernmental Panel on Climate Change (IPCC) highlighted that the uncertainty in projections of future sea-level rise is dominated by uncertainty concerning continental ice, and that understanding of the key processes that will lead to loss of continental ice must be improved before reliable projections of sea-level rise can be produced.

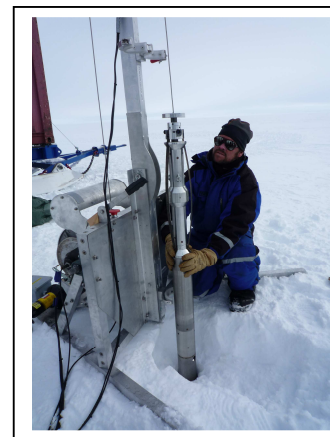


Major uncertainties remain on the level of the contribution of the Antarctic ice sheet to sea-level change. Current numerical models project a negative contribution of the Antarctic ice sheet to sea-level rise, due to increased accumulation rates, while satellite remote sensing measures a significant ice loss, through major outlet glaciers of the Antarctic ice sheet.

Mass loss occurs mostly through iceberg calving and submarine melting through the floating ice shelves that surround Antarctica. However, the Archimedes principle states that sea level does not respond directly to mass loss from floating ice. Instead, the flow of ice from the grounded ice sheet into the ice shelves controls sea-level rise. This flow is strongly modulated by changes in ice-shelf geometry. Calving and submarine melting

can therefore directly increase the rate of grounded-ice loss and sea-

level rise. Underneath most Antarctic ice shelves a distinct water circulation occurs, a so-called thermohaline circulation in which warm deep waters surrounding the Antarctic continent move up the continental shelf and potentially melt the ice sheet at the grounding line.



**The BELISSIMA project aims at investigating the processes occurring at the interface between the ice sheet, ice shelf and the ocean and to quantify mass changes in this area.**