TITLE: **POLAR FRESHWATER ECOSYSTEMS AS SENSORS OF CLIMATE CHANGE**

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DESCRIPTION:
Freshwater ecosystems in polar regions are especially fragile and their dynamics depend directly upon physical forces. The meteorological and environmental characteristics governing these ecosystems include the timing of ice cover, or the availability of allochthonous nutrients via snow/ice melting and active layer thawing. Moreover, polar freshwater ecosystems are considered to be relatively less complicated from the ecological point of view than similar ecosystems at lower latitudes. The combination of these two characteristics, makes polar freshwater ecosystems as ideal sensors for climate change.

Ecological models can be built to identify how the latitudinal characteristics (e.g. temperature, humidity and irradiation) influence the key aspects of the freshwater ecosystems, combining the meteorological characteristics with the limnological features, including biodiversity and functional ecology. In this way, different scenarios of climate change can be introduced in the model, making possible to understand how climate change would change the polar aquatic ecosystems, including the prevalence of the invasive species, colonizing new biotopes.

The rationale of this project is to make several international multidisciplinary polar expeditions during summer 2007/08, including Arctic and Antarctic locations, at those latitudes from which limnetic ecosystems have been scarcely investigated. At this moment a considerable body of information about polar freshwater ecosystems is available in the scientific literature, but most information refers to certain places and latitudes, while other latitudes have been very scarcely investigated.

This initiative is a multidisciplinary perspective which would dedicate its main effort at those unstudied areas, covering disciplines as meteorology, water/ice physics, microbiology, physiology, chemistry and mathematics. This exploration would require the input from several national Antarctic and Arctic programs from the logistic and technical point of view. In this way many nations should be involved, although not all the participants would visit all places, all of them would make use of the same methodology that would be based in the manual of methods developed by RiSCC project, in which several participants are included.

The main aspects investigated in this multidisciplinary and international project would be:
1. Meteorological comparison
2. faunistical composition
3. floristic composition
4. ecological processes (e.g. food-webs)
5. ecophysiology and adaptation
6. invasions and alien species
7. modelling

The persons involved in this project would be:

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Moreover, several other institutions from several countries might be interested in participating:
- British Antarctic Survey (UK)
- NIWA (New Zealand)
- AAD (Australia)
- CSIRO (Australia)
- Université Laval (Canada)
- University of Liège (Belgique)