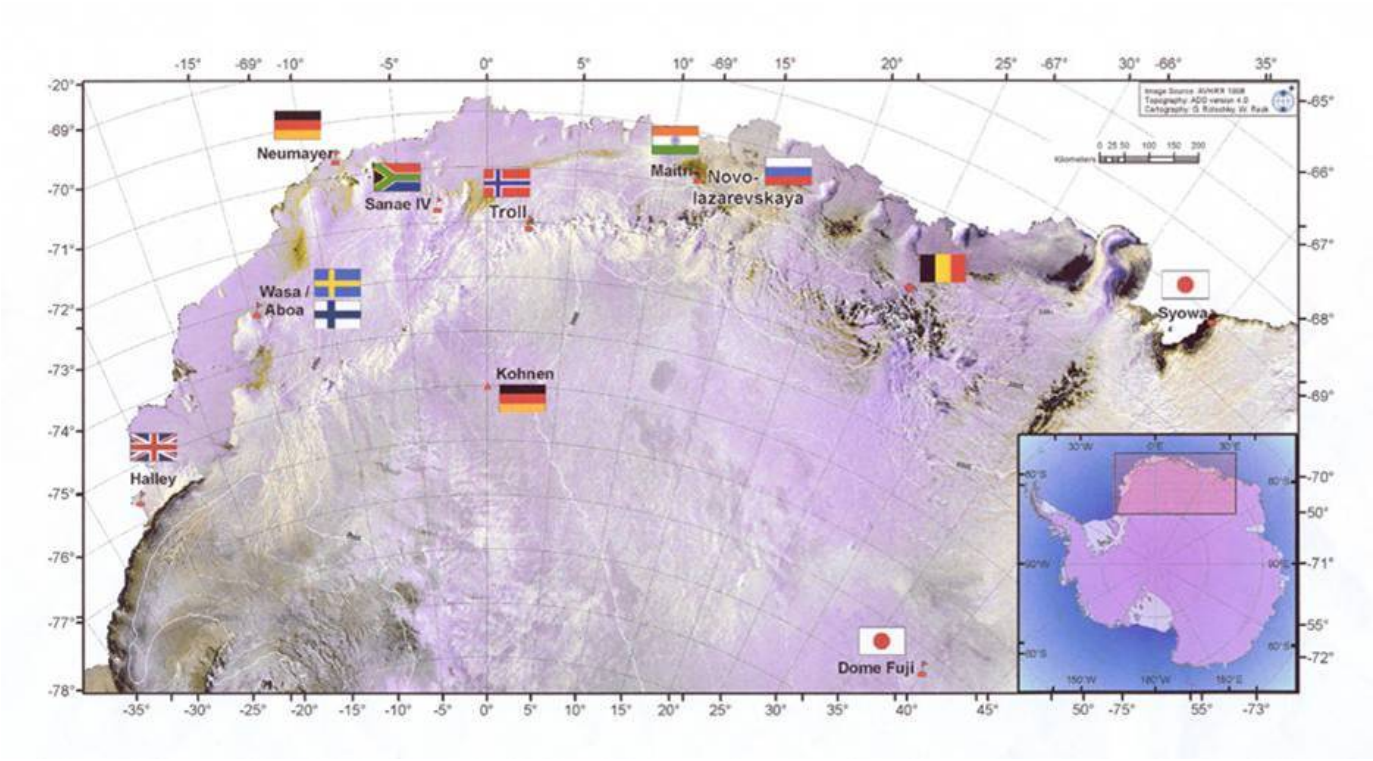
Introduction

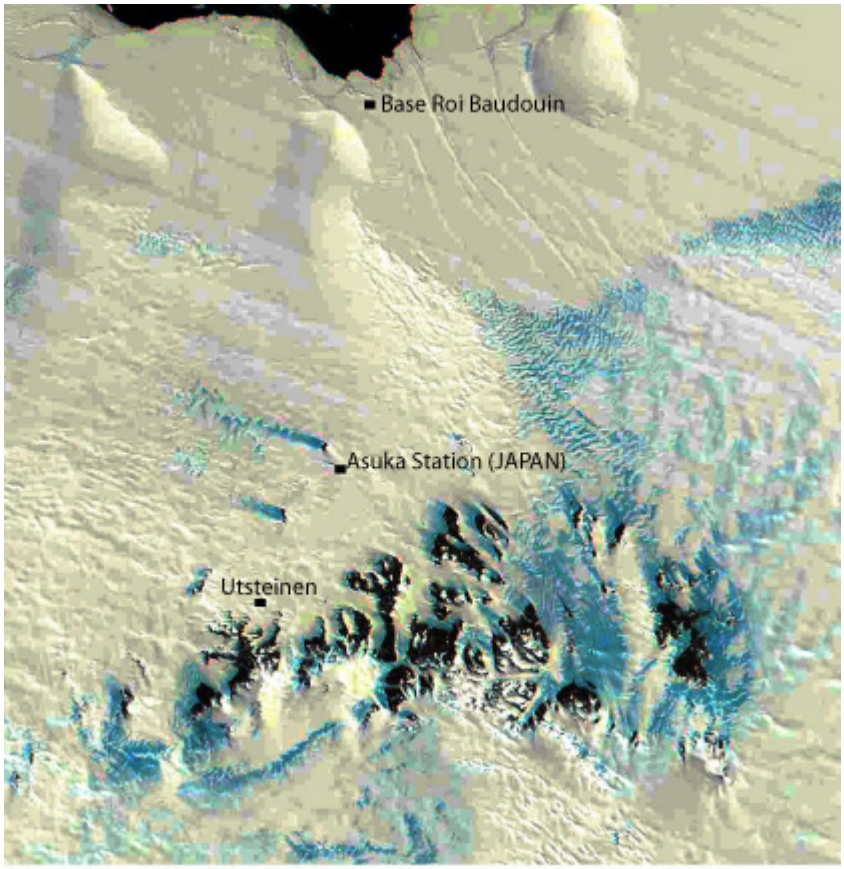
In 2007-2008, Belgium will construct a new research station in Antarctica. This station will replace the former Belgian Roi Baudouin base, built in 1958 at Breid Bay in Dronning Maud Land, closed in 1967. The short operational period associated with the Roi Baudouin base, situated on the ice shelf, and with the nearby Asuka station (1986-1992), situated on the inland ice slope, both subject to high snow accumulation rates and strong katabatic winds, resulted in the decision to construct the new station on bedrock and in the protected western part of the Sør Rondane mountain range.

Location

The new station will be erected on the Utsteinen Ridge (71°57'S; 023°21'E), situated at the foot of the Sør Rondane Mountains, Dronning Maud Land, 173 km inland from the former Roi Baudouin base (1958-1967) and 55 km from the former Japanese Asuka station (1986-1992). Positioned halfway between the Japanese Syowa station (684 km) and the Russian Novolazarevskaya station (431 km) it will fill in a 1072 km unoccupied stretch between these two stations in one of the least occupied sectors of Antarctica that has only been intermittently investigated since the International Geophysical Year (IGY).



Research station situation map



MODIS image displaying the Sør Rondane Mountains and Breid Bay.
Situation of the former Belgian Baudouin Base, the former Japanese Asuka station and the proposed Belgian Utsteinen site.
The size of the image is approximately 250 by 250 km.

Station description

The construction of the station is planned in the austral summer of 2007-2008. In this period the station will be built, system acceptance tests will be performed and finally it will be handed over to the Belgian Science Policy Office at the end of the season.

Characteristics of the station:

- Austral summer station: open from November to February.
- Full-year monitoring and remote sensing capability.
- The station is designed for optimal use by 12 people accommodated in the main building.
- The use of a station "extension" will make it possible to accommodate another 8 people. This extension consists of heated shelters used for sleeping only.
- The station's facilities (kitchen, the sanitary installations, offices …) are designed to cope with the larger occupation as mentioned above.
- Expected design life: 25 years minimum.
- Accommodation (living, technical, research, storage): 900 m².
- There will be laboratory facilities as well as mobile units to be used for field work

Building concept: impression of the building integration on-site.

Staff and logistic support

Four staff personnel will be present during the whole summer season:

- Station leader
- Electrical engineer/electrician
- Mechanic
- Cook / Field support guide

Current logistic support present on site:

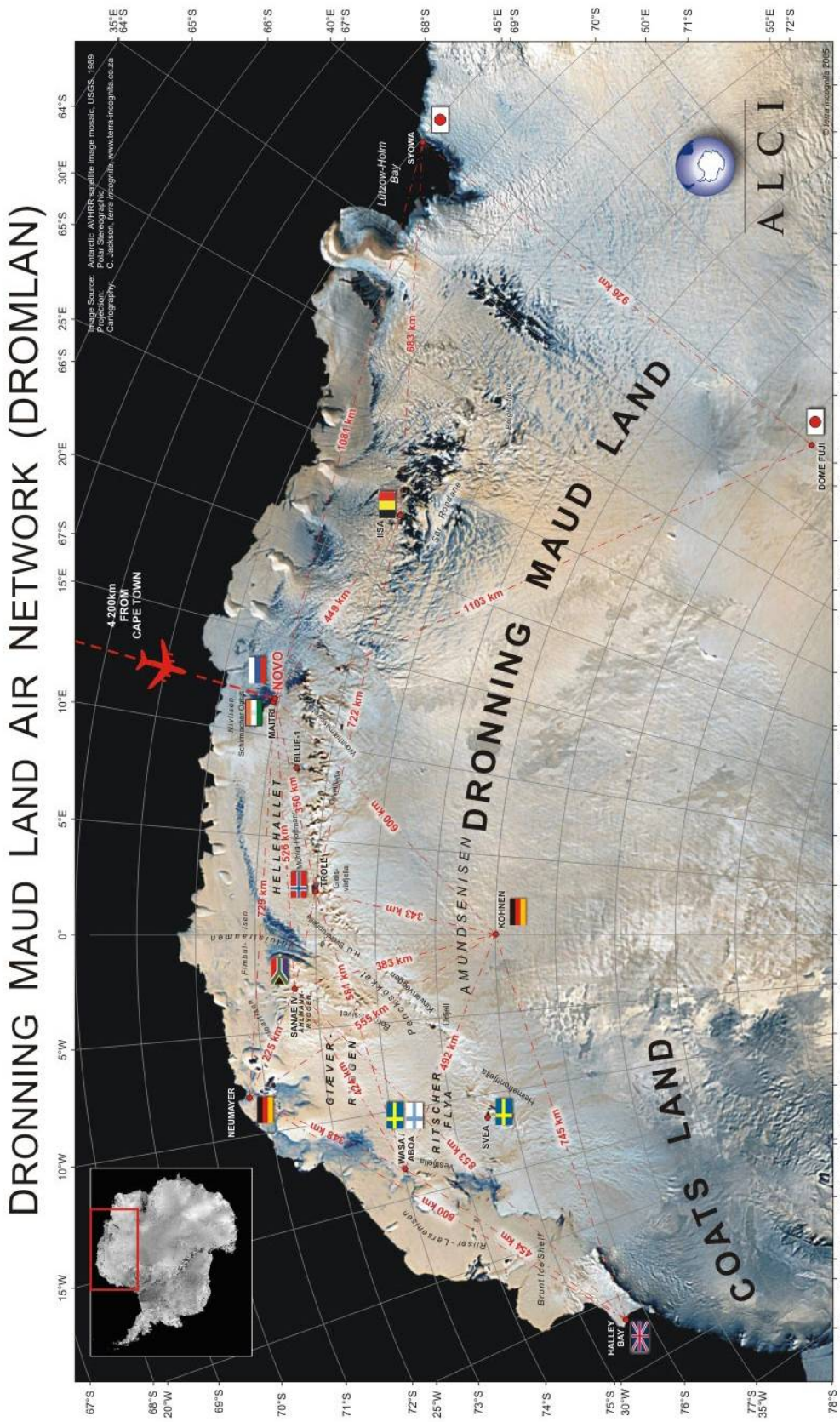
- four skidoos incl. 3 sledges;
- two Prinoth Everest Antarctic version snow tractors incl. eight 20 ft cargo sledges (25000kg payload) both with crane; one with emergency cabin;
- 2 bulldozers recuperated from Asuka station.

Logistic functions and tasks of the station will grow depending on the needs of the research work.

Access to the station

Once the station is operational, station personnel and scientists will use the DROMLAN air link for access to the station and the Sør Rondane region and to bring in small items of equipment. DROMLAN foresees in flights from Cape Town to Novolazarevskaya or Troll station (± 6 hour flight), from which feeder flights are foreseen to the different stations in Dronning Maud Land. An extra 2-3 hour feeder flight is necessary to reach Utsteinen.

The yearly station provisioning by ship (Ice class) - via unloading at Breid Bay and overland tractor transport via Romnaesfjellet - will be as much as possible co-organised and shared with the other nations active in Dronning Maud Land.



DROMLAN-ALCI map giving an overview of research stations in Dronning Maud Land and the distance to all stations from Novo Air Base. Source: Antarctic AVHRR satellite image mosaic, USGS, 1989.

Research possibilities

The new platform created by Belgium will be offered in the most flexible way to the international community for (collaborative) research activities.

Operational flexibility can be assured by Belgium's participation and involvement in the DROMLAN and DROMSHIP networks allowing shared means of transport as well as multiple entries during an extended summer season from the beginning of November until the end of February.

Monitoring

Although at present designed as a summer station only, power supply will be such that continuous year-round monitoring will be feasible, allowing the station to function as an important node in the network of geophysical and climatic observatories.

Field work projects

Scientific diversity is guaranteed by the unique situation of the base at the foot of an important mountain range and the edge of the polar plateau. It allows easy access to all different landscapes in Antarctica within a radius of 200 km (coastal polynia, fast ice, ice shelf, coastal ice rises, ice sheet, mountain range, dry valleys, Polar Plateau). With more substantive logistical support and in strategic terms one might even think of the new station as a hub for field exploration in the 20-30 degrees East sector of Antarctica.

Belgian interests

In 2005, the Belgian Science Policy Office launched a call for Expressions of Interest (EoI) to the Belgian science community. 14 research proposals were received, in different research domains. The Belgian research contacts per domain are listed in **Annex**.

This survey of the Belgian science interests made it possible to establish a priority list of projects for the first station working seasons:

- Starting from 2008-2009 a Belgian scientific programme will be implemented with emphasis on glaciology, earth sciences and terrestrial (micro)biology.

- In synergy with the earth sciences and glaciological programmes the Belgian programme foresees surface weather observations, monitoring of aerosol particles and radiation components, absolute gravity and seismic measurements and continuous GPS measurements.

International research projects

International researchers, interested in developing research projects in and around the new station, will be able to use the station as a base for monitoring projects or as a hub for field exploration, with free use of available logistics. The researchers should foresee in their own project funding and specific scientific equipment.

Although priority will be given to projects in collaboration with Belgian researchers, the Belgian Science Policy Office welcomes new research challenges in an international context.

Belspo calls on the interested international research community to fill in a form "international expression of interest" which will be available on the website www.belspo.be/antar under the section Polar Science - Princess Elisabeth Station.

For more info regarding research possibilities and/or to be informed on possible links with Belgian researchers, please contact Mrs Maaike Vancauwenberghe. The website www.belspo.be/antar will be updated regularly with detailed information on the research activities linked to the station.

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Annex: Belgian research interests

Geodesy for Ice in ANTarctica (GIANT)
contact: Thierry Camelbeeck (Royal Observatory of Belgium - ROB)
and Olivier Francis (University of Luxemburg - ULUX)
thierry.camelbeeck@oma.be; olivier.francis@uni.lu

Lithospheric and Intraplate Structure and Seismicity in Antarctica (LISSA)
contact: Thierry Camelbeeck (Royal Observatory of Belgium - ROB)
thierry.camelbeeck@oma.be

Correlation of Seismic, Ionospheric and Geomagnetic Activity in the Antarctic (COSIGNA)
contact: Jean Rasson (Royal Meteorological Institute of Belgium - RMI)
jr@oma.be

Atmospheric chemistry and climate research
contact: Anne Cheymol (Royal Meteorological Institute of Belgium - RMIB)
anne.cheymol@oma.be
http://ozone.meteo.be

Glaciology
contact: Frank Pattyn (Free University of Brussels - ULB)
fpattyn@ulb.ac.be
http://dev.ulb.ac.be/glaciol/index.htm

Microbial diversity: protein engineering and chemistry
contact: Annick Wilmotte (University of Liège - ULg)
awilmotte@ulg.ac.be
http://www.cip.ulg.ac.be/

contact: Georges Feller (University of Liège - ULg)
gfeller@ulg.ac.be
http://www.ulg.ac.be/biochlab/

Lichen and Bryophyte biodiversity
contact: Damien Ertz (National Botanic Garden of Belgium)
damien.ertz@br.fgov.be

contact: Nathalie Van Der Putten (Ghent University - UG)
Nathalie.VanderPutten@UGent.be

Nematod biodiversity
contact: Gaetan Borgonie
Gaetan.Borgonie@ugent.be
www.nematology.ugent.be

Paleoecological research
contact: Wim Vyverman (Ghent University - UG)
wim.vyverman@UGent.be
http://www.pae.ugent.be/

Petrological, geochemical and thermochronological research
contacts: Marlina Elburg (Ghent University - UG)
Marlina.Elburg@Ugent.be

Meteorite research
contacts: Philippe Claeys (Free University of Brussels - VUB)
phclaeys@vub.ac.be
http://we.vub.ac.be/~dglg/

Environmental monitoring
contact: Martine Leermakers (Free University of Brussels - VUB)
mleermak@vub.ac.be

Research related to the concept of the base (µbial fuel cells and climatic influences)
contact: Javier Sanz (Von Karman Institute - VKI)
sanz@vki.ac.be
http://www.vki.ac.be/

contact: Nico Boon (Ghent University - UG)
Nico.Boon@UGent.be
LabMET.UGent.be

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