

CZECH REPUBLIC

**Exchange of Information
in Accordance
with Article III and VII (5) of the Antarctic Treaty
and
ATCM Resolution 6 (2001)**

Pre-season Information for Austral Summer Season 2008 – 2009

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1. Operational information

Czech Antarctic Station of Johann Gregor Mendel

James Ross Island, location: 63°48'5.6''S and 57°53'5.6''W

Operation period: Austral summer

Maximum population: 15 persons

Austral summer 2008-2009

1.1 Institute of Botany, Academy of Sciences of the Czech Republic, Plant Ecology Section, Třeboň

The Institute is involved in the project of the Ministry of Education, Youth and Sports entitled “Multidisciplinary research in Antarctic terrestrial vegetation in the framework of the International Polar Year, ME contract 945”. We will continue this project during the austral summer of 2008-09 with respect to two individual subjects:

A. Hydrobiological study of selected lakes in the north-western part of James Ross Island:

The basic hydrobiological study of ecological and biological diversity of lakes within an accessible distance from the station will be continued. The main attention will continue to be concentrated on communities of benthic moss species and algae settling the bottoms of the lakes.

The bottom profile, surface and water volume will be measured in these lakes together with their basic ecological characteristics (physical-chemical parameters of lake water profiles – temperature, pH, conductivity, dissolved oxygen, transparency, hydrochemical parameters, lake classification based on their seasonal changes – permanently frozen and stratified lakes, seasonally frozen and mixed lakes), and hydrobiological characteristics (plankton and benthic cyanophytes (seaweed) and green algae diversity, plankton and benthic invertebrates).

B. Ecology of lichens on mountain plateaus in the northwestern region of James Ross Island:

Based on the results from the 2006-2007 season, further small surfaces with dominant bush-like lichens will be measured on mountain plateaus in the northwestern de-glaciated region of the James Ross Island. If the non-destructive method of estimating the diversity and frequency of lichens is successful, a study of diversity and frequency of lichens will be carried out in a transect across the de-glaciating Lachman Crags mountain plateau.

At the same time, all small surfaces will be measured in thermally manipulatable experiments, and changes after the first year of measurements will be evaluated.

1.2 Masaryk University in Brno:

Anticipated research programme of the Brno geography – biology group on James Ross Island during the austral summer of 2008/09

Characteristics of the activity of the Plant Physiology group

The group of physiologists will focus on collecting results of microclimatic measurements performed by automated systems in typical ecosystems and manipulated environment (OTC) in the northern de-glaciated part of James Ross Island and on maintenance or renovation of these systems. Another part of activity will consist in collection of quantitative data on the growth and development of vegetation in the manipulated environment of Antarctic vegetation oases – on experimental small surfaces influenced by elevated air temperature with the aid of open top chambers (OTC). Survey of vegetation in systematically non-explored parts of the Island will be performed, together with sample collection for the purpose of subsequent determination and analysis. Photosynthetic processes in selected representatives of moss and lichen vegetation will be measured by means of biophysical methods, including particularly their reactions to environmental stress factors: low temperature, changes in the degree of thallus humectation (moisturizing), high intensity of incident photosynthetic active radiation.

Characteristics of the activity of the Climatology group

The climatology group will focus on the following topics: (i) the intensity of total sun radiation and of UVB radiation will be measured at the main meteorological station of the Czech base camp, including maintenance and replacement of instruments; (ii) microclimatic conditions and soil atmosphere will be monitored at six research surfaces that were selected as representative localities (biotopes) for long-term checking of colonization processes by living organisms; (iii) the last research topic will consist in glaciological and topographic measurements at selected glaciers and snow fields, concentrating on mass changes in ice and snow. Fieldwork will be performed particularly in the area of the Ulu Peninsula at localities of Bibby Point, Camp Hill, Brandy Bay, Lachman Crags, shore bays St. Matha, Whisky Glacier and Davis Dome.

1.3 Czech Geological Survey:

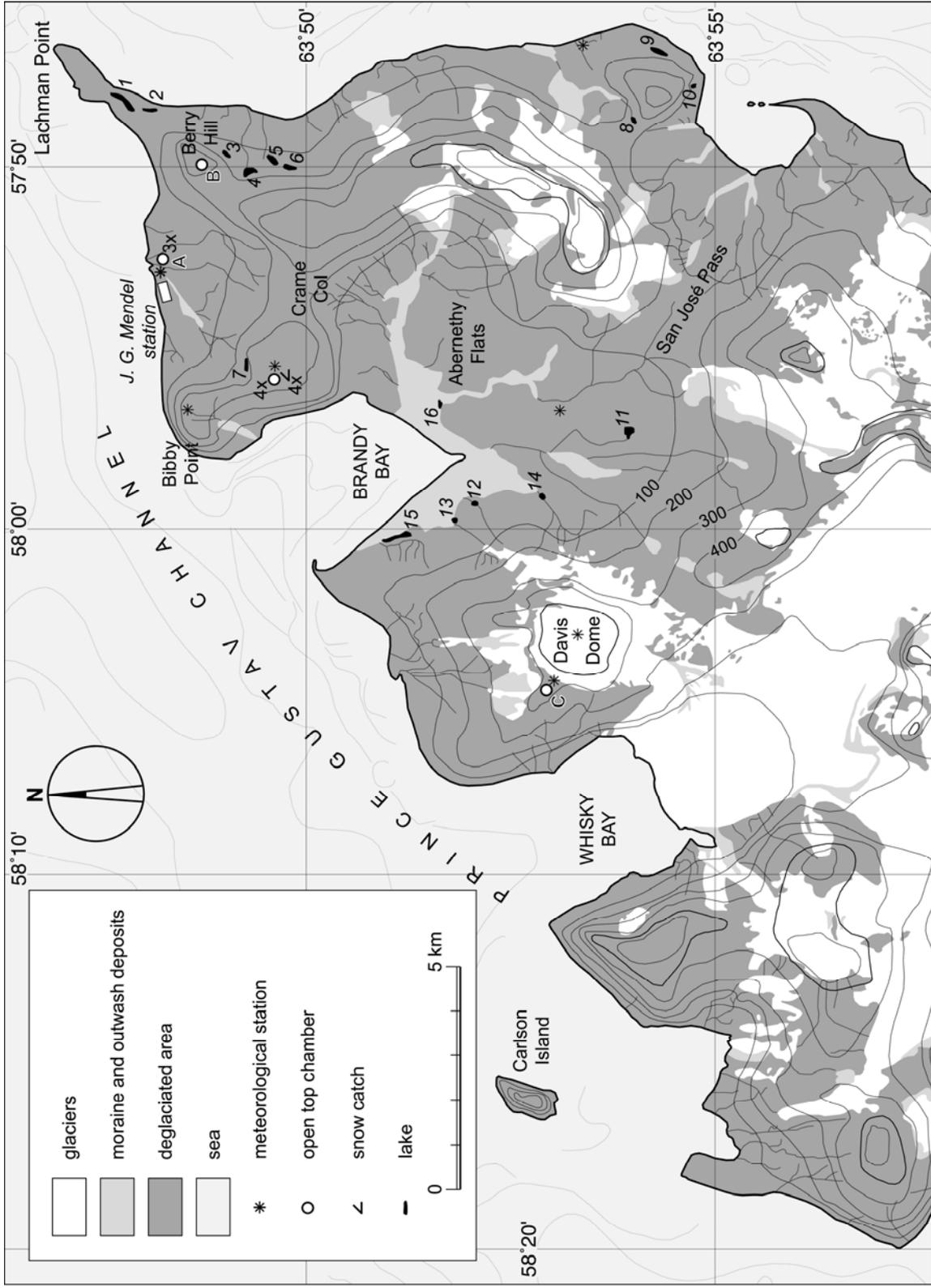
In accordance with the Science and Research project entitled “Contribution of the Czech Republic to the determination of the status of the ozone layer in Antarctica, paleo-climatologic and paleo-geographic reconstruction of a selected area of Antarctica and associated geology study and mapping“ we anticipate that the following research topics will be continued in the 2008-2009 season:

a) The paleo-climatologic and paleo-geographic reconstruction of a selected area in Antarctica and associated geology study and creation of a basic geological map at the scale of 1:25,000.

- b) Contribution to the ecology of Antarctic avifauna – population dynamics and nesting biology of the avifauna at the James Ross Island
- c) Protection indications of local avifauna and seal populations
- d) Development of a system of geomorphologic maps of James Ross Island at the scale of 1:25,000 with respect to the glaciation reconstruction of the whole territory of the Island
- e) Development of a methodology of measuring photochemical changes under the influence of UV radiation
- f) Development of a system of organic pollutants determination in natural snow and ice
- g) Collecting data for peri-glacial processes reconstruction, in dependence on main paleo-climatic factors influencing the extent and orientation of local glaciers
- h) Collecting further data for the geomorphologic reconstruction of James Ross Island and the adjacent islands during the Holocene
- i) Reconstruction of the origin and evolution of the northern part of the Antarctic batholith including determination of petrological and geochemical characteristics of plutonic rocks, establishing of magmatic structures and tectonic regime during emplacement individual intrusive phases into the magmatic arc of the Antarctic Peninsula
- j) Evaluation of glacial processes taking place at the present time on James Ross Island and comparison with the results of reconstruction of continental glaciation in the Czech Republic

2. Visit to Protected Areas

There will be no visit to Protected Areas.



Distribution of Czech fields research on the Ulu Peninsula (north part of James Ross Island) in the austral summer 2007/08.

Source of cartographic content: British Antarctic Survey, Mapping and Geographic Information Centre, Series BAS 100, Sheet 2, Edition 1, 1995