

Czech Arctic Research Infrastructure „Josef Svoboda Station“ in Svalbard

Centre for Polar Ecology,
Faculty of Science,
University of South Bohemia in
České Budějovice



Přírodovědecká
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Faculty
of Science

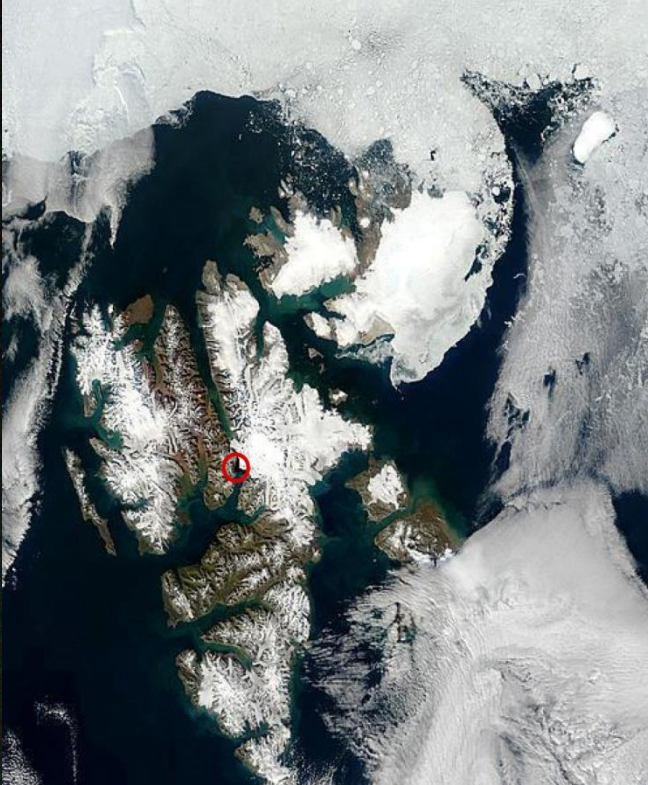
Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice



CENTRE FOR POLAR ECOLOGY

Centrum Polární Ekologie
Na Zlaté Stoce 3
České Budějovice

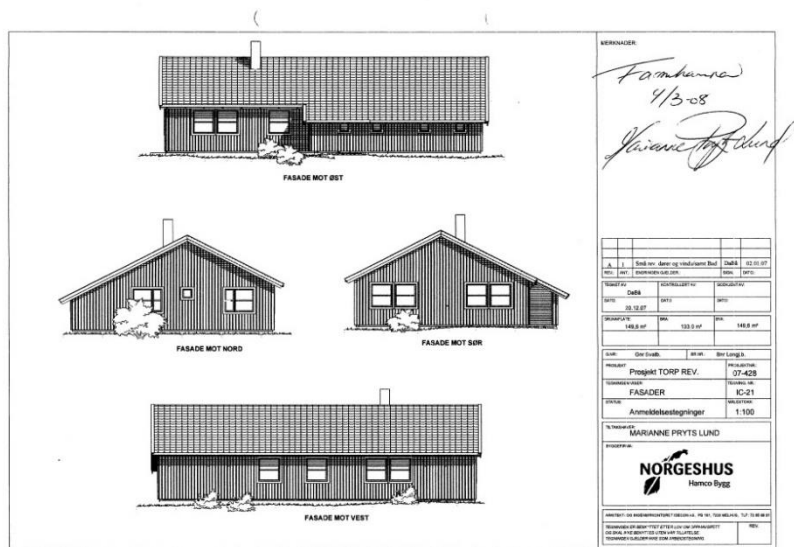
Centre for Polar Ecology constructs and manages research infrastructure in Svalbard



Czech Arctic Research Infrastructure

- Manages specialised department Centre for Polar Ecology in university campus
- Manages research station „Julius Payer“ in Longyearbyen
- Manages field research station „Nostoc“ in Petunia Bay
- Manage research motorsailer „Clione“
- Manages logistic support to whole infrastructure





Josef Svoboda Station
University of South Bohemia
in České Budějovice

JULIUS PAYER



Julius Payer

UNIS

- Field station „Nostoc“ in Petunia Bay;
- Research motorsailer „Clione“



Stanice Josefa Svobody
Jihočeská univerzita
v Českých Budějovicích
CLIONE



Josef Svoboda Station
University of South Bohemia
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NOSTOC

daniel paul



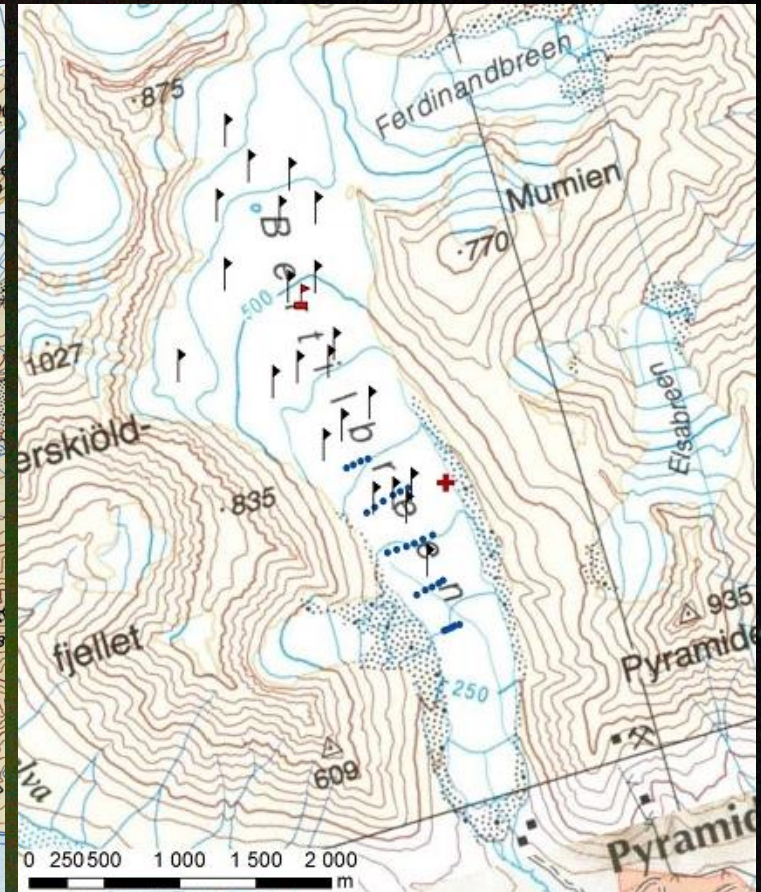
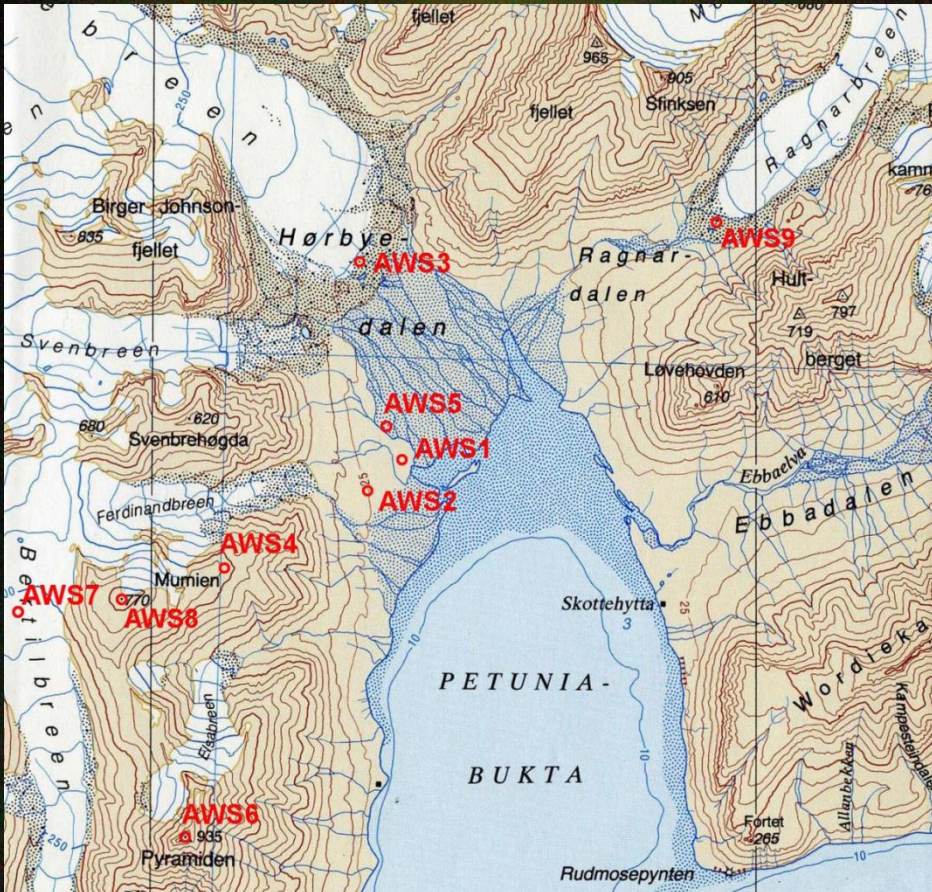
Josef Svoboda Station
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NOSTOC



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CLIONE

Geography Research Topics:

Climatology – Glaciology



1. Climate monitoring (9 automatic weather stations across Petuniabukta)
2. Energy exchange between atmosphere and ground surface (background for long term microbiology and plant ecology development)
3. Mass balance of Bertil and Hørbye glaciers

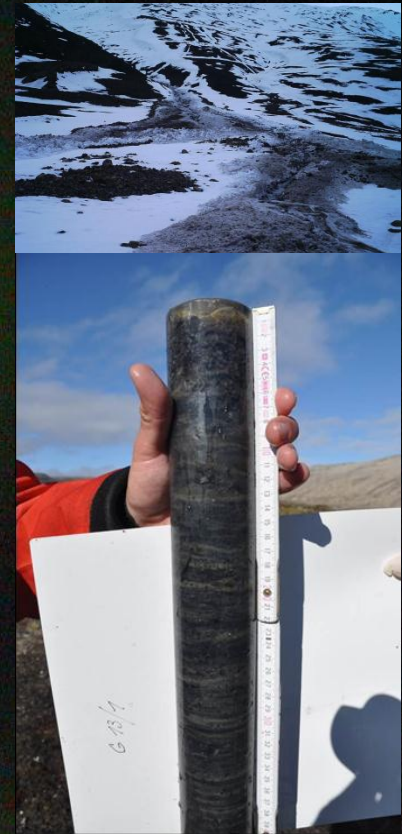
Geology-Geomorphology

1. Petrography of Bertil and Hørbye glaciers (clast analyses of glacial sediments)
2. Holocene glacial cover reconstruction
3. Soil and ground surface cryoturbation in west part of Petuniabukta



Limnology-Hydrology

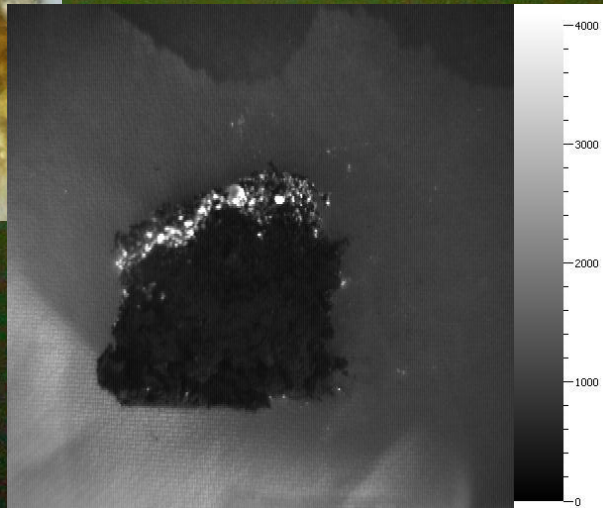
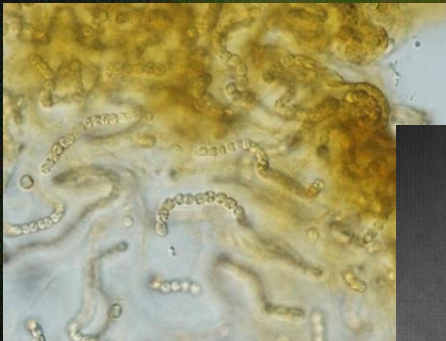
1. Hydrological model of glacial basins (Bertil and Hørbye glaciers)
2. Reconstruction of lake evolution (karst system in Mathiesondalen and Garmaksla glacial lake)
3. Nutrient exchange between marine and freshwater ecosystems (Mathiesondalen – e.g. transport of nutrients by *Risa tridactyla* and their utilisation by phytoplankton *Klebsormidium* sp.)



Life Science Research Topics:

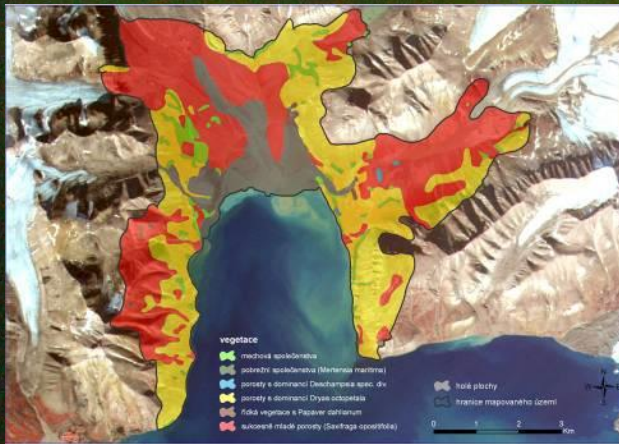
Microbiology-Phycology

1. Molecular diversity and functional ecophysiology (phytogeography of *Microcoleus* sp., *Nostoc* sp., stress ecophysiology of *Phormidium* sp. and *Zygnema* sp.)
2. Mass cultivation and biotechnology (cultivation of algae isolates for production of special substances)
3. Climate and anthropogenic impact and soil development (reaction of *Nostoc* sp. and biological soil crusts to environmental manipulation)



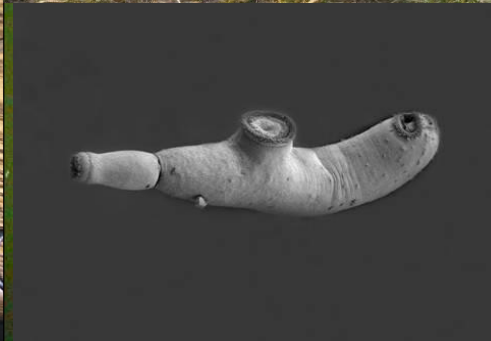
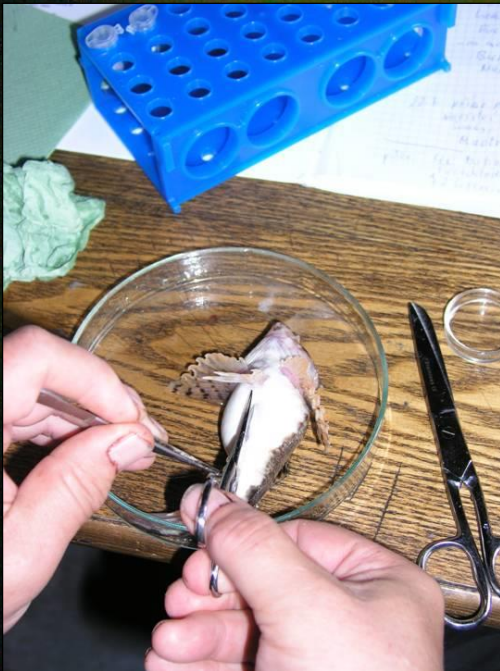
Botany-Plant Ecophysiology

1. Plant distribution and succession in glacial fronts Hørbye, Ragnar and Ferdinand
2. Functional ecophysiology (adaptation of plant's growth and reproduction to extreme conditions in High Arctic)
3. Holocene vegetation reconstruction



Zoology-Parasitology

1. Parasites of Polar cod (*Boreogadus saida*) and possible interactions with parasitofauna of *Gadus morhua*
2. Role of crustaceans in life cycles of *Podocotyle atomon* and other species of fish trematodes and cestodes
3. Influence of helminths and parasiting protists to the fitness of their hosts (sculpins)
4. Diversity of free-living amoebae (focused namely to bipolar species)



Emerging infections in Svalbard and possible role of ticks *Ixodes uriae* and mosquitoes *Aedes nigripes* in their distribution.

Migratory birds as source of agents of emerging diseases.

Intestinal parasites of Polar Bears (*Ursus maritimus*) and Polar Foxes (*Vulpes lagopus*)

- Regularly, on field Arctic research expeditions participate **50 to 60 scientists and students** from different Czech and foreign institutions (example of 2012: USB - 23, MU-10, UK-10, AS-8, UP-4, foreign -3).



- Publications (IF papers): **117**
- Presentations on conferences: **170**
- In courses of polar ecology (climatology-glaciology, geology-geomorphology, hydrology-limnology, microbiology-phytology, botany-plant physiology, zoology-parasitology) **26 students** of Czech universities participate every year.
- Every year **8 – 12 students** graduate in bachelor, master and Ph.D. studies which have been supported by arctic infrastructure.



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Czech Arctic Research Infrastructure Josef Svoboda Station in Svalbard



Josef Svoboda Station in Svalbard consists of several facilities located in central Svalbard with easy access to Svalbard Airport (LYR). The infrastructure includes a base station in Longyearbyen and a field station in Petuniabukta, as well as a research vessel, motorboats, snow scooters and an off-road car providing logistic support.

JULIUS PAYER'S HOUSE (78.22°N, 15.66°E), the base station is located in Longyearbyen and provides housing for 10 people (up to 20 for short-term accommodation) with kitchen and bathroom (shower, washing and drier). There are two life science laboratories equipped with state-of-the-art optical microscopes, sterile space (laminar flow cabinet, dry heat and IR sterilizers), centrifuges, etc.

The Payer's house also provides storage space, technical workshop with basic tools, and scuba diving equipment.

NOSTOC FIELD STATION (78.69°N, 16.46°E, 60 km from Longyearbyen) consists of four modular houses connected by a large tent. It accommodates up to 12 people and includes kitchen, laboratory, technical facility (energy generators, basic workshop tools), and scuba diving equipment. There are also two additional containers (residential and storage) close to Pyramiden harbour (78.66°N, 16.39°E, 6 km south of Nostoc) where up to 4 persons may be accommodated.



RV CLIONE is a 15 m long motorsailer that can operate around the Svalbard archipelago. It has 3 cabins, kitchen, upper parlour, storage space. Up to 12 person may board the vessel depending on the area of operation.



The infrastructure has a complete array of safety equipment, i.e., communication equipment (satellite phones, VHF radios, distress beacons), survival suits, and polar bear defence equipment (rifles and flare guns).



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Thanks for your attention,

