



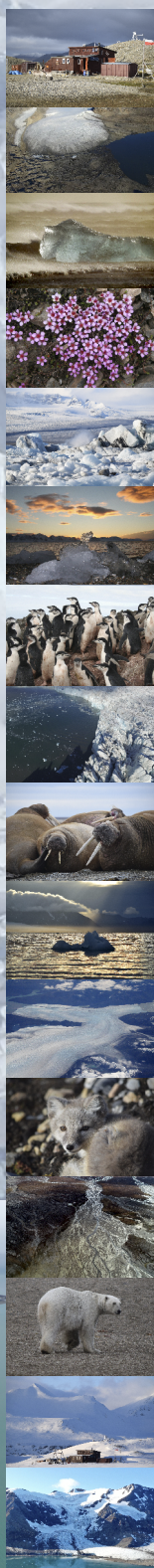
XXXVIII INTERNATIONAL POLAR SYMPOSIUM

Environmental changes in polar regions:
New problems – new solutions



PROGRAM

Toruń, 18-20 November 2021



PROGRAM

17th November 2021

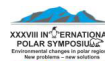
18.00-	Icebreaker & Concert	
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18th November 2021

8.00-10.00	Registration	
10.00-10.30	Opening ceremony	
10.30-12.30	Plenary session	
10.30-10.50	Agata Goździk, Piotr Głowacki, Jerzy Giżejowski <i>Polar Research as a vehicle to raise interest in science and awareness of environmental changes in the Arctic – EDU-ARCTIC.PL case study</i>	
10.50-11.10	Waldemar Walczowski, Małgorzata Merchel, Piotr Wiczorek <i>Role of the Argo floats in Arctic oceanographic observations</i>	
11.10-11.30	Jacek A. Jania, Paulina Waleczek, Małgorzata Błaszczyk, Mariusz Grabiec <i>Role of crevasses in the frontal zone of Hansbreen (Svalbard) for its mass balance</i>	
11.30-11.50	Mateusz C. Strzelecki, Piotr Zagórski <i>Morphodynamics of Svalbard paraglacial coastal systems – recent advances and future challenges</i>	
11.50-12.10	Jakub Grzesiak, Aleksandra Woltyńska, Marek K. Zdanowski, Jan Gawor, Karolina Żuchniewicz, Maria Olech, Tamara Aleksandrak-Piekarczyk, Robert Gromadka, Dorota Górniak <i>Habitat-related variability in Antarctic lichen-hosted bacterial communities</i>	
12.10-12.30	Discussion	
12.30-13.00	Coffee break	
13.00-14.30	Topic sessions	
	<u>Earth Sciences, Hydrology & Glaciology Session</u>	
13.00-13.15	Kornelia Anna Wójcik-Długoborska, Robert Józef Bialik, Maria Osińska, Marek Figielski <i>Mapping of glacial meltwater plumes using a high-resolution multispectral sensor mounted on an Unmanned Aerial Vehicle</i>	
13.15-13.30	Wiesław Ziąja, Krzysztof Ostafin, Wojciech Maciejowski <i>Coast degradation and decline of the Davislaguna lake, Spitsbergen, 1900-2020</i>	
13.30-13.45	Katarzyna Stachniak, Sławomir Sitek, Krzysztof Janik, Dariusz Ignatiuk, Jacek Jania <i>Hydrogeological properties of the ground for the numerical model of groundwater flow in the Werenskiöld Glacier marginal zone</i>	
13.45-14.00	Krystyna Kozioł, Wanda Wilczyńska-Michalik, Marek Michalik, Filip Pawlak, Żaneta Polkowska <i>Characteristics of anthropogenic pollution in the atmospheric air in Hornsund in spring 2019</i>	
14.00-14.15	Łukasz Stachnik, Krzysztof Migala, Mirosław Wasik, Henryk Marszałek, Marek Kasprzak, Aleksandra Wołoszyn, Elżbieta Łepkowska	

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Long-term (1973-2019) changes of hydrological regime in a fluvial-lacustrine basin underlain by continuous permafrost (Brattegddalen, SW Spitsbergen)

14.15-14.30 Discussion

Polar Biology & Oceanology Session



13.00-13.15 Maciej Chelchowski, Piotr Bałazy, Piotr Kukliński
Seasonal variability of macrobenthos community in the Antarctic intertidal zone

13.15-13.30 Wojciech Majewski, Philip J. Bart, Lindsay O. Prothro, Lauren M. Simkins, John B. Anderson
Sub-fossil foraminifera in the Ross Sea, Antarctica: Life near grounding lines

13.30-13.45 Maciej K. Mańko, Sławomir Kwaśniewski, Waldemar Walczowski, Agata Weydmann-Zwolicka
*Long term trends in the distribution and population structure of a boreal jellyfish *Aglantha digitale* in the European Arctic*

13.45-14.00 Piotr Androsiuk, Jan Paweł Jastrzębski, Łukasz Pauksto, Karol Makowczenko, Adam Okorski, Agnieszka Pszczółkowska, Katarzyna Joanna Chwedorzewska, Ryszard Górecki, Irena Gielwanowska
*The complete chloroplast genome of six *Colobanthus* species: evolutionary dynamics and phylogenetic analyses*

14.00-14.30 Discussion

14.30-16.00 Lunch



16.00-17.30 Topics sessions

Polar Human Session



16.00-16.15 Jacek Szymala
Polish Documentary Films about Svalbard

16.15-16.30 Viktoriia Verezhak
Space, Gender and Climate Change in the Arctic. Concept of a research project

16.30-16.45 Julia Depta
The phenomenon of antibiotic resistance in the polar regions - a review

16.45-17.00 Leszek Krzysztof Sadurski
The Arctic Coast Guard Forum as an example of adaptation of the regional security complex in the Arctic in the context of climate change impacts

17.00-17.15 Wojciech Szczerbowicz
The Arctic as a social construct – talking politics

17.15-17.30 Discussion

Polar Biology & Oceanology Session



16.00-16.15 Anna Cwanek, Maria A. Olech, Mats Eriksson
Levels and trends of natural and anthropogenic radioactivity in Western Arctic tundra

16.15-16.30 Anna Sowa, Piotr Bałazy, Maciej Chelchowski, Piotr Kukliński
Influence of position of substrate on colonization of artificial experimental plates in the high Arctic (Isfjorden, Spitsbergen)




16.30-16.45 Małgorzata Jarzynowska, Dominika Saniewska, Michał Saniewski, Piotr Bałazy
Mercury in the benthic organisms of Admiralty Bay (Antarctica)

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16.45-17.00	Ewa J. Demianiuk, Wojciech Majewski, Mateusz Baca, Danijela Popović, Lindsay O. Prothro, Inés Barrenechea Angeles, John Anderson <i>SedaDNA reconstruction of foraminiferal assemblages from deglacial sediments of the Western Ross Sea, Antarctica</i>	
17.00-17.15	Barbara Wojtasik, Krzysztof M. Różański, Dorota Burska, Elżbieta Machanec, Jan Wojtasik, Klaudia Lewandowska <i>Meiobenthos assemblages selected reservoirs of Coraholmen, Svalbard</i>	
17.15-17.30	Discussion	
17.30-17.45	Coffee break	
17.45-19.00	Poster session	
20.00–2.00	Evening reception	

19th November 2021

9.00-10.30	Topics sessions	
	<u>Polar Biology & Oceanology Session</u>	
9.00-9.15	Marlena Szeligowska, Emilia Trudnowska, Rafał Boehnke, Anna Dąbrowska, Katarzyna Dragańska-Deja, Kajetan Deja, Mirosław Darecki, Katarzyna Błachowiak-Samołyk <i>Living in the turbid waters – the interplay between plankton and particles in Isfjorden in the summer 2019</i>	
9.15-9.30	Paulina Rudnicka-Kępa, Agata Zaborska <i>Concentrations of selected heavy metals in Van Mijenfjorden marine sediments</i>	
9.30-9.45	Lech Stempniewicz, Agata Weydmann-Zwolicka, Michał Goc, Marta Głuchowska, Dorota Kidawa, Agnieszka Strzelewicz, Waldemar Walczowski, Jan Marcin Węślawski, Adrian Zwolicki <i>The importance of advection for seabirds foraging in a high-Arctic fjord</i>	
9.45-10.00	Weronika Patuła, Agata Weydmann-Zwolicka, Piotr Kukliński, Piotr Bałazy, Joanna Legeżyńska, Lech Kotwicki, Marta Ronowicz <i>Cryptic fauna of the shallow, hard bottom. Seasonal changes of faunal community structure in Isfjorden (Svalbard Archipelago)</i>	
10.00-10.15	Małgorzata Szopińska, Aneta Luczkiewicz, Sylwia Fudala-Książek, Joanna Potapowicz, Ola Svahn, Erland Björklund, Żaneta Polkowska <i>Pharmaceuticals and another groups of emerging contaminants: Occurrence and sources in Admiralty Bay (King George Island, Maritime Antarctica)</i>	
10.15-10.30	Discussion	
	<u>Polar Permafrost and Climatology Session</u>	
9.00-9.15	Piotr Dolnicki <i>Velocity of movement of debris covers on the periglacial slopes of Fugleberget (SW Spitsbergen)</i>	
9.15-9.30	Tomasz Wawrzyniak, Marzena Osuch <i>Recent, past and future climate change impacts on permafrost in SW Spitsbergen (Svalbard)</i>	
9.30-9.45	Marek Kasprzak <i>Onshore-permafrost wedge in the coastal zone of the Greenland Sea: seawater intrusion and permafrost-base active layer</i>	

9.45-10.00	Daniel Kępski, Marek Kubicki <i>Thunderstorm activity in high latitudes registered on manned WMO weather stations in years 2000-2019</i>	
10.00-10.15	Marek Kubicki, Jerzy Konarski, Wojciech Gajda - In memory of Anna Górską and Michał Sawicki <i>Thunderstorm observation in Polish Polar Station in Hornsund (77°N, 15°E). Present infrastructure and further plans</i>	
10.15-10.30	Discussion	
10.30-10.45	Coffee break	
10.45-12.00	Plenary session - The 45th Jubilee Session of the NCU Polar Station, Spitsbergen	
10.45-11.00	Kristaps Lamsters (Co-authors: Jānis Karušs, Ireneusz Sobota, Pēteris Džeriņš, Jurijs Ješkins) <i>Thermal structure and subglacial topography of small High Arctic glaciers: Waldemarbreen and Irenebreen, Svalbard</i>	
11.00-11.15	Kuo-Chen Hao (Co-authors: Zhuo-Kang Guan, Sławomir Jacek Giletycz, Ireneusz Sobota) <i>Preliminary results of the icequakes characteristics of Aavatsmarkbreen and Waldemarbreen from the fieldtrip to NCU Polar station (September 2021)</i>	
11.15-11.30	Florian Tolle (Co-authors: Eric Bernard, Jean-Michel Friedt, Alexander Prokop, Erik Kuschel, Christian Zangerl, Christelle Marlin, Sophie, Schiavone, Songtao Ai, Agnès Baltzer, Marine Bourriquen, Madeleine Griselin) <i>Svalbard cryosphere contemporary evolutions - The canary in a warming Arctic coal mine</i>	
11.30-11.45	Michał Węgrzyn <i>Tracking pollutions with cryptogamic bioindicators on Kaffiøyra Plain</i>	
11.45-12.00	Edyta Łokas (Co-authors: Agata Zaborska, Piotr Zagórski, Ireneusz Sobota, Shiv Mohan Singh, Wiesław Ziaja, Paweł Gaca) <i>Ecological consequences of Arctic glaciers melting</i>	
12.00-12.15	Coffee break	
12.15-13.30	Plenary session	
12.15-12.30	Piotr Zagórski, Kamila Jarosz, Mateusz Moskalik, Jacek Jania, Małgorzata Błaszczyk <i>On difference of surge type behavior of three glaciers in southern Svalbard</i>	
12.30-12.45	Wojciech Majewski, Aneta Majda, Tomasz Mamos, Maria Holzmänn, Jan Pawłowski <i>Evolution and dispersal of Cassidulinidae (benthic foraminifera) in the Southern Ocean and Cenozoic climatic changes</i>	
12.45-13.00	Wojciech Dobiński <i>Permafrost active layer in glaciers: how does it look like?</i>	
13.00-13.15	Dagmara Bożek, Monika A. Kusiak, Marek Lewandowski, Wojciech Miloch, Adam Nawrot, Krzysztof Otto <i>Revitalization of Antoni Bolesław Dobrowolski Polish Antarctic Station. Phase I: recognition of the state of infrastructure and scientific potential, and testing of geophysical equipment in situ.</i>	
13.15-13.30	Discussion	
13.30-13.45	Coffee break	
13.45-15.00	Topic sessions	

Polar Biology & Oceanology Session

- 13.45-14.00 Marta Ronowicz, Piotr Kukliński, Kajetan Deja, Katarzyna Dragańska-Deja, Maria Włodarska-Kowalczyk
Arctic kelp forest in rapidly changing glacial fjord environment
- 14.00-14.15 Violetta Drozdowska, Joanna Stoń-Egiert, Karol Kuliński, Iwona Niedźwiecka, Jacek Piskozub, Małgorzata Kitowska, Piotr Markuszewski, Przemysław Makuch
Enrichment of the surface microlayer in CDOM in the Arctic regions – a case study
- 14.15-14.30 Ewa Korejwo, Dominika Saniewska, Jacek Beldowski, Piotr Bałazy, Michał Saniewski
Total mercury and methylmercury in benthic organisms from Isfjorden, Svalbard
- 14.30-14.45 Agnieszka Strzelewicz, Anna Przyborska, Waldemar Walczowski
The fate of the Polar Front: Increased presence of Atlantic Water on the shelf south-west of Spitsbergen
- 14.45-15.00 Discussion

Earth Sciences, Hydrology & Glaciology Session

- 13.45-14.00 Sara Lehmann-Konera, Żaneta Polkowska
Pollution of the Scott River with persistent toxic PAH substances - composition and origin in key points of the catchment (Bellsund, Spitsbergen)
- 14.00-14.15 Piotr Owczarek, Magdalena Opala-Owczarek, Stéphane Boudreau, Patrick Lajeunesse, Łukasz Stachnik
Complex landslide-terrain at the mouth of Great Whale River in subarctic Quebec - old problem, new discoveries
- 14.15-14.30 Marzena Osuch et al.
Projections of hydro-climatic conditions in SW Spitsbergen
- 14.30-14.45 Justyna Dudek, Michał Pętlicki
The recession of glaciers in the northern part of the Sørkapp Land peninsula, Svalbard, 1961-2010
- 14.45-15.00 Discussion

15.00-16.00 Lunch



16.00-17.00 Polish Polar Consortium – the open workshop



17.00-18.30 Polar Club of the Polish Geographical Society – open meeting & Closing Ceremony



18.30-20.00 Committee on Polar Research of the Polish Academy of Sciences – meeting

**20 November 2021**

10.00-13.00 Post-symposium trip - Sightseeing of Toruń, "Gothic to touch"

POSTERS

Rafał Boehnke, Dariusz Jakubas, Katarzyna Wojczulanis-Jakubas, Dorota Kidawa, Lech Stempniewicz, Katarzyna Błachowiak-Samołyk

Is variability of the little auk chicks' diet associated with conditions on foraging grounds near Hornsund colony (Spitsbergen)?

Agnieszka Burakowska, Marek Kubicki, Bogumiła Mysiek-Laurikainen, Michał Piotrowski, Halina Trzaskowska, Renata Sosnowiec

Man-made radionuclides ($Cs-137$, $Cs-134$) in the ground layer of the atmosphere in the polar (Hornsund, Spitsbergen) and mid-latitudes (Otwock-Świder, Poland) regions

Aleksandra Cichecka, Dominika Saniewska, Michał Saniewski

Weathering of rock in periglacial regions as a potential source of mercury in the Antarctic coastal zone

Anna Cygankiewicz-Truś, Wiesław Ziaja

Landscape transformation due to recession of the Dryadreen and Longyearreen glaciers, Nordenskiöld Land, Spitsbergen

Kamil Czarnecki, Marcin Nowak

Analysis of cloud cover on the 2013-2020 Landsat 8 imagery over the terminal zone of the Aavatsmark glacier (NW Spitsbergen, Svalbard)

Kamil Czarnecki, Ireneusz Sobota, Justyna Łukaszewska

Research on contemporary changes in the coastline of Kaffiøyra (Svalbard) in the light of remote sensing and of photogrammetry using a UAV

Sławomir Jacek Giletycz, Kuo-Chen Hao, Guan Zhuo-Kang, Ireneusz Sobota, Katarzyna Greń

Glacier retreat exposes new surface for structural geological mapping, example from northern Kaffiøyra, Svalbard

Agata Grynczel, Agnieszka Beszczynska-Moeller, Waldemar Walczowski

Drivers of sea ice variability in the north of Svalbard

Kamil Kachniarz, Mariusz Grabiec, Dariusz Ignatiuk, Jacek Jania, Dariusz Puczek

Changes in the thermal structure of Hansbreen on the basis of repeated radio-echo sounding

Klaudia Kosek, Marek Ruman, Joanna Potapowicz, Sebastian Czapiewski, Aneta Luczkiewicz, Żaneta Polkowska

Revelva catchment: chemical characteristics and changes in the concentration levels of selected pollutants over two summer seasons, southwestern Svalbard

Sara Lehmann-Konera, Łukasz Franczak, Kamil Nowiński, Mateusz Dobek, Piotr Zagórski, Żaneta Polkowska

Spatial and temporal changes of physicochemical parameters of surface and subsurface water in the non-glaciated Reindeer Creek catchment (Bellsund, Spitsbergen)

Edward Zbigniew Łaszycza

Recognition of variability in air humidity and evaporation near the Polish Polar Station Hornsund (Svalbard) using modern measurement techniques

Justyna Łukaszewska, Ireneusz Sobota, Kamil Czarnecki

Runoff from the High Arctic glacial catchment of Waldemarbreen, Svalbard

Elżbieta Machaniec, Barbara Wojtasik, Krzysztof M. Różański, Klaudia Lewandowska, Jan Wojtasik, Dorota Burska

Benthic foraminifera from sediments of selected reservoirs of Coraholmen, Svalbard as an environmental indicators

Karol Mazanowski, Maciej K. Mańko, Eva F. Møller, Agata Weydmann-Zwolicka

Gelatinous zooplankton distribution and diversity off the northeast Greenland coast

Aleksandra Osika, Jacek Jania, Joanna Szafranec
The Holocene Climate Optimum in Svalbard – a review

Weronika Patuła, Agata Weydmann-Zwolica, Marta Ronowicz
The interplay between predatory chaetognaths and zooplankton community in Isfjorden - a high Arctic fjord

Filip Pawlak, Krystyna Koziol, Żaneta Polkowska
Concentrations of organochlorine pesticides and polychlorinated biphenyls in fresh-fallen snow on the Svalbard: spatial differences

Mohit Phulara, Magdalena Opała-Owczarek, Piotr Owczarek
Growth rings of Salix herbacea as a source of information about modern environmental change, NE Iceland

Joanna Potapowicz, Małgorzata Szopińska, Danuta Szumińska, Robert Józef Bialik, Żaneta Polkowska
Occurrence and spatial distribution of polycyclic aromatic hydrocarbons in sediments and surface water on the western shore of the Admiralty Bay (King George Island, Maritime Antarctica)

Dominika Saniewska, Ewa Korejwo, Michał Saniewski, Piotr Bałazy, Jacek Beldowski
Methylmercury in the first chains of Antarctic marine coastal food web (Admiralty Bay)

Michał Saniewski, Piotr Bałazy, Dominika Saniewska, T. Zalewska, Paulina Wietrzyk-Pelka, P. Osyczka, Michał H. Węgrzyn
⁹⁰Sr and ¹³⁷Cs distribution in fauna and flora organisms of polar areas in the aspect of melting glacier as a derivative source of isotopes of anthropogenic origin

Edwin Sieredziński
1. Parasitic ciliates of krill I: possibility of detection and phylogenetic analysis; 2. Parasitic ciliates of krill II: dispersion and invasion mechanisms; 3. Parasitic ciliates of krill III: micropredation and possibility of myxocytosis; 4. Mysterious skull from Grenland: case of narluga; 5. Mysterious skull from Grenland: case of narluga

Małgorzata Szopińska, Danuta Szumińska, Joanna Potapowicz, Robert Józef Bialik, Stanisław Chmiel, Żaneta Polkowska
Heavy metals content in fresh water samples at Lions Rump headland (Maritime Antarctica, King George Island)

Mateusz C. Strzelecki, Marek Jaskólski
Tsunamis unleashed by rapidly warming Arctic degrade coastal landscapes and communities – case study of Nuugaatsiaq, western Greenland

Danuta Szumińska, Joanna Potapowicz, Małgorzata Szopińska, Sebastian Czapiewski, Żaneta Polkowska
Distribution of Persistent Organic Pollutants (POPs) in Antarctic biotic and abiotic environment (South Shetland Islands)

Joanna Tuszyńska, Jacek Jania, Małgorzata Błaszczyk, Bartłomiej Luks, Dariusz Puczo
Seasonal and inter-annual changes in surface velocity of Hans Glacier, Southern Spitsbergen

Iwo Wieczorek, Mateusz C. Strzelecki, Łukasz Stachnik, Jacob C. Yde
New inventory of glacial lakes systems on Svalbard

Aleksandra Woltyńska, Marek K. Zdanowski, Jan Gawor, Karolina Żuchniewicz, Maria Olech, Tamara Aleksandrak-Piekarczyk, Robert Gromadka, Dorota Górniak, Jakub Grzesiak
Lichen-bacteria interactions at the Ecology Glacier foreland (King George Island, Maritime Antarctica)

Aleksandra Wołoszyn
Morphological characteristic of small catchments in Wedel Jarsberg Land, SW Spitsbergen

KEYNOTE SPEAKERS

Kristaps Lamsters - University of Latvia

He is a postdoctoral researcher at the University of Latvia with a main interest in the fields of glaciology, glacial geology and geomorphology and Quaternary geology. Since 2014 he has been organizing and conducting scientific expeditions to Polar Regions with a team of scientists from Latvia. His main focus has been geophysical studies of glaciers in Iceland, Greenland, Antarctica and Svalbard. Using ground penetrating radars (GPR), unmanned aerial vehicles (UAV), and GNSS receivers we have obtained the data about the thermal structure, englacial drainage, surface and subglacial topography of several outlet glaciers and ice caps allowing the better understanding of the connection between these components and glacier dynamics.



Title: Thermal structure and subglacial topography of small High Arctic glaciers: Waldemarbreen and Irenebreen, Svalbard. Co-authors: Jānis Karušs, Pēteris Džeriņš, Jurijs Ješkins, Ireneusz Sobota

Glaciers in the Arctic are losing their mass rapidly during the last decades. Therefore it is crucial to assess the impact of global warming on the dynamics of glaciers that is mainly driven by the changes of thermal regime and drainage system. He will present the new data about the thermal structure, englacial drainage and subglacial topography of two polythermal Svalbard glaciers obtained by ground penetrating radar (GPR) during the expedition to NCU Polar Station. Polythermal glaciers in Svalbard tend to have a thick basal layer of temperate ice overlain by cold ice or consist of entirely cold ice in the case of smaller glaciers. This study reveals temperate ice in the accumulation areas of the predominantly cold glaciers. The distribution of temperate ice seems to be governed by the subglacial topography (the presence of over deepened depression), ice thickness and structure (crevasses etc.).

Florian Tolle - University of Bourgogne Franche-Comté

Florian Tolle is a geographer specialized in Arctic glaciology and morphological evolutions linked to the cryosphere. He has been on 20 field missions to the French Polar Institute IPEV Corbel station located on Brøggerhalvøya near Ny-Ålesund in Northwestern Svalbard. This station has been operated since 1963 and allowed for the monitoring of the Austre Lovénbreen glacier basin. Florian Tolle has been collaborating and leading programs working on glacier mass balance and their drivers, on periglacial morphology, and on sediment transport. From GPS surveys to Lidar measurements and drone campaigns, a wide range of tools have been mobilized to quantify this glacier's contemporary evolutions.



Title: Svalbard cryosphere contemporary evolutions - The canary in a warming Arctic coal mine. Co-authors: Eric Bernard, Jean-Michel Friedt, Alexander Prokop, Erik Kuschel, Christian Zangerl, Christelle Marlin, Sophie, Schiavone, Songtao Ai, Agnès Baltzer, Marine Bourriquen, Madeleine Griselin

Arctic amplification is causing the northern areas of the globe to warm faster than the rest. Within the Arctic, Svalbard is the area warming the fastest. It is also getting wetter. The consequences of these evolutions are multiple, and not only affect glaciers but the entire cryosphere. 13 years of monitoring in the Austre Lovénbreen glacier basin revealed strengthening trends. As the glacier is starved from snow and enduring wetter and longer melt seasons, it can't keep up with the speed at which its main drivers are evolving. Newly ice-free areas are highly dynamic and translate into landslides, hydrological

shifts, increased sediment transport and have measurable consequences all the way into the fjords. The impact of these changes is revealed through mass balance measurements and high-resolution ground morphology surveys. Small Svalbard glaciers might be the canaries of global ice masses, but the same way they were of utmost importance in the coal mines, their warning should certainly be taken seriously.

Hao Kuo-Chen - Department of Earth Sciences, National Central University, Taiwan

Hao Kuo-Chen is a specialist of mountain building and seismogenic process in areas of active collision. His research focuses on understanding the role of the physical properties and fault zone structures of the continental lithosphere on tectonic evolution of collision orogens. To do this he constructs 2D/3D crustal and upper mantle structures in Taiwan orogen and adjacent areas by using 3D seismic tomography, 2D wide-angle refraction/reflection survey, high-resolution multi channel seismic (MCS) survey with active and passive sources. Currently, he involves many projects related to dense seismic array experiments for better capturing environmental signals.



Title: Preliminary results of the icequakes characteristics of Aavatsmarkbreen and Waldemarbreen (Kaffiøyra, Svalbard) from a dense seismic array. Co-authors: Zhuo-Kang Guan, Slawomir Jacek Giletycz, Ireneusz Sobota

Dense seismic array is one of the most powerful tools for capturing active movements of glaciers. Recently, this method has been applied for many glacial environments in both of northern and southern polar regions from the regional to small scales. For the regional scale, previous studies have shown the numbers of icequakes significantly increased in past 20 years due to global warming. For the small scale, calving, cracks, icefalls, crevasses, and some other movements related to glaciers can be recorded in details. In this study, we deployed 40 geophones (10Hz and one vertical component) with 200-300m spacing around Aavatsmarkbreen and Waldemarbreen for recording seismic signals from both glaciers and ambient noises for around 20 days. This is the first time for a dense seismic experiment performed here. According to the current analysis, frequently icequakes occurred and sometimes were heard loudly during the fieldwork as well. Because of the relative quite environment, the seismic signals of icequakes were captured by most of the geophones. Besides, the signals from the rivers of the melting glaciers were recorded. P and Rayleigh waves from icequakes are clearly distinguished from the seismic signals. Based on those signals, locations of icequakes and shallow seismic velocity structures can be well determined. For better constraining seismic velocity, we performed seismic refraction experiment near the NCU polar station. Around 20 days deployment, the data itself already contains valuable signals for further analysis.

Michał Węgrzyn - Jagiellonian University in Kraków

He works at the Department of Polar Research and Documentation in the Institute of Botany of the Faculty of Biology at the Jagiellonian University in Kraków. His scientific interests focus on the lichens in mountain areas and since 2008 he has also conducted his research in the Arctic. He participated in 7 science expeditions to the Svalbard. He is currently studying the use of cryptogamic organisms as bioindicators of air pollution in polar regions. He is also interested in the lichen reactions to the changing environmental factors in the polar areas and the cryptogam roles in the processes of primary succession in the glacier foreland.



Title: Tracking pollutions with cryptogamic bioindicators on Kaffiøyra Plain.

*Many studies confirm the changes that occur in the tundra communities and the glacier moraines under the influence of climate fluctuations in the last 30 years. The increasing of the temperatures in the Arctic winter also shortens the period of the snow cover presence, and in many areas, it causes an increase in the amount of rainfall. Higher temperature and greater water availability increase the production of primary tundra vegetation, which in turn stimulates the growth of herbivore populations. The increase in the number of reindeer herds (*Rangifer tarandus platyrhynchus*) is considered to be one of the causes of changes in the species composition of tundra communities on Svalbard. The increasing grazing of lichens in winter, contributes to a noticeable reduction in the range of cryptogams, such as *Cetraria islandica*, *Flavocetraria nivalis*, *F. cucullata* and many species of the genus *Cladonia*, which due to their prevalence in the tundra communities until the 1990s, were included as the best bioindicators for measure the levels of the trace element pollution and radionuclides of the Arctic environment. At the same time, the spread of other species like *Cetrariella delisei* is observed thanks to reindeer avoidance of this species. Due to growing reindeer pressure as well as the need for search of a new bioindicators of pollutants, these studies were devoted to investigation of contaminant levels in the tundra of Kaffiøyra Plain as well as determination of the best pollution bioindicator for the Arctic.*

Edyta Łokas - Department of Mass Spectrometry in the Institute of Nuclear Physics Polish Academy of Sciences in Kraków

Dr Edyta Łokas works at the Department of Mass Spectrometry in the Institute of Nuclear Physics Polish Academy of Sciences in Kraków. Her scientific interests focus on environmental radioactivity in polar and high-altitude regions. She is particularly interested in different aspects of cryoconite radioactivity; its sources, variability among glaciers in different regions of the world, environmental fate and suitability as indicators of environmental change. Dr Edyta Łokas participated in two scientific expeditions to Spitsbergen. She participates in the AMAP Radioactivity Expert Group.



Title: Ecological consequences of Arctic glaciers melting. Co-authors: Agata Zaborska, Piotr Zagórski, Ireneusz Sobota, Shiv Mohan Singh, Wiesław Ziąja, Paweł Gaca

Although the polar regions are not industrialized, numerous contaminants originating from human activity are detectable in the biotic and abiotic components of the Arctic. Two of the major contaminant groups of growing concern in the polar regions are heavy metals and radionuclides. Apart from natural source (rock weathering), heavy metals origin from fossil fuel combustion, mining and metallurgic industry while radionuclides mainly origin from global fallout (nuclear weapon tests), nuclear accidents (eg. Chernobyl), and nuclear fuel reprocessing treatment plants. The largest part of contaminants is transported to the polar regions from global sources but several local sources (eg. past nuclear installations at Novaya Zemlya) may be also locally important. Radionuclides and heavy metals are transported to terrestrial environment mainly by atmosphere. Coastal areas can be also influenced by metals from marine sources eg. sea aerosols. Cryoconite are the holes in the glaciers and ice caps that accumulate dust (mineral and organic) from the wet and dry air precipitation. After deposition the dust containing contaminants is trapped by extracellular polymeric substances secreted by microorganisms living in cryoconite. The contaminants trapped in the cryoconite may be stored inside the hole for many years. The retreat of glacier can thus lead to discharge of radionuclides and metals in the terrestrial and marine ecosystems. The knowledge on cryoconite is thus important to fully understand the fate of these substances in the environment during the current climate change. Our research reveals widespread incidence of fallout radionuclides (^{137}Cs , Pu isotopes, ^{241}Am and ^{210}Pb) and heavy metals (Cd , Pb , Zn , Cu) in cryoconite across numerous sites in the Svalbard. The levels of some radionuclides found in these sites are orders of magnitude higher than those detected in many other, non-glaciated environments, raising important questions on the role of glaciers, and specially cryoconite, in concentrating contaminants to levels much above those found in the surrounding environment.

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Polish Polar Consortium
– the open workshop
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WALNE ZEBRANIE KLUBU POLARNEGO PTG (19.11.2021, 17.00-18.30)

Porządek zebrania:

- Otwarcie zebrania.
- Wspomnienie o tych, co odeszli...
- Wyróżnienia PTG i przyjęcie nowych członków Klubu
- Wybór przewodniczącego zebrania i protokolanta
- Podjęcie uchwały w sprawie porządku obrad (U1) sposobu głosowania (U2)
- Sprawozdanie merytoryczno-finansowe za okres 2016-2021
- Sprawozdanie Komisji Rewizyjnej
- Dyskusja nad sprawozdaniami
- Głosowanie nad sprawozdaniami w celu ich przyjęcia lub odrzucenia (podjęcie uchwały U3 ws. absoltorium)
- Wybory Zarządu na kadencję 2021 – 2024 (uchwała U4)
- Wybór Organizatora XXXIX Sympozjum Polarnego (uchwała U5)
- Wolne wnioski



Visit the EU-PolarNet 2 information point at the 38. International Polar Symposium in Toruń!

The primary objective of EU-PolarNet 2 is to develop the foundations for a common European research policy and a multifaceted and complex presence in the polar regions (incl. joint strategy, sustainable policy towards the polar regions, expert scientific advice to European and national decision-making bodies and dissemination of these activities in society).

The result of the project will be the creation and long-term maintenance of the European Polar Coordination Office (EPCO), an office coordinating the implementation of the European Polar Strategy.

The project coordinator is Dr. Nicole Biebow from the Alfred Wegener Institute (AWI) in Germany. At the national level, the coordinator is the Centre for Polar Studies at the University of Silesia in Katowice, acting to benefit the entire polar community in Poland.



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