GLAERE – activities at IOPAS in 2016

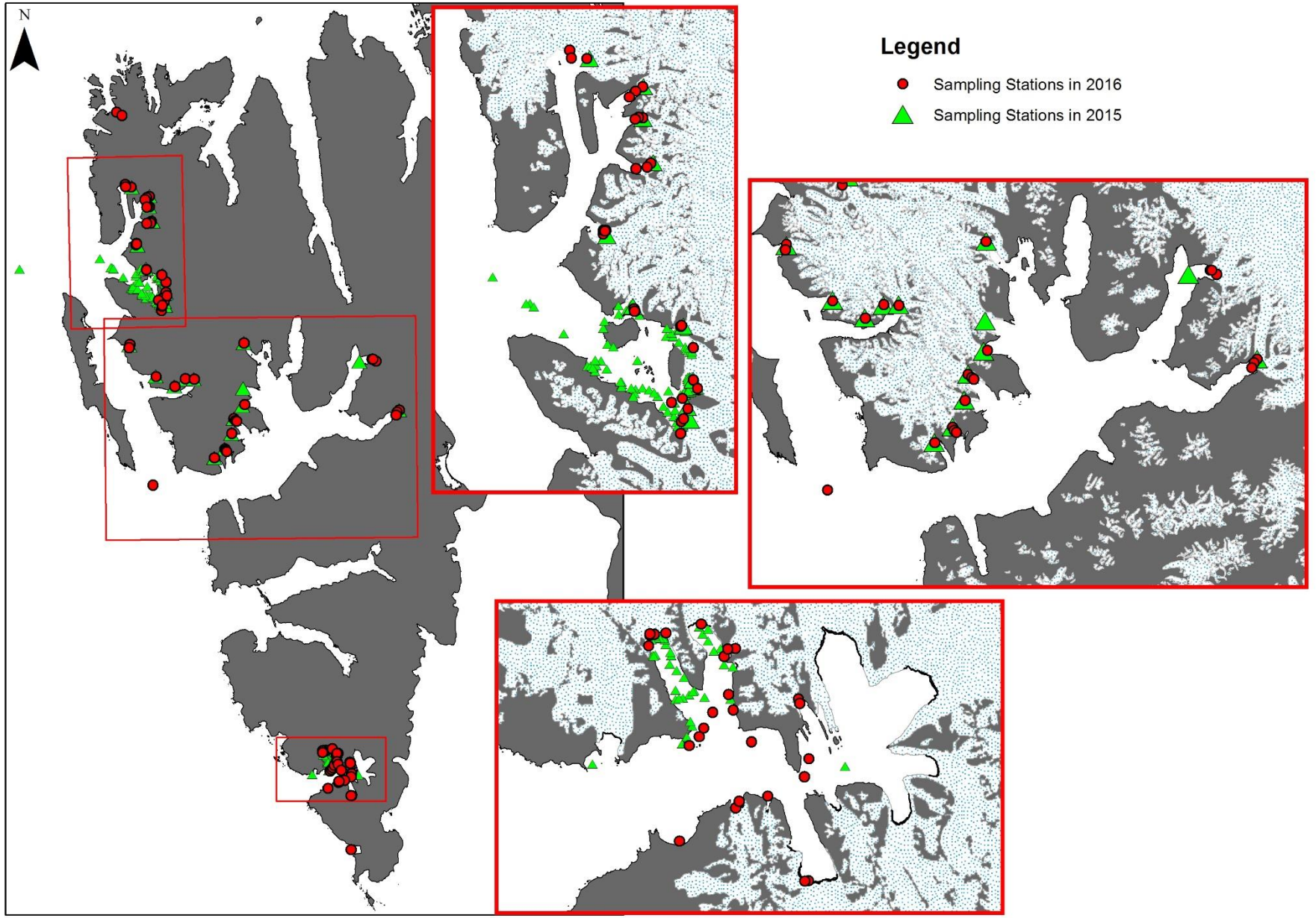
reported by J.Marcin Weslawski , 23rd Jan. 2017

Field work 2016

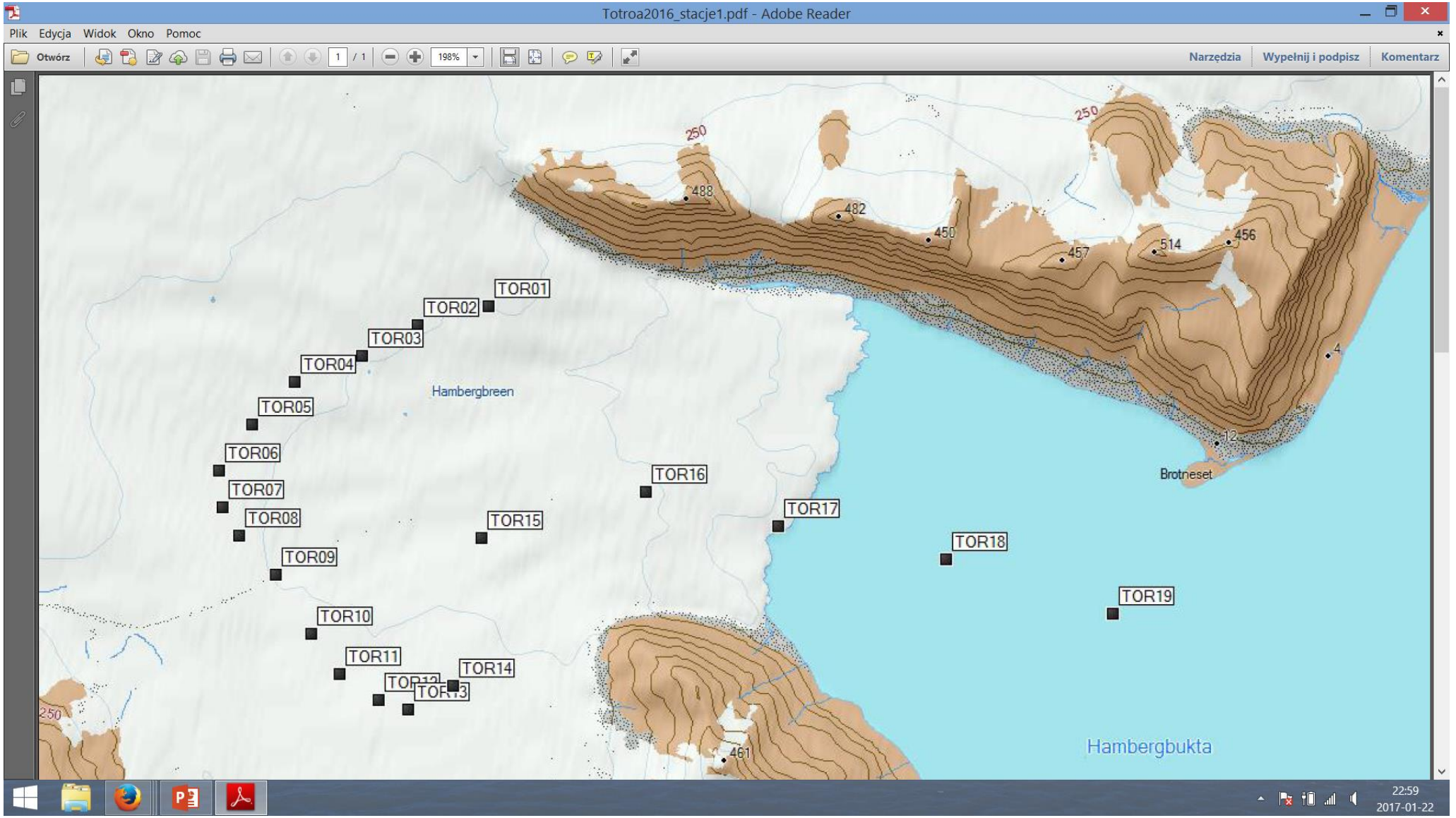
Besides r/v OCEANIA also citizen science activity

In situ glacial suspensions optical profiles, samples and associated satelite imagery

Kasia Dragańska & Sławek Sagan

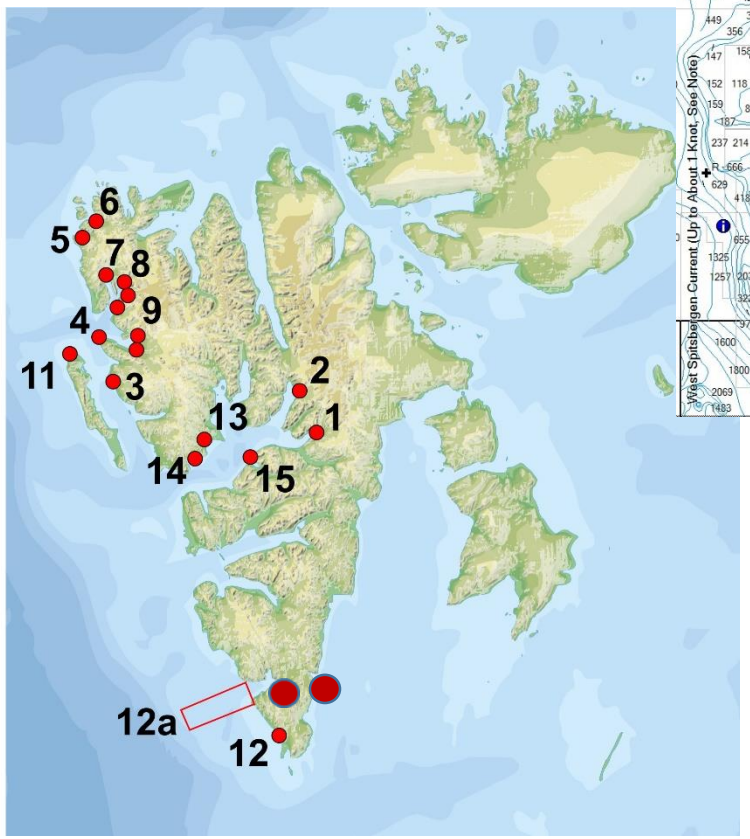


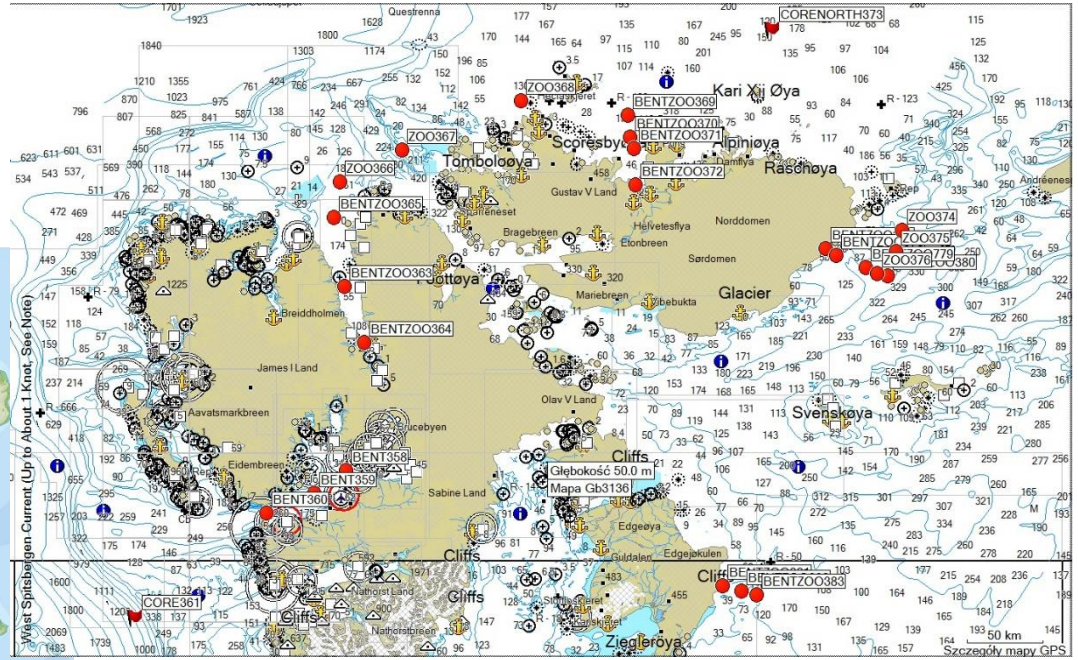
Detail of s/y Toroa CTD profiling at Hambergbukta/ Brepolen at Hornsund – Waldek Walczowski



Oceania 2016 and yachts (Barlovento, Toroa, Magnus Zaremba, Mirakulix) – CTD profiles, sediment and suspensions sampling

1 Tempelfjord
2 Adolfbukta
3 Hornbaeckbukta
4 Ny Alesund
5 Magdalenafjorden
6 Smeerenburgfjorden
7 Lillehoekbreen
8 Kollerbreen
9 Mayerbreen
10 Kongsfjorden
11 Fuglehuken
12 Olsokbreen
12a plankton profiles
13 Borebukta
14 Ymerbukta
15 Longyearbyen





Automated craft for CTD and suspensions profiling in Hornsund – Jacek Urbański & team

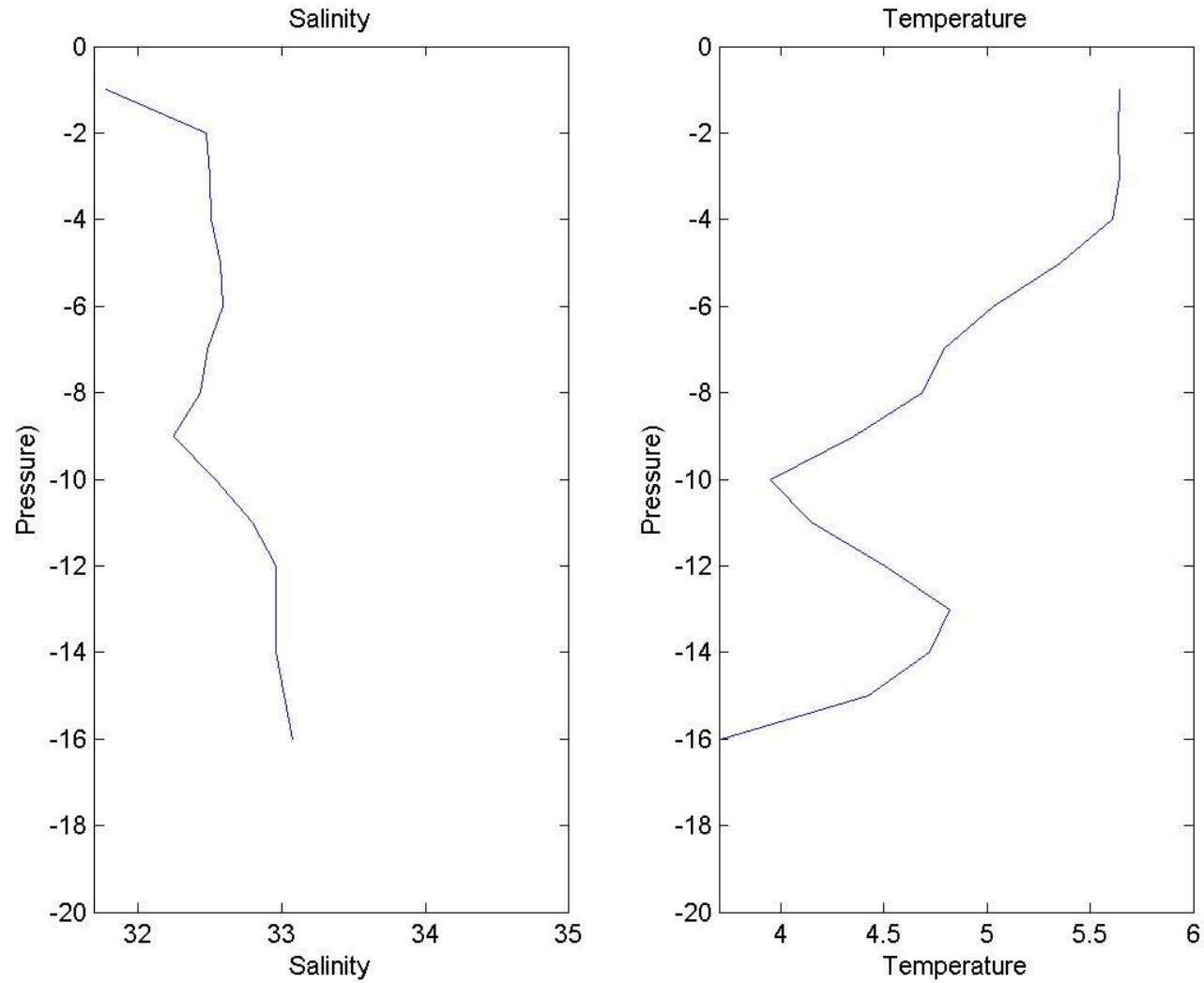
Laboratory and office work

Open, web based catalogue of tidal glacier bays – Jan Rodak, work in progress

date	long	lat	name	depth	Topog.	sechchi	Sal.	Temp.	birds	photo	observer

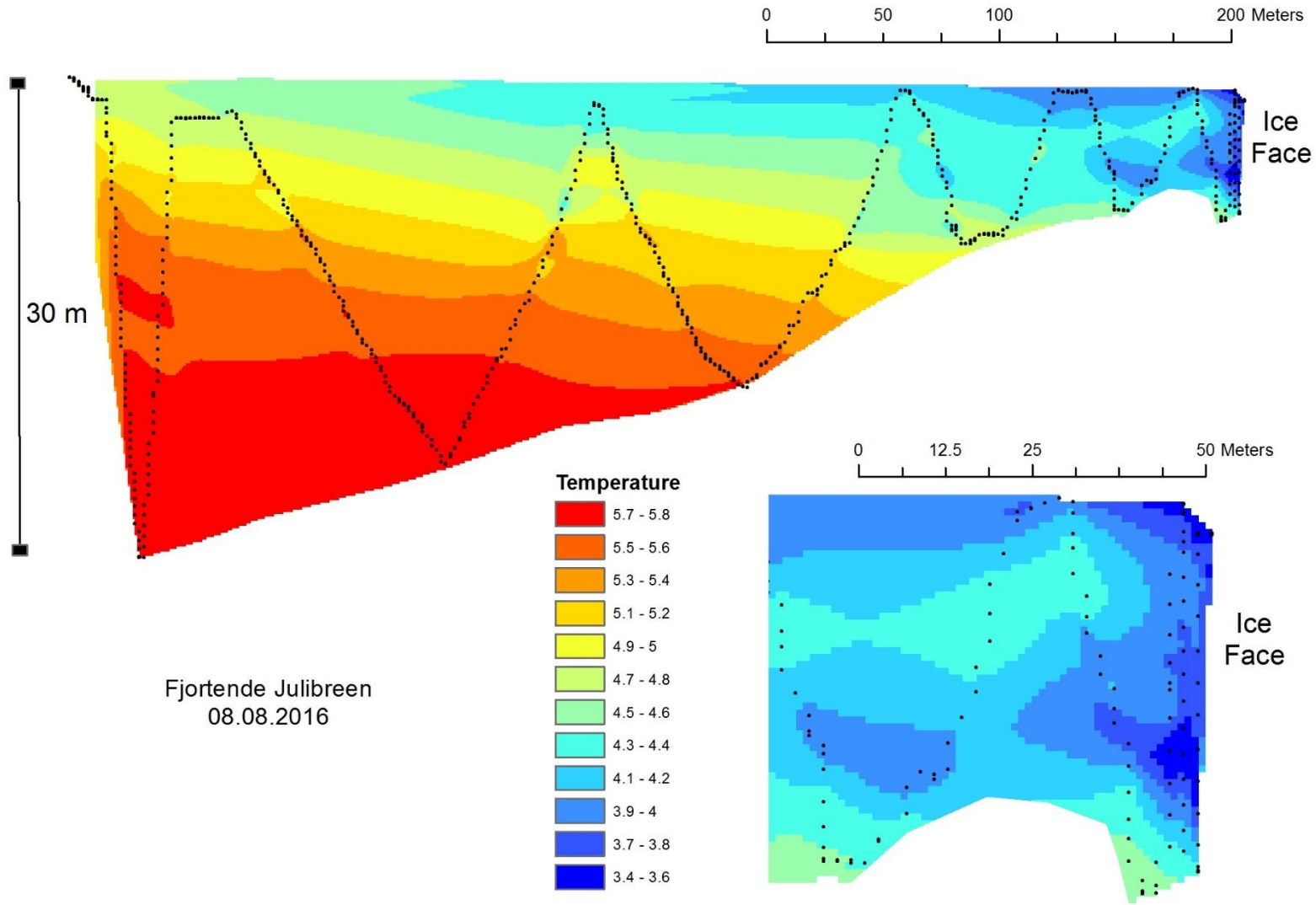
Over 500 photos from 2015 and 2016

Typical CTD file from the catalogue (date, hour, position, gear, contributor…)

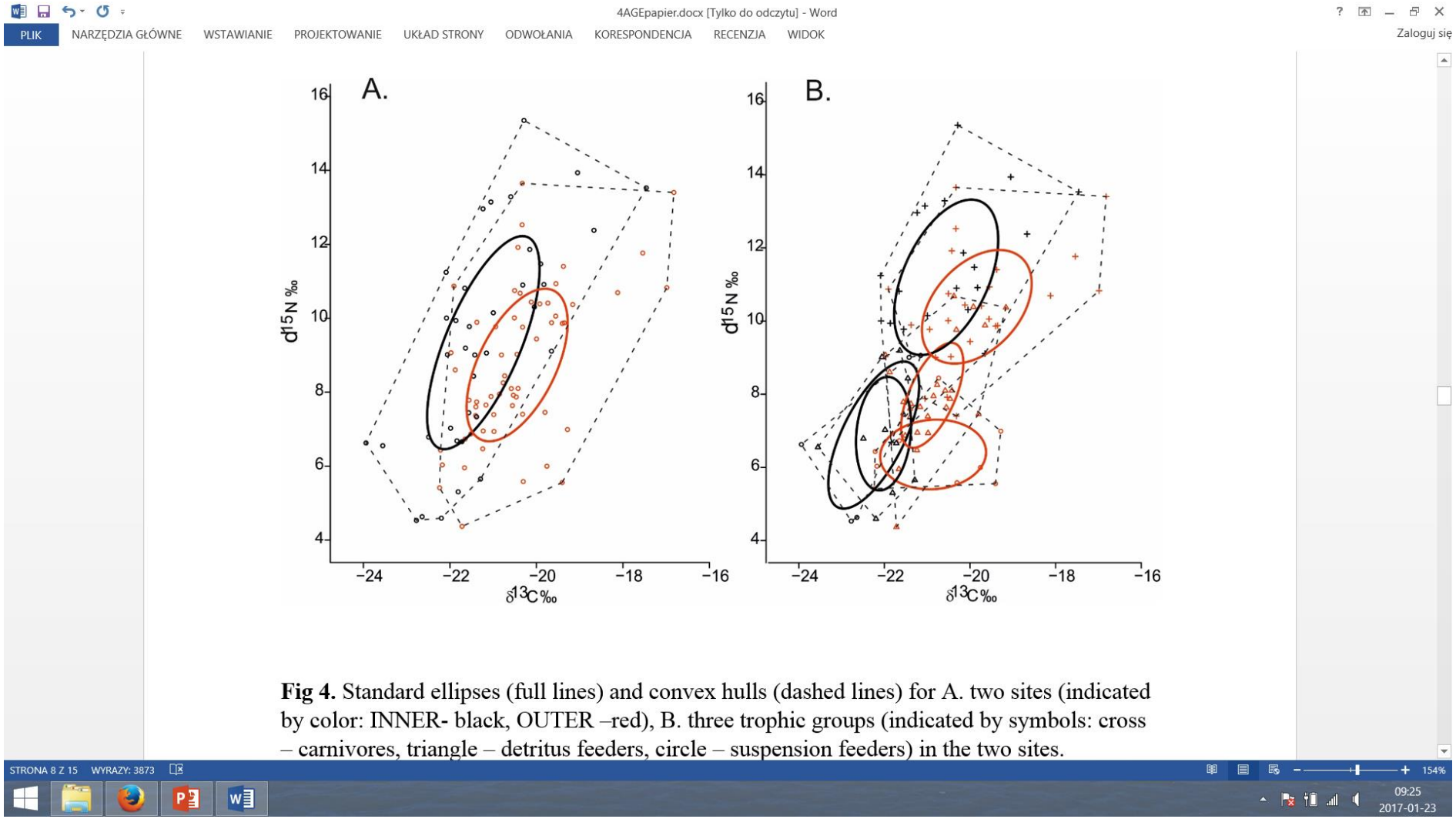


Example of glacier photos taken from the yacht - from catalogue by Jan Rodak

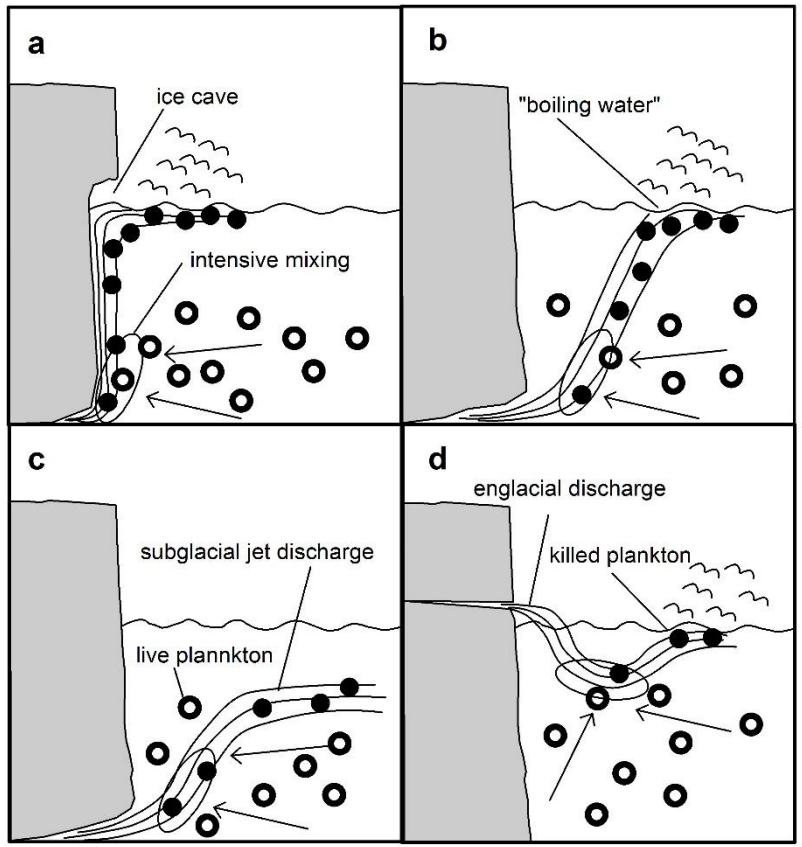
Walczowski et al. 2017 – cold water at glacier's face prevent the warm marine water from melting the ice

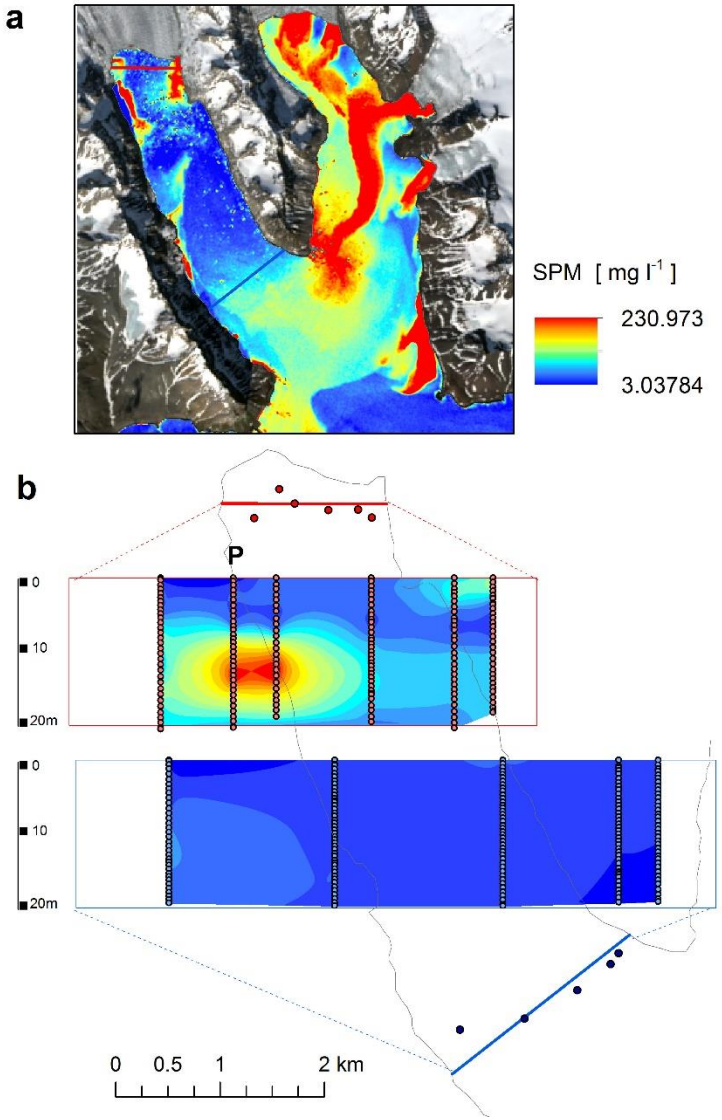


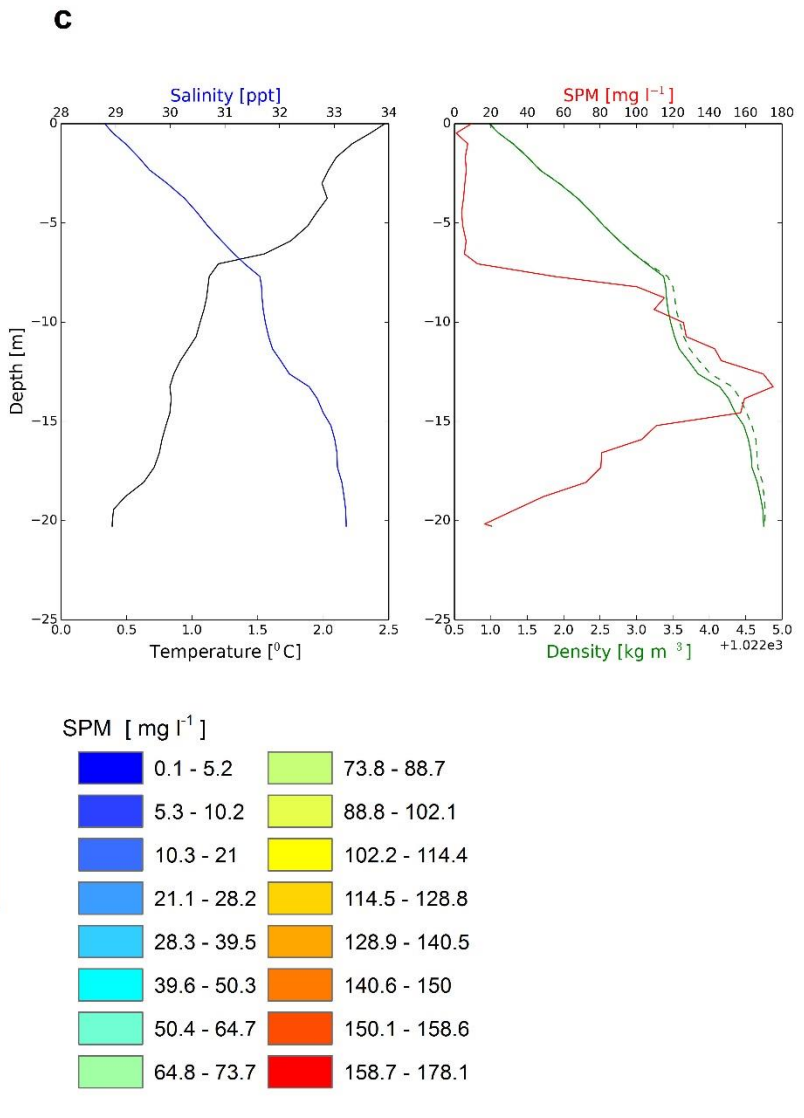
Functional similarity between species poor glacial bay (inner) and diverse outer fjord in isotopic picture of the benthic food web – Włodarska- Kowalczuk et al. In prep.



Urbanski et al. 2017 –
Fluvial discharge…

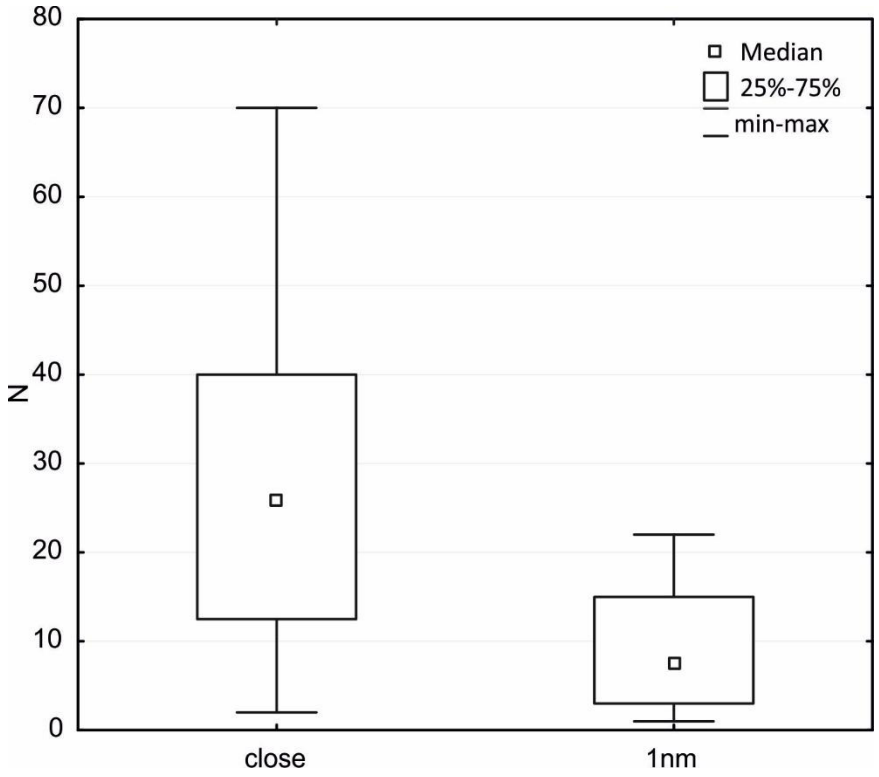




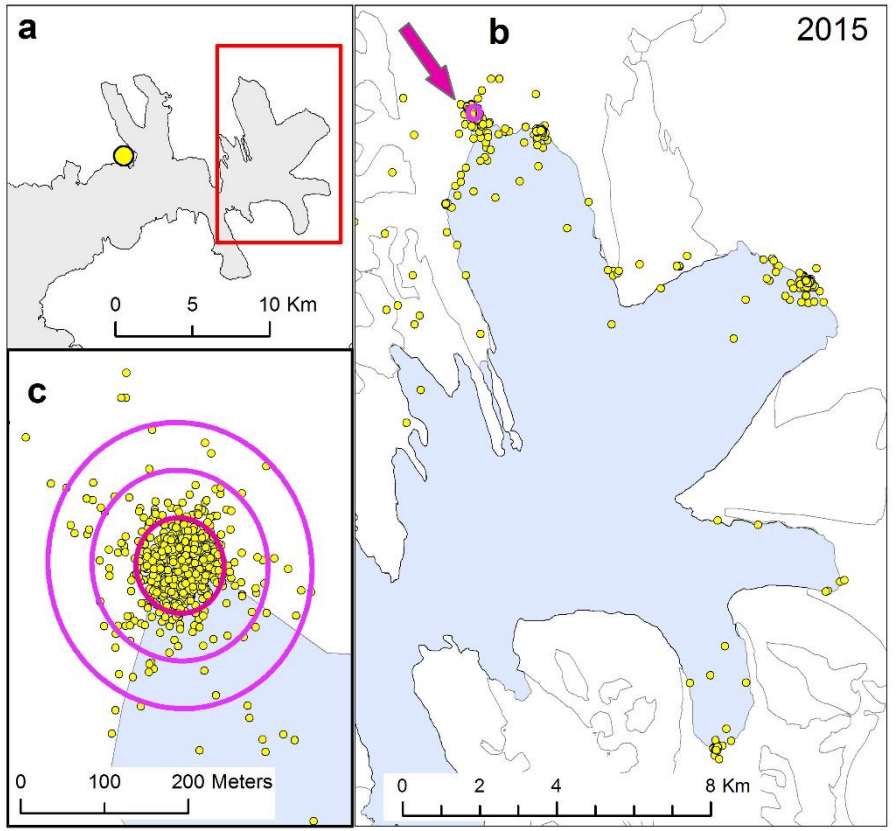


Urbanski J., et al. 2017 – Fluvial discharge.. In review NC

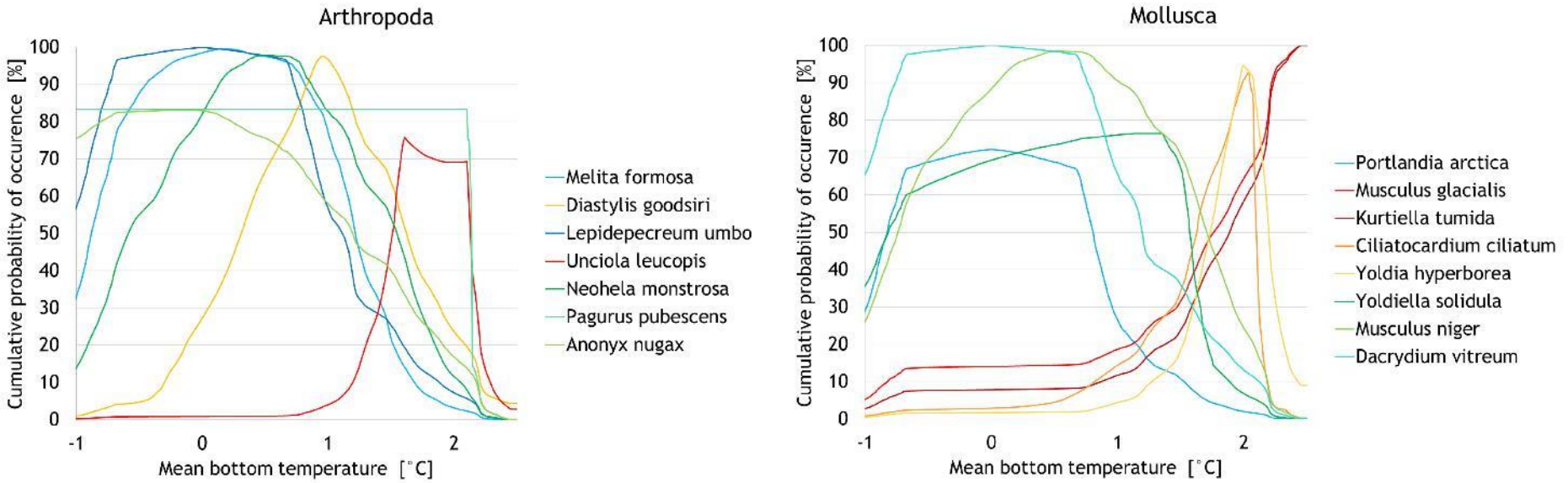
Near surface macrozooplankton density (individuals per sample) – „Close” – stations G near the glacier cliff, 1nm – stations G-control off the glacier

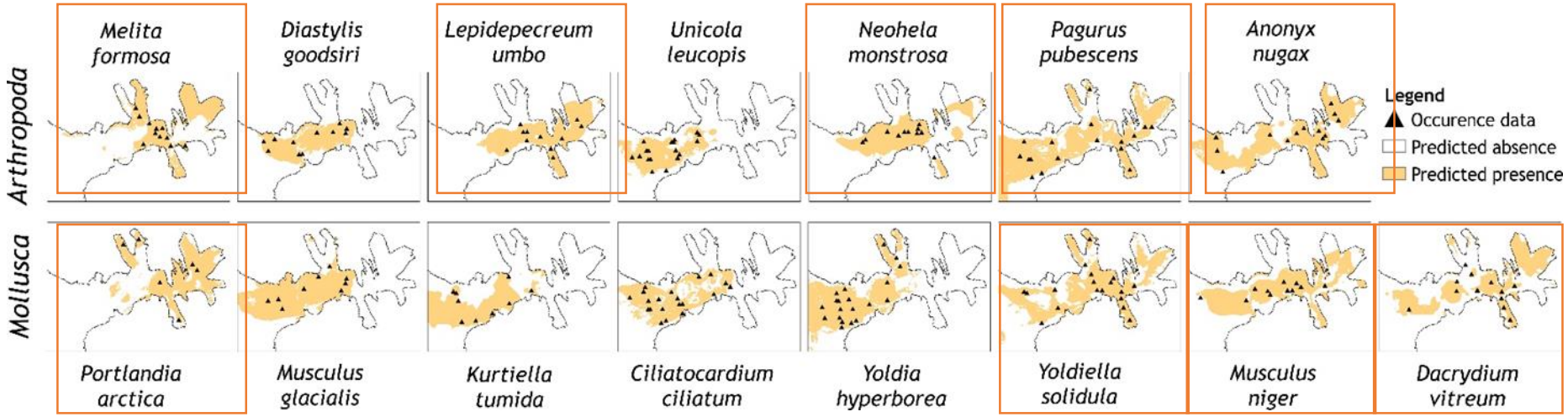


Kittiwake concentration near glacier at Brepolen



Response curves for mean bottom temp. (derived with Maxent modeling)





Piszewska et al., Oceanologia 2017, accepted

Szczucka et al. 2017 ACOUSTICAL ESTIMATION OF FISH DISTRIBUTION AND ABUNDANCE IN TWO SPITSBERGEN FJORDS. Oceanologia, accepted

Fish biomass estimated to be 188 ton in summer 2015, higher than in 2013 and 2014

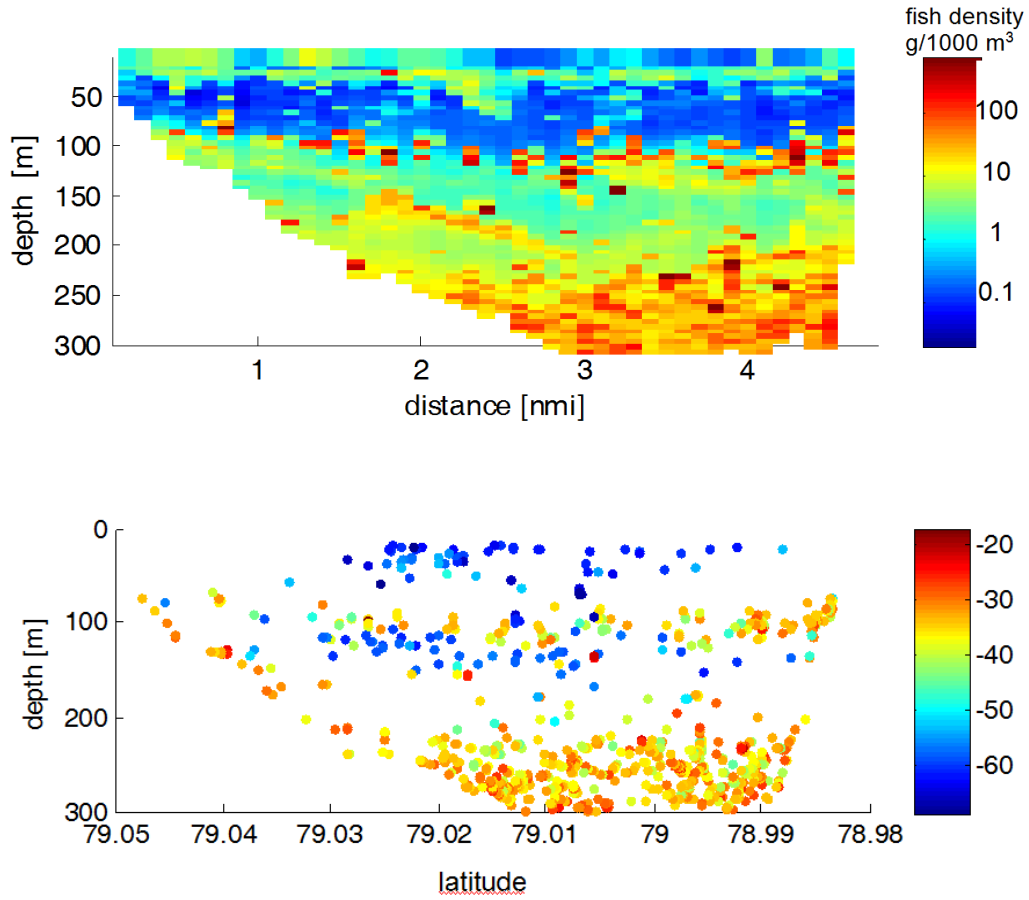


Fig. 7. (a) Fish biomass along external transverse transect of Kongsfjorden in 2014. S_V integrated horizontally over 0.5 nmi and vertically by 5 m depth.

(b) Fish target strength vs depth for the same transect

Climatic Change
pp 1–16

Marine birds and mammals foraging in the rapidly deglaciating Arctic fjord - numbers, distribution and habitat preferences

Authors | Authors and affiliations

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Abstract

Climate-induced glacier retreat is considered in the context of its reducing the sea-ice contact zone used by marine birds and mammals as important foraging grounds and may cause declines in their numbers. To test this hypothesis, a survey was conducted in diversified habitat
mamm
pursuit-divers. Deep tidewater glacier bays were used by the most numerous but least

Papers to be submitted before April 2017

Deja K. et al. – Nearbottom occurrence of krill in glacial bays on Svalbard. Completed for subm.

Włodarska MK et al,. Trophic diversity - decoupled from taxonomic and functional diversity? Isotope niche traits in Arctic coastal benthic consumers. Journal of Marine Systems - submitted

Weslawski JM et al. Can seabirds modify carbon burial in fjords ? Oceanologia 2017, accepted

Drewnik A., et al. Glacial bays as refugia for cold water species ? Oceanologia 2017, accepted

Szczucka et al. 2017ACOUSTICAL ESTIMATION OF FISH DISTRIBUTION AND ABUNDANCE IN TWO SPITSBERGEN FJORDS. Oceanologia, accepted

Urbański J. et alSubglacial discharges creates fluctuating foraging “hot spots” in tidewater glacier bays. Nature Communications – in review

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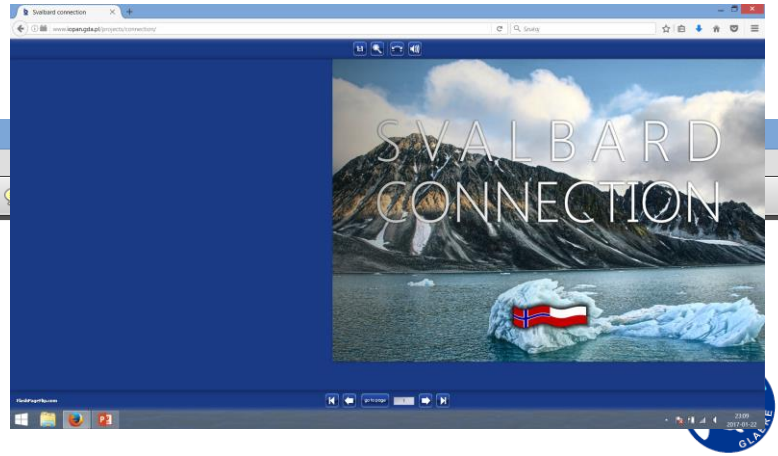
Coffe table book – to be printed in February 2017;
http://www.iopan.gda.pl/projects/connection/



Plik Edycja Widok Okno Pomoc

Otwórz 8 / 10 102% Narzędzia Wypełnij i podpisz Komentarz

GLAERE

Glaciers as Arctic Ecosystem Refugia

Project funded by Norwegian Funding Mechanism in 2013 nr DZP/POL-NOR/1876/2013 6th August 2013, RIS 6783

Main message

Seabirds feeding near the sea surface, ringed, common and bearded seals, belugas and polar bears all need glacial bays, where their food (krill) is concentrated. Such hotspots are not stable: they depend on the one hand on food being advected from the adjacent shelf, and on other on the hydraulic pressure of the meltwater that concentrates the food. The depth of the adjacent water is of key importance for the development of this phenomenon..

Participants

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23:05
2017-01-22

Questions raised in May 2016, answers as of Jan. 2017

- Does freshwater and suspensions correlate lineary ? **NO**
- What is the food of large asteroids near glaciers ? **Zooplankton**
- Where are the fish in close proximity to glacier ? **They may come close**
- Considering low temperaturę and food abundance what is the growth rate of fish ? – **work in progres- larval otholits reading**
- Is the macroplankton concentraton only a summer phenomenon ?

No, krill is present in winter as well

- Retreating glaciers – will it make fjords clearer ? – **on the surface maybe**