Minutes from GLAERE, TIGRIF and TW-ICE meeting Tromso 23rd 2017

Harald Steen – opening – kittiwakes data loggerrs in KGF, North Kongsvegen photoghraphy, CTD, rosette and plankton wp-3 net with helicopter deployment.

Jan Marcin Węsławski – CTD, suspensions and bird counts from the yachts and Oceania at 19 glacier fronts around Spitsbergen, close up CTD profiles from automated craft (ROV), work in progress on data analyses on macroplankton and fish occurrence and food web in glacial bays, cold water species occurrence modeled fro Hornsund, indicating glaciers importance.

Pedro Duarte – 120mg/dm3 of suspensions near the glacier front, more carbon near the glacier in suspended matter, low N concentration. Ammonia values near the glacier 5 to 6 umol. High ammonium levels might be related to mineralisation of POC. Percent of zooplankton in plume found dead in samples (stained red). Probably refractory POC colonised by microbes. Low salinity killing the zooplankton is not common as the freshwater is mixing rapidly. What is the consequence of turning tidal to landlocked glacier. To do: different organic matters sources, refractory and labile POC. Microbial community to be studied, more study is needed to study the dilution of nutrients.

Alistair Everett - Seals and plumes- five seals tagged, highest number of dives in proximity to intensive plume. When the plum outflow is high, the seals dive, less actively with low outflow. Seals dive to the depth of food occurrence and then resurface.

Katrine Husum – AUV – seabed mapping. Fluvial sedimentation in Dicksonfjord, Konsvegen in 2017. Debris flows in Fjortendejulibreen recorded on multibeam AUV. Delicate iceberg scours of 0,5m depth and less. Crevasses squeeze ridges – sharp erected ridges. Debris flow lobes. Bioturbated fine-grained muds. AUV can record fish as well.

Eva Fuglei – arctic foxes and glacier fronts – Svalbard foxes have high inputs of marine carbon intheir diet. COAT program. Response of tundra ecosystem to climate change. Rain on Snow (ROS) will produce more carcasses and impact foxes. Ice loss reduce migration in winter. Fox walking from Svalbard (KGF) to NovaiaZemlia – in 1990 (shot by Russian soldier) Svalbard foxes are linked with Taimyr, Greenland, have been recorded at 86 oNorth on ice. Foxes can detect food from 40km distance on ice. Success with finding seal pups (32%) better than in polar bears (8%) – Lydersen and Gjertz 1986.

Christian Lydersen & Kit Kovacs – tagging of 18 white whales completed, recent movement shows exploration of open water fish, not just following the coast as in the past – response to Atlantic water inflow (and associated temperate schooling fish). Ringed seals are more confined to glaciers. Noise may mask animals from echolocating predators (Alaska case with orcas and harbourseals). Five ringed seals instrumented in 2016 - moving between glaciers. Polar cod likely still key as a food source for them.

Jack Kohler – runoff modeling in multidecadal scale (1km resolution). Liston and Hiemstra 2011, snow model applied. In summer the Kongswegen gives 300 to 500 m3/sek. Bayelva discharge measurements – Novak and Hobson There is more discharge coming now with a peak in July. Glacial outflow calculation from salinity drop in the fjord will be made in TIGRIFF. Kongsbreen North becomes a deepest basin, there the subglacial plume in the deep glacier will not reach the surface.

Plans for the 2017 -

LANCE in Kongsfjorden near the glacier between24th July to 8th August 2017 to do a series of CDT casts and take water samples from the inner fjord and–helicopter will be used to continue the study of the water masses in front of the glacier. , seabed mapping and photography mounted on AUV.

OCEANIA in Hornsund, KGF and North Svalbard glaciers in late July – mid August, - baited and non baited traps and lander photography – time lapse- Still camera on tripod to detect the food falls.

White whale and ringed seal tagging will be continued (co-operatively financed with ICE-whales, TIGRIF and TW-ICE).

Seabird tagging will also continue with TW-ICE funding, while GLÆRE analyses continue on already assigned financing.

At IOPAN – the catalogue of tidal glacier bays – consult the categories of glaciers, basins, etc –

Proposed entries:

Name of the bay

Geographic position (lat, long)

Date and hours of observation

Observer, vessel

Photos of the glacier front – enclosed files

CTD profile – enclosed files

Number of kittiwakes observed

Number of other bird species

Sea mammals – species, number

Floating ice in the bay (dense over 7/10, medium 3-6/10, low – below 3/10)

Water transparency – Sechchi disc (m)

Total suspensions load (mg/dm3)

Mineral suspensions load (mg/dm3)

Type of nearest bedrock

Plankton in the bay – enclosed files

Benthos in the bay – enclosed files

Photos of the seabed – enclosed files

Exposure to the open sea (fetch) – high, medium, low

Type of the glacial bay

- A - shallow (below 30m depth) with wide open contact to marine waters
- B - shallow (below 30m depth) with partly restricted (sill, barrier island)contact to marine waters
- C - moderately deep (31 to 100m) with wide open contact to marine waters
- D - moderately deep (31- to 100m) with partly restricted contact to marine waters
- E - deep (over 100m depth) with completely open contact to marine waters
- F - deep (over 100m depth) with partly restricted contact to marine waters

Tidewater glacier

Frontal advance/retreat

- A: very active (over 100m retreat per year)
- B: moderately active (20 to 100m retreat per year)
- C: slow (below 20 m retreat per year)
- D: surging
- E: advancing

Speed

- A: fast (>300 m per year)
- B: medium (30-300 m per year)
- C: slow (<30 m per year)

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