Kongsfjorden Symposium 25 september 2015

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Joined latter: Pedro Duarte, Marzena Kaczmarska, Caixin Wang, Vittorio Pasquali

This list of participants is referred as "*the group*" hereafter in this document.

1. Organisation of the flagship

Nysmac suggests to have a leader and a co-leader, a scientific committee and some working groups.

Kai Bishop has accepted to be the leader of the Kongsfjorden System flagship. Geir Gabrielsen has accepted to be the co-leader of the flagship. The group emphasized the value of having not only biologists in the flagship leading group and committee. All fields within marine science should be represented in the group.

The scientific committee should have 4 to 5 members. Haakon Hop has accepted to be a member of the committee. Participants from countries other than Norway or Germany should be part of this committee as well. Olivier Chastel (CNRS, France) has been contacted and asked to become a member of the committee. The importance of marine biology for several countries is uncertain. Kim Holmen will provide one name for a possible member of the committee.

Then, some working groups or at least a mailing list should be set up so that everyone can stay aware of what is going on with research in the Kongsfjorden system. The need to include all research fields and groups working with the marine environment was stressed. For example, we should not forget people working with biochemistry which is a new topic withint the Kongsfjorden system flagship. The objective is now to make this mailing list. Svalbard Science Forum (RiS database) will be contacted to help in making the marine science list.

Note: it has been suggested that new projects and new published papers could appear on the Nysmac webpage. However, this will require a coordinator (e.g. Christina Pedersen) and a large amount of work. In a first step, a mailing list putting everyone in touch might be enough. The Nysmac Webpage can stay as simple as it is now but at least, reports provided online should be updated.

2. Prioritized tasks for the flagship

First, the group reviewed the research priorities and research programs listed in 2008 at the establishment of the flagship program to assess which ones have made good progress (green color below) or no progress (red colour).

The flagship stated the following future research priorities

- A combination of atmospheric measurements of long-range pollutants with measurements of contaminant levels in the biota

Overall, this work is going on (NILU) but there is a need to improve the accessibility to the data (time-series). The group also mentioned that particle (e.g. black carbon) transport should be monitored. The question is how realistic is this?

- Studies of feedback mechanisms from the biosphere to the atmosphere

It is unclear what has been achieved in this field?

The group still considers this field as a research priority. More specifically the interactions between marine and land/terrestrial systems must be studied more intensely (e.g., energy transfer, importance of glacier run offs, …). This will imply collaborative work between flagships).

- Investigation of interactive effects of rising temperatures and enhanced UV- radiation

The effect of rising temperatures on seabirds and seaweeds has been to some extent addressed. UV-radiation is likely a more important parameter for terrestrial systems. Overall, lots of work is going on in this field and it might be a good timing to integrate our knowledge and data into a more integrative approach (through modelling potentially).

- Studies of changes in the pelagic fish community of Kongsfjorden

Even if some data may exist and some work (e.g. changes in kittiwake diets) have been done, there is clearly a lack of knowledge regarding the changes in the pelagic fish community in Kongsfjorden. This needs to be developed.

- Studies of organic carbon mineralization

There is a clear lack of studies and knowledge here and this should be developed (and the carbon should not be the only focus).

- Studies of water exchange processes in the fjord and small scale turbulences

There might be very good knowledge for larger-scale phenomenon in the inner part of the fjord. However, how can we access to those data?

When it comes to small scale turbulences (e.g. run off at glacier fronts, turbulences in kelp forests), there is clearly a need for more studies as nothing is done in that field.

- The use of clams as environmental indicators

It is likely that nothing has been done here and the group questions the relevance of having such a narrow topic as a research priority for the flagship?

- A monitoring programme for phytoplankton

It sems that some work has been done (e.g. work from the Dutch group, work based on fluorescence, sampling done by AWIPEV for Polish group, MOSJ cruise led by P. Assmy in July). But it is unclear what data do exist and what are the length of the time series if any?

There is a need for long-term monitoring that investigates not only the inter-annual changes but also the seasonal changes in phytoplankton.

- Monitoring and modelling of the underwater light climate (with FS Atmosphere)

There is no regular programme here but some work has been done. This needs to be checked in more details.

In this context, this is important to link sea ice in the fjord with different processes, biological or not, and the light will be an important factor to consider here

- Land-Fjord interactions (impact of terrestrial run-off and freshwater discharge; with FS Cryosphere & Terrestrial Ecology)

One project led by Jack Kohler (TIGRIF) is related to this but otherwise, there is virtually nothing done in this field. This is however an important topic that needs to be addressed more thoroughly (e.g. importance of glacier run offs, sedimentation, pollutant transport…).

- Studies on seasonal drivers of Kongsfjord ecosystem functioning, including overwintering strategies in benthic and pelagic communities (with FS Terrestrial Ecology)

UNIS / J. Bergen group have done some work here (Polar night project) but the focus was on the pelagic community. Kai Bishop et al. will start a project on benthos from 2016 onwards.

Note: the need to study what is going on outside the fjord and basically how much is coming from the outside(boundary effects) need to be taken into account if some modelling of the Kongsfjorden system is tobe developped.

Proposed projects in 2008 to fill the documented knowledge gaps (see Flagship System report, 2009):

Projects 3-1: not going on / To be confirmed.

Project 3-2: not going on / To be confirmed

Project 3-3: not going on / To be confirmed.

Project 3-4: going on (Geir Gabrielsen / NPI and Jan Ove Bustnes / NINA)

Project 3-5: going on.

Project 3-6: going on / To be confirmed

Project 3-7: not going on / To be confirmed

Project 3-8: going on / To be confirmed (contact J. Berge. This might be the Polar Night project?)

Project 3-9: going on / To be confirmed

Then, the group discussed potential new research priorities that should be addressed within this Kongsforden system flagship. Several ideas have been proposed that could be summed up in 5 points:

- **Modelling of the Kongsfjord ecosystem**
- **Land-Fjord interactions**
- **Seasonality and seasonal drivers of Kongsfjord ecosystem functioning (incl. role of sea ice cover and dynamics)**
- **Biodiversity changes and adaptations in Kongsfjorden**
- **Kongsfjorden in a pan-Arctic perspective**

To move forward, the group discussed potential actions. Everyone agreed that it is too early to come up with specific research projects now but there is needs for workshops. These workshops should include participants from other flagships. Four workshops have been proposed:

- Workshop focusing on "Seasonality". It should bring people from atmospherics science and glaciology.
- Workshop on "land/fjord interactions"
- Workshop on "Adaptation to environmental changes in the Arctic"
- Workshop "New methods and technologies for research and monitoring in the Arctic"

The group defined the workshop on ***Adaptation*** **as the first priority.** The objective is to send an application before 25. November 2015 to the Svalbard Science Forum to get funding and organize this workshop in early 2016.

3. How to interact with NySMAC

The group stressed out that there should be some agreement here among all flagships in the way to communicate and interact with Nysmac.

One weakness emphasized by the group is the poor access to or knowledge of end-products. Publications related to RiS projects are rarely visible on SSF/RiS website, and it is also difficult to really know what is going on in the fjord. What data are collected and where exactly?

The RiS database provides some answers but clearly not complete. An updated map showing the research locations within Kongsjforden with associated metadata would be extremely useful. How to develop such a tool requires a specific workshop.

4. How to use/take advantage of the new NySMAC webpage

The Nysmac website does not need to be developed. It can stay as simple as it is now. However, the content should be updated and the reports about flagships revised. Research priorities have changed since 2008. The list of participant within each flagship should also appear on the webpage.