

IASC TWG Meeting 22nd March 2024 and onwards.

UK WG Representatives: Bob Baxter, Durham University and Mary Edwards, Southampton University

OPEN MEETING

About 20 members live and several guests. Online participation appeared a little difficult at times, sound was bad. Unclear how many were online; there were some online no-shows. There was a sharper focus this year on science priorities – as per ICARP IV and setting more of a TWG agenda on science rather than just process.

1. Round table reports. Country quick summary—here delegates reported ongoing key in-country developments and also talked about their interests.

Austria: Circumarctic landcover units through the CHARTER programme of research.

Belgium: Sofie Opfergelt– Protistology and Aquatic ecology (Ghent); subsea permafrost (ULB); Permafrost geochemistry (UCLouvain).

China: no representative

Czech Republic (Elster) – Ongoing active arctic research highlighted.

Denmark – (Simon Bahrndorff, Aarborg U) Adaptation to extreme cold – no turning towards adaptation to high temperatures (insect work). South Greenland – (GIOS) Nature, community and business in Denmark and Greenland – infrastructure project.

Finland: no representative

France: (Emilie Gautier) – sedimentary archive work, cross-cutting approaches.

Germany: (Nicola + Ulrike) SW Svalbard visits – gravimetric measurements – geophysical science developments. Two projects underway – loss of tundra and after-effects of industrial use of the Arctic. Several field trips, Alaska, Greenland and Canada.

Iceland: (Bjarni) Biodice, now in third year – Nordic Biodiversity Framework funded through Nordic co-operation.

India: Indian arctic expedition to Svalbard; Canadian arctic expedition (CHARS); upcoming expeditions to Svalbard in 24-25 – fate of terrestrial organic matter, nitrogen cycle, C dynamics in permafrost/DOM in streams.

Italy: (Mariasylvia Giambertini) – Italy research base in Svalbard; measuring and modelling carbon fluxes at multiple scales; developing infrastructure at Ny Alesund. Winter fluxes being developed – developing a carbon infrastructure; carbon/nutrient cycle in high arctic tundra; freshwater fluxes (hydrogeology) in deglaciated areas. Also involved in the TWG AZCON project

Japan: Flagship Project – Arctic Challenge for Sustainability II; new KAKENHI project to be initiated for rain on snow. Had to end project on permafrost, hydrology, resilience in Russia. Also doing top-down/bottom-up CH₄ measurements.

Korea: No representative

Netherlands: work on fire and permafrost, also have an AWI bilateral agreement.

Norway: (Kristine) Northern vascular plant biodiversity. Large collaborative effort bringing a quantitative species list for risk assessment for Norway, high concern about invasive plant species.

Poland: (Monika, geochemist) –expeditions to Greenland and Labrador.

Portugal: Joao and team working on geochem related to thaw lakes

Spain: (Sergi) – lake records

Sweden: (Hans) – gearing up to big expedition to Greenland summer of 24/25.

Switzerland: (Jakob) – Swiss Polar Institute – signed memorandum with Laval, Canada. June 2024 – World Biodiversity Forum. Pushing for arctic representation at the conference, including CAFF.

UK: (Mary and Bob) – AGORA workshop cross-cutting project. UKRI successes in 2023-4; UK-Iceland, UK Greenland, UK-Japan bursaries; UK researchers have opportunities to engage with Arctic Council working groups via Arctic Office grants. Arctic researchers pursuing cross-cutting opportunities in the recent UKRI trial Interdisciplinary Studies grant rounds in 2023-4.

USA: (Michelle and Craig) Navigating the New Arctic NSF program science and social science 10 years, soon ending. NASA arctic boreal vulnerability experiment field campaign Phase IV winding down; DOE next generation ecosystem experiment -Arctic 4th phase – focussed on international collaborations; interagency arctic research policy Committee (IARPC). Useful new US Arctic observing viewer – visualising logistic sites and work undertaken via NSF funded research etc.

2. Ideas for TWG themes. Some of these ideas were focussed on people's ongoing research. Other looked more broadly at general themes that might be taken forward as group foci. The idea was to make TWG more proactive in promoting research ideas, rather than merely be a passive reporting body, and to encourage TWG members to apply for X-cutting themes.

A 'Round Robin' of interests was presented across the group (one slide pitch per person) and a word cloud generated to point to the most common topics and ideas for next session.

At the end of the morning, Hans talked about the ongoing ICARP process and links to PY32-33. It was agreed that getting funding streams going early was important – therefore heads up to funding agencies important.

3. Small-group discussion. In the first session of the afternoon (led by Michelle Mack) we broke into groups to address emerging themes of (1) "Circum-polar geospatial and temporal modelling/extrapolations; (2) Critical Zone Observatories; (3) Knowledge co-production outreach and in-reach; (4) Biodiversity and community dynamics.

Notes were taken and fed back to the whole group in plenary:

- (1) Abiotic data relatively well handled, but biotic much less so? This would require multi-country engagement and creative applications to create a data platform. There are some Russian data.
- (2) Critical zone observatories– across bedrock to top of vegetation canopies. Are there commonalities of abilities to collect data across sites used by different groups? What could be achieved together across biology, hydrology, geochemistry etc? A need to consider the broader scale from restricted detailed sampling at a limited number of sites.
- (3) Involve local communities, building trust and collaborative relationship from the very inception of the relevant questions; storytelling as a route to exchange ideas. Arranging sessions on fieldwork skills etc for capacity building and better bridges across communities

(indigenous and scientific). Look to funding agencies beyond the normal national ones (e.g. Gordon and Betty Moore).

- (4) Incorporation of below-ground diversity is key in the future. Monitoring requires much work (biotic has the potential to develop further protocols)—CAFF is making headway though. Link to co-production very important as is the use of e-DNA approaches for rapid biodiversity assessments (e.g. developing citizen science protocols that may be very beneficial). What trends and extreme events considered? The former relatively well known now, the latter not so. Much potential overlap with the other three components being considered in breakout groups. For example, maps of surface characteristics (e.g., phenology, soil) helpful to land surface packages of ESMs.
- (5) Online group.....geo-mapping as a first step to knowing what all TWG groups members and others are doing/achieving, where and why? Provide a seminar series to instruct each other of our approaches and methodologies. Community inputs wherever they exist are vital/need developing at earliest opportunity to help move things forward.

4. Synthesis

A final hour was spent pulling together working group initial findings (above). From (1) – we could envisage a TWG-led workshop addressing key pinch points – e.g. Russia issues- using existing data and remote sensing approaches to address this. From (2) how can we link international CZO sites into a coherent, uniform, network to tackle general questions about Arctic change. For (3) better engage in respectful research practices. Equip ourselves better to design arctic research projects that are respectful and inclusive. How to inform/reform relevant institutions (including IASC working groups) to better support science knowledge co-production processes. Better incorporation of place-based experiences of climate and biodiversity change in the Arctic. For (4) How can we synergise biotic and abiotic observing networks to address key questions about biodiversity and community.

Linkage among 1), 2) and 4) appears around the general idea of data homogenization and mapping, with variable modes of presentation (so maps/data are easily accessible to ALL). Co-production, inclusive approaches and site-based stories permeate all.

Commentary

Clay described his Greenland project—monitoring transect in World Heritage landscape, key local involvement, which could in many ways be a test site for such an approach (would require creative funding for people to get to Greenland, but other approaches to engagement are possible).