

ASSW 2023 – Terrestrial Working Group – Summary Notes – Bob Baxter and Mary Edwards

Vienna 2023

Introductions and country updates:

Canada – Emily Jenkins – UK-Canada programme highlighted (Bob and Mary alerted members to the associated webpage of ongoing projects for further information).

China – Xiaofan Yang – (Vice Chair) – works with Antenello on AZCON. Several large projects are being established over the last couple of years.

Czech – Josef Elster – 2 projects in Svalbard. One just ended on bioprospecting.

Denmark – not present; Finland – not present;

France – Emily Gautier - National workshop re: polar research held this past year - need for interdisciplinary approaches to be further developed + ethical considerations for interactions with arctic communities + eco-responsibility.

Germany – Ulrika Herzs Schuh– new project asking which areas of the Arctic require protection - refugia area. Nikola Koglin – geodynamics of arctic margins – hard rock geology.

German research (as elsewhere) focussing away from Russia just now. More intense collaboration with UNIS and Tromso is underway– with a combined expedition to Svalbard in 2023.

Iceland – not present; India – not present

Italy – Antonello Provenzale– Mainly working on C and water fluxes from soil and vegetation plus mosses and crusts. Involved in T Mosaic – New project on winter fluxes to start in winter of 2023-4. Silvia – winter and summer carbon fluxes in Svalbard.

Japan – Flaship project “Arctic Challenge for Sustainability” C Water fluxes Siberia and Alaska. Japan society for Promotion of Sciences – Pan-Arctic water and C cycles – ongoing to 2024.

Korea – Ji Young Jung – 4-year project – sub arctic environmental changes. Work also in Alaska and high Arctic Canada on cryospheric processes, including snow depth studies.

Norway – not present.

Poland – Piotr – Permafrost geophysical research underway – large field projects on geomorphology of the arctic. Iceland, Greenland, Canada etc.

Portugal – Jao Canario – Composition of natural organic matter – greenhouse gas release roles. Thermokarst lakes – mercury dynamics – in N Quebec and Fairbanks Alaska. Development of spectroscopic methodologies.

Spain – Sergei Pla Rables– aquatic ecosystems. National work – vegetation responses – microbial communities work + scaling issues of mobilization of C P N etc. Mobilization of elements from rivers to sea. AGORA (TWG + cross-cutting project) – report will be delivered at a workshop in ASSW2023 – multiple disciplines incorporated.

Sweden – Hans – climate change reconstructions in Arctic regions. Building TWG links through ICARPIV.

Switzerland – Christian Rixen – Re-survey of existing vegetation – initial data in 1929 for example in Svalbard. World Biodiversity forum upcoming. Celebration of 30 years of ITEX. Gabriella - Vegetation archive data ongoing. Large southern Greenland project – terminal glacier – nutrient inputs to local system.

MoU – with IMQ in Canada and NIPR AWG and Greenland authorities moving forward.

United Kingdom – Mary Edwards and Bob Baxter – (see attached summary document provided to the TWG for this meeting).

United States – Michelle Mack – below-ground processes project reporting at ASSW2023. Craig Tweedie (new USA representative from 2023 onwards) – Bonanza Creek and arctic LTER just both refunded and a further location (Beaufort lagoons) due for consideration very soon. Navigating the new arctic programme – local knowledge – co-production. Pre-meetings -international collaborations. NASA ABOVE now in phase three (a decadal programme). Full airborne campaign starting this year. – mostly with Canada. Ends 2026.

USA will host ASSW 2025 – Boulder, Colorado.

Additional comments: Gareth Rees – UK rep. on ISIRA – (collaborative work with Russia). Keeping very low-level collaboration alive. Polar Educators International – Gareth is an unofficial link.

REPORTS on TWG-sponsored projects:

- 1) **AZCON** Workshop (Pisa – January 2023) – Several presentations on permafrost, fires, fluxes etc. Discussions on permafrost and hydrology, carbon fluxes, variables to be measured. Need for a common land surface/ vegetation model for the arctic critical zone.

2nd workshop being developed – existing models being identified; Minimal set of variables to be measured; Drivers of wildfires in boreal/Arctic regions – open to all; Workshop at ASSW2023 taking these things forward.

2) HERBIVORY NETWORK:

Cristian Rixen, Isabella – group update – a broad group *ca.* 200 members from 20+ countries.

Systematic review led by Iceland; Tundra enclosure Network (TExNet); Next meeting Cambridge Bay Canada June 2023.

3) ARCTIC UNDERGROUND – Michelle Mack

Will meet again at ASSW2024 – but have made progress on 3 synthesis manuscripts to be submitted in the spring of 2023 – soil warming experiments; plant functional traits above and below ground; root traits and symbionts.

4) ARCTIC VEGETATION ARCHIVE - Gabriella

Workshop held at ASSW 2023. Work led by Skip Walker (Fairbanks). Good progress made on both Russian and Alaskan side of the project. Main information pulled together on CAF website. ECRs being kept engaged through training activities through Fairbanks. How to now integrate all datasets into a more pan-Arctic dataset? Will continue with a monthly webinar to advance progress. Pan-Arctic integration will be pushed forward for reporting at ASSW2025 in Boulder Colorado.

5) **WITHIN SPECIES DIVERSITY GROUP** -Bjarni Kristjánsson, Iceland.

Developed a new initiative called Biodice, in Iceland – three pillars, research, policy and capacity building. 25 participants at the workshop.

ICARPIV preparations for contribution of TWG

Now in phase II – seeking community input during 2023. Designing research priorities for incorporation into ICARPIV. Goals and scientific foci – considering the urgent knowledge gaps – a bottom-up approach – new and innovative cross-collaborative initiatives and thinking.

Research Priority Teams (RPTs) – being determined in first half of 2023.

Discussion of TWG ideas:

- Big themes that the group had already started discussing last year in Tromso. Polar Knowledge Canada has already developed a database – identifying four themes that are statistically corroborated.
- Country Foods, Contaminants etc.....

Key discussion points/questions: Systems-level and interconnectedness as a priority for ICARPIV. How ICARPIV communicates to national research councils(through TWG?). What areas to protect in Arctic – century timescales for longer-term prospective. Unprecedented change – future implications re: knowledge from the past. Consideration of an Arctic species seedbank. Fire – becoming more important as an additional driver of change. Invasives into the Arctic and their consequences. Zoonoses. Coastal processes – system change – remote sensing technologies addressing change at relevant spatial and temporal scales.

Further discussion on future plans for the TWG:

A proposal to hold an extra meeting during the year (online) to discuss the big science questions.....

Ulrika & Jao– consider whether we could plan a large programme of research involving the whole group in terms of fieldwork; Could have a part of meeting bringing in other group expertise e.g. snow biogeochemistry - need TWG research priorities sorted.

TWG website – we agreed that this requires significant updating - to be achieved by working with the IASC secretariat personnel.

Finally, Ulrike Herzs Schuh, Alfred Wegener Institute stepped down as Chair of the TWG. Jao Canario (Portugal) was unanimously voted-in to replace her. In addition,

Michelle mack was unanimously voted-in as a Vice Chair of the grouping.

END.