



International Arctic Science Committee (IASC)

Terrestrial Working Group

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IASC Terrestrial Working Group 5yr Work Plan: 2022-2027

In September 2017 the IASC Terrestrial Working Group (TWG) published its 5-year plan. The aim was to articulate how the TWG will achieve IASC's vision over 5 years, and to assist researchers in becoming involved in IASC activities. The plan articulates the broad scientific scope of the TWG and the parallel aims of (i) being strategic in terms of funding priorities, but (ii) maintaining the flexibility to support emerging excellent initiatives, which create both dynamic challenges as well as opportunities.

High-level information about the TWG and IASC is available (<https://iasc.info/our-work/working-groups/terrestrial>). In this update we wish to (i) highlight the strategic aims of the IASC TWG, (ii) identify broad thematic areas of interest (while remaining receptive to new and emerging priorities), (iii) provide examples of the kinds of successful initiatives that have been supported recently, and (iv) suggest how best to develop projects for funding.

Strategic Aims of the IASC TWG

- To promote scientific excellence and capacity-building. The latter accords with the IASC emphasis on engagement by, and involvement with, Early Career Researchers (ECRs) and Arctic residents (both indigenous and non-indigenous).
- To support education, communication and outreach activities (e.g. through training programs, webinars, workshops, newsletters, and social media) and to strengthen science-policy linkages.
- To foster dialogue between delegates and their national communities and stakeholders.

Example thematic areas of interest

[Not presented in any order of priority Cross-cutting activities are also encouraged]

A. Abiotic/biotic Linkages and Feedbacks

- i. Linkages between the Arctic and Earth systems (physical, biophysical, biogeochemical, and biological, including diseases and their vectors)
- ii. Feedbacks between the climate system and the biosphere
- iii. Linkages between global change and Arctic terrestrial and freshwater ecosystems
- iv. Understanding arctic biogeochemical cycles and biodiversity
- v. Long-term responses of Arctic terrestrial and freshwater ecosystems to past and current environmental changes

B. Rapid Changes and Life at the Extremes

- i. Life at the extremes
- ii. Seasonality/Phenology
- iii. Winter ecology
- iv. Permafrost characterization, including biochemistry and thaw dynamics.
- v. Phase shifts in water, from solid, to liquid, to gas, and their implications
- vi. Disturbance regimes and ecological thresholds in land and inland water systems
- vii. Properties of the (changing) Arctic terrestrial realm (A+B) Crossing ecological thresholds in land and inland water systems.



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C. Social-ecological Systems & Development

- i. Exploring links between people and environment, and their dynamics, through deployment of a social-ecological system framework and emerging approaches
- ii. Economic development of the Arctic: threats and opportunities
- iii. Past, present, and future of arctic environments and societies
- iv. 'Bio-prospection': low temperature biotechnology
- v. Pathogens and pandemics, and their vectors

D. Advancing TWG aims and deliverables.

- i. Promote Indigenous participation and knowledge coproduction.
- ii. Upscaling and/or downscaling of climate change impacts through space and time.
- iii. Advancing observations in the Arctic terrestrial realm (including inland water systems)
- iv. Data sharing and exchange
- v. Improving model development and benchmarking
- vi. Outreach

Examples of recent successful initiatives

Information on on-going and recent TWG-supported activities can be found at <https://iasc.info/our-work/working-groups/terrestrial/projects>. The following examples illustrate the scope and nature of supported activities:

- The Frozen-Ground Cartoon is an example of an outreach project. It comprises a series of comics about permafrost, developed through an iterative process of exchanging ideas between two artists and thirteen scientists (<https://frozengroundcartoon.com>).
- T-MOSAiC (Terrestrial – Multidisciplinary distributed Observatories for the Study of Arctic Climate) was launched in April 2017 and is on-going (<https://www.t-mosaic.com/>).
- The Herbivory Network, HN; (<http://herbivory.lbhi.is>) was initiated in 2014 with the support of the IASC TWG.

How to develop projects for funding

Those interested in launching an IASC TWG-supported activity are encouraged to get in touch with TWG members or national representatives to discuss their proposal at an early stage. We urge applicants to reflect on whether their proposal addresses ICARP III roadmap priorities (https://icarp.iasc.info/images/pdf/ICARP3/Downloads/ICARPIII_Final_Report.pdf), which serves as a guide for scientific excellence and innovation. Applicants should identify their target stakeholders explicitly (e.g. academics, local and indigenous communities, national academies, governmental departments/agencies, NGOs, the Arctic Council, commercial and industrial partners), specific measurables, milestones and deliverables.

IASC is not a research funding organization, but can support the following types of activities:

- The development of ideas and researcher networks by provisioning seed-funding e.g. for networking meetings, horizon-scanning activities and targeted synthesis and publication activities
- Consideration of climate impacts, sustainability, and diversity and inclusion in activities
- Fostering ECR development / networking for building capacity
- Translation of science themes to shape policy and/or meet stakeholder needs
- Promoting outreach, education, and public engagement activities



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- Strengthening links to indigenous knowledge
- Promoting interdisciplinary dialogue and collaborations (including collaboration between IASC Working Groups through cross-cutting activities)