

# Terrestrial Working Group Meeting

5 April 2014  
09:00 – 18:00

Helsinki, Finland  
The Dynamicum, Finnish Meteorological Institute

## *Draft Minutes*

### **PARTICIPANTS**

#### **WG MEMBERS PRESENT**

INGIBJÖRG SVALA JÓNSDÓTTIR – ICELAND, CHAIR  
WARWICK F. VINCENT – CANADA, VICE-CHAIR  
TORBEN CHRISTENIEN – DENMARK, VICE-CHAIR  
JOSEF ELTSER – CZECH REPUBLIC  
OTSO SUOMINEN – FINLAND  
KARSTEN PIEPJOHN – GERMANY  
JON S. OLAFSSON – ICELAND  
ATSUKO SUGIMOTO – JAPAN  
TAKAYUKI NAKATSUBO – JAPAN  
YOO KYUNG LEE – KOREA  
STEPHEN COULSON – NORWAY  
SKIP WALKER – USA  
PHILIP WOOKEY – UNITED KINGDOM  
VLADIMIR ROMANOUSKY – USA

#### **WG MEMBER NOT PRESENT**

THIERRY BOULINIER - FRANCE  
MADS FORCHHAMMER – DENMARK  
EVA-MARIA PFEIFFER – GERMANY  
WEI LUO - CHINA  
ANTERO JÄRVINEN - FINLAND  
MANISH TIWARI - INDIA  
RATAN KAR – INDIA  
INGER GREVE ALSOS - NORWAY  
PIOTR GLOWACKI – POLAND  
WIESLAW ZIAJA - POLAND

BENJAMIN VINEGLA PÉREZ - SPAIN  
DANIEL SANCHEZ-MATA - SPAIN  
VICTORIA PEASE - SWEDEN  
JELTE ROZEMA - THE NETHERLAND

#### **GUESTS AND OBSERVERS**

PASI RAUTIO – FINLAND  
LIYANG ZHAN – CHINA  
RIKU PAAVOLA – FINLAND  
JANE LEE – KOREA  
LOUISE-PHILIPPE ROY – CANADA  
ELENA KUZNETSOVA – NORWAY  
LARRY HINZMAN – USA  
SEONG-JOONG KIM – KOREA  
MARIA VAISANEN – FINLAND  
YLVA SJÖBERG – SWEDEN  
SANDRA STARKWEATHER – USA  
YUJI KODAMA – JAPAN  
PATRICIA AZINHAGA – PORTUGAL  
MARC MELOCHE – CANADA  
KARINA SCHOLLAEN – GERMANY  
JENNY BAESEMAN – NORWAY  
MALYGINA NATALIA – RUSSIAN FEDERATION

#### **SECRETARIAT**

YOO KYUNG LEE - KOREA  
JEFFREY ROSS - USA  
NOEMIE BOULANGER-LAPOINTE - CANADA

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# **1 OPENING AND REPORTING**

## **1.1 WELCOME AND INTRODUCTIONS (INGIBJÖRG SVALA JÓNSDÓTTIR)**

The Chair opened the meeting and welcomed the participants.

## **1.2 REPORT FROM THE CHAIR (INGIBJÖRG SVALA JÓNSDÓTTIR)**

In her introductory report, the Chair summarized last year's activities of the TWG and highlighted issues to be discussed in the context of the scientific foci of the group which are:

- Improving knowledge at multiple spatial scales of the current state of Arctic terrestrial geo-systems and ecosystems;
- Determining the net effect of terrestrial and biospheres processes that amplify or moderate climate warming;
- Developing unifying concepts, fundamental theories, and computer models of the interactions among species, between species & their environments, and the biology of life in extreme environments;
- Estimating past changes in Arctic geo- and biodiversity, measuring current changes, and predicting future changes;
- Developing high spatial resolution models of geo-systems & ecosystem changes;
- Determining the role of connectivity in the functioning of Arctic terrestrial ecosystems, including connections within the arctic and the global systems.

## **1.3 APPROVAL OF THE MINUTES OF THE LAST MEETING (YOO KYUNG LEE)**

The minutes of the 2013 TWG meeting were approved without modification.

## **1.4 ADOPTION OF THE AGENDA (INGIBJÖRG SVALA JÓNSDÓTTIR)**

The agenda was adopted with a minor modification: the addition of item "2.3.1. CAPEC of Korea" and '2.3.2. Arctic Change 2014'.

# **2 MAIN ISSUES**

## **2.1 REPORTS ON TWG ACTIVITIES**

### **2.1.1 SHAPING FORCES OF BIODIVERSITY IN THE ARCTIC**

**(INGIBJÖRG SVALA JÓNSDÓTTIR)**

Ingibjörg Svala Jónsdóttir presented a report on the progress of “Shaping Forces of Biodiversity in the Arctic” since the workshop held 21-22 January 2013 in Reykjavik.

The idea developed at the workshop was to a design of a coherent research framework to address shaping forces at multiple temporal and spatial scales in search for commonalities across biological hierarchies and organism groups, to be written up in a conceptual paper. The framework idea was presented to a wider audience at the ASSW 2013 Science Symposium in Kraków, Poland where it was well received, as was the idea of publishing the conceptual paper in a special issue supported by papers on case studies. These ideas were also presented at the International Tundra Experiment (ITEX) Conference in Bergün, Switzerland where the ITEX network was invited to contribute to a special issue. However, the initiative was too premature for ITEX to adopt. After low activity during winter while waiting for the release of the Arctic Biodiversity Assessment report, the work on the conceptual paper has now commenced, aiming at submission to an appropriate journal later this year.

Participants noted the report.

### **2.1.2 ARCTIC VEGETATION ARCHIVE (AVA) WORKSHOPS (SKIP WALKER)**

Skip Walker reported on the Arctic Vegetation Archive (AVA), a coordinated effort to identify and preserve historical vegetation plot data for use in a pan-Arctic vegetation classification and as a resource for climate change and biodiversity research. Skip Walker provided an overview of the major milestones of the project, which began with the first International Arctic Vegetation Classification workshop in Boulder, Colorado in 1991. The International Arctic Science Council (IASC) and Conservation of Arctic Flora and Fauna (CAFF) endorsed the AVA Database in 2011 and assisted with two workshops. The first workshop was held in April 2013 at ASSW 2013 in Kraków, Poland and a second workshop—focusing on an Alaska Arctic Vegetation Archive—was held 14-16 October 2013 in Boulder, Colorado.

During these workshops, a conceptual framework for the project was discussed. At ASSW 2013 in Kraków, 42 people participated and 25 papers were presented. A consensus among Arctic countries regarding the geographic scope of the database, the types of data to be included, general approach for building the database, initial steps for recruiting people and resources to complete the database was reached. At the second workshop in Boulder 21 people participated and 20 papers were presented with a focus on Alaska. A major field campaign—the ABOVE Initiative—will take place in Alaska and

western Canada. This Initiative will seek a better understanding of the vulnerability and resilience of ecosystems and society in changing environment—including a map and plot archives. The next step in the process is to complete the Alaska and Greenland prototypes.

*The presentation is given in ANNEX 2.1.2.*

Participants noted the report and discussed how to develop the database and potential collaborations with INTERACT.

### **2.1.3 GLOBAL CHANGE, ARCTIC HYDROLOGY AND EARTH SYSTEM PROCESSES WORKSHOP (ARCHES) (PHIL WOOKEY)**

Phil Wookey presented on ARCHES, a scoping initiative to draft a position and review papers on the consequences of changing hydrology in the Arctic terrestrial realm and to strengthen links between actors/organizations in the research community. The exercise is strongly aligned to the mission of the IASC TWG but has crosscutting relevance to other IASC Working Groups. The workshop took place on 24-25 February 2014 in Edinburgh with 11 participants attending.

The project is slightly behind schedule as the goal was to present a position paper at ASSW 2014. However, the group is still in the process of writing a draft paper, which will review biophysical and biogeochemical feedbacks from land surface/biotic processes and their effects on downstream processes. Initial empirical work suggests that inter-annual and long-term variations in hydrology are driving biogeochemical cycling and energy exchange to an extent where it is impossible to make any future projections without considering them.

*The presentation is given in ANNEX 2.1.3.*

Participants noted the report and discussed whether or not ARCHES should consider to link with THAW and Freshwater synthesis. ARCHES is concerned about the potential to lose focus if the scope broadens and may be limited by publication length.

### **2.1.4 THAW 2014: WORKSHOP ON FRESHWATER ECOSYSTEMS IN PERMAFROST LANDSCAPES (WARWICK F. VINCENT)**

Warwick Vincent presented on the THAW workshop held in Quebec City 12-15 March 2014. Some 80 abstracts were submitted and approximately 100 participants attended this event. The workshop touched on three central themes: 1) physical aspects and dynamics of permafrost aquatic ecosystems; 2) biogeochemical properties of permafrost aquatic ecosystems; and 3) biodiversity and food webs in permafrost aquatic systems. Contributions from the workshop will be published in a special issue of *Biogeosciences* entitled 'Freshwater Ecosystems in Changing Permafrost Landscapes. Contributions from researchers not involved in the workshop are also welcomed.

THAW is building a web interface to serve as a forum for knowledge exchange about freshwater ecosystems. THAW intends to keep the group multidisciplinary and will link with other conferences/workshops such as ASLO – USA, G-B - Canada, EUCOP – Portugal, and ICARP III – Japan.

*The presentation is given in ANNEX 2.1.4.*

Participants noted the report and discussed how to link THAW with research on infrastructures, ecosystem services, climate and biodiversity.

## **2.2 REVIEW OF IASC ACTIVITIES RELATED TO THE TWG**

### **2.2.1 ITEX (INGIBJÖRG SVALA JÓNSDÓTTIR)**

Ingibjörg Svala Jónsdóttir gave a presentation on the conference organized by the International Tundra Experiment (ITEX), in Bergün, Switzerland, 17-20 September 2013. ITEX is a successful scientific network of experiments focusing on the impact of climate change on selected plant species in tundra and alpine vegetation. Research teams from 61 circumpolar sites in tundra ecosystems have carried out similar, multi-year plant manipulation experiments for up to 20 years that allow them to compare annual variation in plant performance with respect to response to climate conditions. The aim of the conference in Bergün, was to broaden up the network to include other approaches to climate change impact research. More than 79 participants from 18 countries attended the conference. Support was provided by IASC to allow 17 early career scientists from 13 countries to attend. The Swiss National Science Foundation also provided funding for keynote speakers and contributors from eastern Germany to attend the event. Further support was provided by the Swiss Federal Institute for Forest, Snow, & Landscape Research.

Sessions at the workshop focused on ITEX experiments and long-term observations of tundra vegetation. Workshop discussions centered on research gaps and future directions of ITEX—pointing out research needs in plant functional trait research and plant-herbivore interactions.

*The presentation is given in ANNEX 2.2.1.*

Participants noted the report and discussed potential collaborations between AVA and ITEX.

### **2.2.2 ONSHORE GEOSCIENTIFIC RESEARCH AND LOGISTICS – THE CASE PROGRAM OF BGR (KARSTEN PIEPJOHN)**

Karsten Piepjohn presented on the CircumArctic Structural Events (CASE) program of the Federal Institute for Geosciences and Natural Resources (BGR). BGR research project focus on: 1) the formation of Laurasia; 2) the evolution of sedimentary and structural events during the last 650 million years; 3) the break-up of Laurasia; 4) Arctic paleo-climate in the Late Cretaceous/Early

Tertiary; and 5) Arctic Ocean plate-tectonic reconstruction.

*The presentation is given in ANNEX 2.2.2.*

Participants noted the report and discussed how to better coordinate research efforts to address logistical challenges. The Chair asked the TWG to draft a statement to improve cooperation at research stations.

- **Action: Karsten Piepjohn will recruit people to work on the statement to improve cooperation at research stations.**

### **2.2.3 SECRETARIAL SUPPORT (VOLKER RACHOLD)**

Volker Rachold presented IASC new fellowship program for Early Career Scientist. ECS will receive travel funding in exchange of secretarial support for IASC working groups. This will be a networking opportunity for ECS and will help in the organization of the WG. The program still needs to be approved by IASC Council.

## **2.3 OTHER TERRESTRIAL ACTIVITIES EXTERNAL TO IASC**

### **2.3.1 CIRCUM-ARCTIC ENVIRONMENTAL CHANGE STUDIES (CAPEC) AT KOPRI (YOO KYUNG LEE)**

Yoo Kyung Lee provided an overview of KOPRI's CAPEC studies. KOPRI currently has research sites in Svalbard, Alaska, Greenland, and Canada. Research projects focus on soil organic carbon, soil carbon fluxes, soil bacterial communities, soil processes and vegetation.

Participants noted the report and discussed collaborations between KOPRI and other institutions. It was noted that Dr. Lee just published a book on Arctic tundra plant.

*The presentation is given in ANNEX 2.3.1.*

### **2.3.2 ARCTIC CHANGE 2014 (WARWICK VINCENT)**

Arctic Change conference will be held in Ottawa from 8-12 December 2014. It aims to attract researchers from the Circumpolar Arctic working in the fields of natural and health sciences with collaborations in the Humanities.

## **2.4 3RD INTERNATIONAL CONFERENCE ON ARCTIC RESEARCH PLANNING (ICARP III)**

#### **2.4.1 INTRODUCTION TO ICARP III (VOLKER RACHOLD)**

Volker Rachold introduced the goals and calendar for the International Conference on Arctic Research Planning (ICARP III): Integrating Arctic Research a Roadmap for the Future. The ICARP III program was launched during ASSW2014 and would culminate during ASSW2015 in conjunction with IASC 25<sup>th</sup> anniversary. During 2014-2015, a series of related meetings and events will be organized. ICARP III is a process for integrating priorities for forward-looking, collaborative, interdisciplinary Arctic research and observing; establishing an inventory of recent and current synthesis documents and major developments in Arctic research; and taking into account the outcome of ICARP II, the International Polar Year, recent assessments and upcoming or new initiatives. The goals and objectives are to identify Arctic science priorities for the next decade; coordinate various Arctic research agendas; inform policy makers, people who live in or near the Arctic and the global community; and build constructive relationships between producers and users of knowledge.

*The presentation is given in ANNEX 2.4.1.*

#### **2.4.2 RAPID ARCTIC TRANSITIONS DUE TO INFRASTRUCTURE AND CLIMATE CHANGES (RATIC) WORKSHOP (DONALD A. WALKER)**

Rapid Arctic transitions due to Infrastructure and Climate Changes (RATIC) is an ICARP III activity that will address the combination of Arctic infrastructure-related and climate-related changes, their consequences to permafrost and social-ecological system, and approaches for a sustainable future using adaptive scientific, engineering, educational and managing approaches. The case study of Prudhoe Bay (Alaska, USA) development was presented in detail. The workshop will be funded by IASC, NSF, and NASA and will have a budget of 50,000 euros.

*The presentation is given in ANNEX 2.4.2.*

Participants noted the report. RATIC was originally planned to take place at the end of 2014 in Finland, but following discussions, it was suggested that the workshop should take place during Arctic Change Conference held in Ottawa in December 2014. This option will be discussed with the conference organizers.

#### **2.4.3 ARCTIC SNOW COVER CHANGES AND THEIR CONSEQUENCES WORKSHOP (INGIBJÖRG SVALA JÓNSDÓTTIR ON BEHALF OF TERRY V. CALLAGHAN)**

A workshop, entitled “Arctic snow cover changes and their consequences,” will directly address the IASC mission to encourage and facilitate cooperation in aspects of Arctic research that has been neglected. The workshop originally planned for May 2014 has been postponed to October 2014. It will be hosted by INTERACT in Copenhagen and will be organized in collaboration with IASC, CLiC and AMAP. The main objectives of the workshop are to assess current



knowledge; identify gaps in the knowledge of snow *per se* and its *consequences*; to address adaptation needs using an Arctic system approach; to develop a research agenda including the creation of standard protocols; to identify mechanisms to implement the research agenda; and to present the road map for further research at ICARP III.

*The presentation is given in ANNEX 2.4.3.*

Participants noted the report and observed that the workshop should be linked with other TWG initiatives.

#### **2.4.4 THE IASC FRESHWATER SYNTHESIS (VOLKER RACHOLD)**

Volker Rachold discussed an upcoming publication entitled, *Arctic Freshwater Synthesis: Overview of key components & keys issues*, which is being led by Terry Prowse. Detailed information on this publication can be found on the CliC website at: [climate-cryosphere.org](http://climate-cryosphere.org). A writing meeting will be held in Stockholm in May.

Participants noted the report and discussed how to have related initiatives, such as THAW and ARCHES, contributing to the freshwater synthesis.

## **2.5 PROPOSED ACTIVITIES FOR 2014-2015**

### **2.5.1 THE HERBIVORY NETWORK WORKSHOP (INGIBJÖRG SVALA JÓNSDÓTTIR)**

The Herbivory Network initiative emerged during the ITEX conference in Switzerland 2013. The proposed aims of the network are to understand the role of plant-herbivore and herbivore-herbivore interactions in northern and alpine systems; to facilitate multi-site comparisons; to develop common experimental protocols; and to synthesize existing data.

The workshop will be held during ASSW2014 involving 30 participants of which half are early career scientists. The workshop is funded by TWG and the money will be used to provide travelling support for Early Career Scientists.

*The presentation is given in ANNEX 2.5.1.*

### **2.5.2 NEW ACTIVITIES/TASKS BROUGHT FORWARD BY THE MEMBERS**

No official proposal for new activities or tasks were submitted to the TWG. However, the following initiatives were discussed.

- Creating opportunities to better integrate geological sciences to the TWG activities. It was noted that a related initiative is currently taking place under ICARP III.
- Identify logistical needs and ways to coordinate logistics across terrestrial research disciplines. Network of research stations a big step forward

(INTERACT), but more mobility needs to be added

- Sandra Starkweather from the University of Colorado mentioned that the network of atmosphere observatories is interested to improve data accessibilities and would like to receive inputs on which products should be developed and how to better coordinate the use of long-term datasets.
- Phil Wookey noted that there is a need to better integrate remote sensing and modeling with field observations. He offered to seek interest from IASC working groups' members and make an official proposition to the TWG if the answer is positive.
- Skip A. Walker brought forward the usefulness of latitudinal data collection and propose that new transects should be investigated. It was mentioned that there is a new research project funded by Denmark that will be conducting such work in Greenland. There is also a plan to extend further south an existing transect in western Siberia. The Chair encouraged Skip to further develop ideas of large transects in the Arctic with coordinated interdisciplinary terrestrial research approach.
- Warwick Vincent and Phil Wookey mentioned that some activities in link with the Freshwater Ecosystems Workshop are planned for ASSW 2015, but there is no set plan for the moment.
- Phil Wookey noted that there could be some work done to better coordinate the efforts of IASC working groups. Such issues would be discussed during IASC Council meeting during ASSW 2014.

### **3 NEXT ARCTIC SCIENCE SUMMIT WEEKS**

#### **3.1 ASSW 2015 (KODAWA YUJI)**

The 2015 meeting will be held at the ASSW 2015 in Toyoma, Japan on 23-30 April 2015, in conjunction with IASC's 25th Anniversary, the ICARP III and the 4th International Symposium on Arctic Research. The venue contains a large room that can host up to 800 people as well as a number of smaller rooms.

#### **3.2 ASSW 2016 (LARRY HINZMAN)**

The University of Alaska Fairbanks submitted its candidacy to host the ASSW on March 12-17 2016 as part of USA activities as Chair of the Arctic Council. IASC Council will be voting on this proposition during ASSW2014.

