



# Atmosphere Working Group Meeting

6 April 2014

09.00-16.00

(Lunch 12.00-13.30, Coffee Breaks 10.15-10.45 and 15.00-15.30)

Helsinki, Finland  
The Dynamicum, Finnish Meteorological Institute

## *Draft Minutes*

### Participants:

#### **WG MEMBERS PRESENT:**

JIM OVERLAND – USA, CHAIR  
MICHAEL TJERNSTRÖM – SWEDEN, VICE CHAIR  
KATHY LAW – FRANCE, VICE CHAIR  
CLAUDE LABINE – CANADA  
KAMIL LASKA – CZECH REPUBLIC  
EILA LEHMUS – FINLAND  
TIMO VIHMA – FINLAND  
KLAUS DETHLOFF – GERMANY  
GÜNTHER HEINEMANN – GERMANY  
VITO VITALE – ITALY  
SEONG JOONG KIM – KOREA  
THOMAS SPENGLER – NORWAY  
RAJMUND PRZYBYLAK – POLAND  
ANGEL FRUTOS BARAJA – SPAIN  
JOHN CASSANO – USA

#### **WG MEMBERS NOT PRESENT:**

HIROSHI L. TANAKA – JAPAN, VICE CHAIR  
BIAN LINGEN – CHINA  
HENRIK KOV – DENMARK  
GUDRUN NINA PETERSON – ICELAND  
HALLDOR BJORNSSON – ICELAND  
SURESH BABU – INDIA  
NUNCIO MURUKESH – INDIA  
KAORU SATO – JAPAN  
YOUNG JUN YOON – KOREA

KJETIL TØRSETH – NORWAY  
TADEUSZ NIEDŹWIEDŹ – POLAND  
PETER VAN VELTHOVEN – NETHERLANDS

#### **GUESTS AND OBSERVERS:**

THOMAS JUNG – AWI  
DONGQI ZHANG – CAMS  
YANG YANG – CHINESE ARCTIC & ANTARCTIC  
ADMINISTRATION  
IRENE SUOMI – FMI  
SVYATOSLAV TYUKUKOV – FMI  
SANDY STARKWEATHER – IAOSA  
NEIL GORDEN – ICO, POLAR PREDICTION  
JUN INOUE (IN PLACE OF KAORU SATO) – JAPAN  
BERT RUDELS – MWG CHAIR  
JINPING ZHAO – MWG JAPAN, VICE CHAIR  
GEORG HANSEN (IN PLACE OF KJETIL TØRSETH) –  
NORWAY  
MATTHEW SHUPE – NOAA  
JENNIFER MERCER – NSF/ USA E  
SIMON STEPHENSON – NSF/ USA  
PETER HARRISON – QUEEN'S UNIVERSITY

#### **SECRETARIAT**

YOO KYUNG LEE (EXECUTIVE OFFICER)  
HEIKE MIDLEJA (IASC SECRETARIAT)  
JANE LEE (KOPRI SUPPORT)

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# 1 OPENING AND REPORTING

## 1.1 WELCOME AND INTRODUCTIONS (JAMES OVERLAND)

The Chair opened the meeting by welcoming all the members present, noting a new member from Finland and Norway. Short self-introductions were made around the room.

## 1.2 REPORT FROM THE CHAIR (JAMES OVERLAND)

The Chair gave a short introduction on the main themes of the working group – Year of polar prediction, MOSAiC, Arctic amplification and data recovery – the continuation and implementation of these were to be the topics of discussion in the meeting. Additionally he noted that the two AWG ICARP III proposals that were well funded and this will open up opportunities to start new themes or fill in programs that can be reinforced. Overall, he was pleased with how things were shaping up and in the progress of the Atmosphere Working Group.

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

The Secretariat did not receive comments on the minutes of the last meeting and they were approved

## 1.4 ADOPTION OF THE AGENDA (JAMES OVERLAND)

The agenda was adopted.

# 2 REPORTS ON CURRENT ACTIVITIES

## 2.1 MOSAIC (JAMES OVERLAND)

The MOSAiC was stressed and emphasized as one of the main AWG initiatives, involving other Working Groups such as, the marine and cryosphere. The Chair wants to push this to the committee level of IASC for more support.

### 2.1.1 YOPP (YEAR OF POLAR PREDICTION)

#### (THOMAS JUNG PPP AND YOPP SCIENCE AND PROGRAM OVERVIEW)

The Year of Polar Prediction is part of the WWRP (World Weather Research Program) Polar Prediction Project. The chair, Thomas Jung, gave an introduction of PPP's Mission Statement, research goals and the chosen Flagship themes. YOPP is one of the 4 flagship themes that were chosen to be concentrated on, which is planned to be from 2013 to 2022. This is further divided into three different phases, the preparation phase (2103 to mid-2017), YOPP (mid-2017 to mid-2019) and Consolidation Phase (mid-2019 to 2022).

YOPP has the modeling and observing components. YOPP has extended to include the MOSAiC. There is an upcoming YOPP workshop on 16 – 21 August 2014, Montreal, Canada, inviting 1 or 2 members of the AWG to attend.

- **ACTION: Feedback is needed on implementing the YOPP plan by the end of April. YOPP will continue to work with MOSAiC.**
- **Kathy noted that the wording, “Low priority” for aerosols was not suitable, and awkward that it stands alone as it needs to be put in context with pollution or clouds in the implementation plan of YOPP**

*The presentation is given in ANNEX 2.1.1.*

### **2.1.2 MOSAIC PLANNING (MATTHEW SHUPE)**

MOSAIC is a very detailed interdisciplinary processes study with three concepts, 1) Central Observatory on a Ship, 2) Distributed Observation Network, and 3) Coordinate Modelling Activities. The timeframe is from 2018 -2019, an annual cycle at the Central Arctic Basin ice pack targeting first year sea ice. Currently there is a team of scientists writing a science plan, a part of the ICARP III, aiming to finalize the writing plan in which the first draft is underway for public comment. The main question that arose from a workshop in the summer of 2012, Boulder was, ‘What are the causes and consequences of an evolving and diminished Arctic sea-ice cover?’ This will serve to be the foundation of the science plan. As the active discussion on the floor was evolving interestingly, Jim noted that MOSAiC had strong endorsement from IASC, a good scientific input on strategy and priorities but is still in need of supportive dialog with funding agencies.

- **ACTION: The MOSAiC science plan subgroup should make a roadmap for funding of the MOSAiC as there is still a long way to go. There are needs of a more combined effort in funding of the MOSAiC.**
- **MOSAIC needs to clarify its timeframe and target details in order to take necessary actions, such as arranging a second icebreaker to supply logistics.**
- **MOSAIC and YOPP appear well accepted by the broader community as a specific program that IASC should plan for.**

*The presentation is given in ANNEX 2.1.2.*

### **2.2 IASC WORKSHOP ON ARCTIC DATA RESCUE, CITIZEN-SCIENCE AND COLLABORATIVE RESEARCH (RAJMUND PRZYBYLAK)**

Rajmund reported on the activities involving the data rescue activity in the Arctic consisting of 3 projects, 1) Contemporary and historical changes in the

Svalbard climate and topoclimates. 2) Atmosphere and Climate change Work Package 6 (project AWAKE-2), a continuation and extension of the Polish-Norwegian AWAKE project aims to understand the interactions between the main components of the climate system in Svalbard area: ocean, atmosphere and ice to identify mechanisms of inter annual climate variability and long-term trends and 3) Variability of Russian Arctic and Subarctic climate in the last 3 centuries. Through this we observed that much of the data from Russia could not be recovered.

On 11-12 November 2013, there was an IASC workshop on Data Rescue, Citizen-Science, and Collaborative Research in Reykjavik, Iceland. With 22 participants the workshop was composed of 7 sessions concerning the history of the climate in the Arctic, problems with data and its homogeneity, on-line databases and portals about the Arctic.

ACRE is an initiative to recover historical data for weather and to conduct weather reanalysis and reconstruction based on retrieved data. The last annual workshop - the 6<sup>th</sup> ACRE (Atmospheric Circulation Reconstructions over the Earth) – took place in Lisbon, Portugal, on 18 -20 November 2013 in conjunction with FFCUL/IDL. As an outcome of this, a few papers were presented on Jeannette.

*The presentation is given in ANNEX 2.2.*

### 2.3 **ARCTIC – MIDLATITUDE LINKAGES (TIMO VIHMA AND JAMES OVERLAND)**

Timo gave a science lecture on a paper he had recently published, ‘The effects of Arctic sea ice decline on mid-latitude weather and climate.’ Many studies prove that the Arctic climate warming is causing a speedy loss of Arctic ice. Moreover, the unusual weather around the world leads to the big question, ‘Is there a link between the Arctic sea ice decline and cold winters in mid-latitude?’ Interestingly different study methods are reaching similar conclusions that regional warming of the Arctic affects the lower latitudes; the Arctic is no longer cold as the past, but this does not explain the very cold winters in North America. It is not only getting colder but, lasts longer with other side effects such as floods and heat waves. According to the models addressing the processes in the future, there will be a warming trend in Europe, although episodes of cold winter months will remain rather common. A negative AO with anomalously cold Europe and warm arctic is typical for the cold events. Ironically, climate model stimulations do not predict cold winter but warming in the northern high and mid latitude continents. Therefore in conclusion, many recent studies suggest that the Arctic sea ice decline has affected and will further affect mid-latitude weather, but results scatter on the magnitude, timing and spatial extent of these effects as well as on the mechanisms behind them.

*The presentation is given in ANNEX 2.3.1*

In relationship to this topic, Jim reported on a workshop held in Iceland, November, where a small group were working on a review paper of the jet stream processes which is a part of the ICARP III session. Showing pictures of extreme weathers, he explained them using Timo's diagram, that the force from the Arctic and the connections from mid-latitude historically had a tight polar vortex, the cold air in the arctic was bottled up in the vortex and had been very stable. There are multiple causes for the extreme weather as the Arctic is very complex and chaotic it is worth further investigation.

- **In ICARP III, on the 25<sup>th</sup> anniversary of IASC, the AWG should make a consensus statement on climate, technology and field programs, terrestrial. He gave a short introduction of ICARP III and how AWG was going to contribute to the ICARP III proposal**

*The presentation is given in ANNEX 2.3.2*

## **2.4 AIR CHEMISTRY**

### **2.4.1 ARCTIC AIR POLLUTION SESSION/SIDE MEETING AT AGU, WORKSHOP IN SAN FRANCISCO (KATHY LAW)**

Kathy and Sandy, organized a session at AGU on local arctic air pollution. More than 20 abstracts were submitted and 3 invited speakers funded by the IASC AWG. At the oral session covering aspects related to the Arctic shipping (J. Corbett, U. Delaware), local pollution in Alaska (N. Molders, U. Alaska) and IASI satellite observations of sulphur dioxide from metal smelting in Russia (S. Baudin, ULB, Belgium – student contribution). A side meeting was also held to discuss on-going and future field and modelling activities in the Arctic including up-coming airborne campaigns and ground-based initiatives. The possibility to organise a workshop in fall 2014 about Arctic air pollution was also discussed. The proposal was favourably received by more than 30 participants. No lunch was provided. Modelling to measurement and planned activities. Sandy commented that many ECS attended and it was good to have a mixture of different climate modellers.

### **2.4.2 ICE-ARC (KATHY LAW)**

Ice, Climate and Economics – Arctic Research on Change (ICE-ARC) is a new 4 year project, funded by the Framework 7 of the European Union, to investigate processes and impacts related to sea-ice change in the Arctic. It is coordinated by the British Antarctic Survey, and includes new observations and model evaluation/improvement and examination of socio-economic vulnerabilities as well

- **ACTION: Any interested member can contact through [ice-arc@bas.ac.uk](mailto:ice-arc@bas.ac.uk) or visit the site, [www.ice-arc.eu](http://www.ice-arc.eu)**

*The presentation is given in ANNEX 2.4.2.*

### **2.4.3 IASOA WORKSHOP IN VANCOUVER (SANDY STARKWEATHER)**

Two IASOA working groups (Net Radiation, Equivalent Black Carbon) formally convened at a side meeting in conjunction with the Arctic Observing Summit in Vancouver, 3 May 2013. The purpose of this meeting was to identify observing assets, clarify paths forward toward interoperable datasets, and frame potential contributions to the 2013 Arctic Report Card. IASC funds were used to cover for one working group lead and one APECS steering committee member. The groups successfully identified key problems during the meeting and made provisional plans for moving datasets towards interoperable formats. They continued to work through the summer and fall on developing contributions to the Arctic Report Card. The near term results were inclusion of two integrated analyses in the 2013 Arctic Report Card (Sharma et al., 2013; Key et al., 2013) and the presentation of an AGU poster (Burkhart et al., 2013). IASOA plans to build on these results in 2014 and expand the working group activities into new directions.

*The presentation is given in ANNEX 2.4.3.*

## **2.5 REVIEW OF IASC ACTIVITIES RELATED TO THE AWG**

### **2.5.1 CLIMATE ACTIVITIES OF CLIC (JENNY BASEMAN)**

Jenny, former director of the APECS, now the director of CLiC, gave an overview of the current new activities and people to contact that might be of interest to the AWG members, such as the Arctic Freshwater Synthesis (AFS), ISMASS and other workshops. CLiC is also involved with the ICARP III proposal, APECS – where are they now? and FrostBytes. CLiC is very interactive with other groups collaborating with WCRP, WWRP-PPP, and PCIPI initiatives. CLiC has many resources ([www.Climate-cryosphere.org](http://www.Climate-cryosphere.org)) and in particular, the calendar will show the current activities.

*The presentation is given in ANNEX 2.5.1.*

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

Korea will give secretarial support until the end of next year but there is no long term support. Volker introduced a more permanent solution regarding secretarial support. Through APECS, the IASC Secretary will recruit 2 ECS for each of the 5 Working Groups. The selected ECS Young Secretariat will enter the IASC fellowship and support their respective WG meetings by drafting the minutes and following up on the WG activities. The ECS will not be paid but funded to attend the ASSW and this can be a great opportunity for them. As a



test and trial, this year, 8 ECS were chosen through APECS however, there were no applicants for the AWG. The Secretarial support is yet to be discussed and approved by the Council.

- **ACTION: AWG has no ECS Young Secretariat, this may be because only certain ECSs were aware of this, and next time IASC should fully announce this opportunity to all the APECS and recruit ECS for the AWG.**

### 3. Plans for 2014 - 2015

#### 3.1 **3<sup>RD</sup> INTERNATIONAL CONFERENCE ON ARCTIC RESEARCH PLANNING (ICARP III) (VOLKER RACHOLD)**

Under this agenda item, Volker introduced the selected proposals from the ExCom meeting. The ICARP III activities have funds that were specially set aside. ICARP III is grouped into four themes led by the IASC WG, Networks & Action Groups and Partner organizations; the IASC AWG has two ICARP III proposals, MOSAiC and Linkages. One interesting ICARP III proposal is APECS – where are they now? This will show how ECS were supported and how it influenced them. There will be the steering committee established by the participating organizations. ICARP III sessions will be presented in Toyama. He introduced the ICARP III partners which involved indigenous people. All the information is available in the website. He gave a status report of the ICARP III.

*The presentation is given in ANNEX 3.1.*

##### 3.1.1 **LINKAGE (JAMES OVERLAND)**

The proposed Linkage activities have two goals, first, to produce a synthesis manuscript on Linkages for submission to a leading peer-review climate/science journal during 2014, which provide **consensus** statements on the state of the science and future directions as the basis for an ICARP III symposium session. Second, to promote Linkages research by supporting participation by leading scientist and early-career investigators in workshops and symposium sessions.

##### 3.1.2 **MOSAIC**

This was already discussed fully under item 2.1.2 by Matthew Shupe.

#### 3.2 **ADDITIONAL PROPOSED AWG ACTIVITIES FOR 2014 AND 2015 NEW ACTIVITIES/TASKS BROUGHT FORWARD BY THE MEMBERS**



Under this agenda item, new suggestions and proposals on WG activities were brought forward by members of the Working Groups. This included short presentations followed by a discussion.

### **3.2.1 PROPOSAL FOR WORKSHOP ON ARCTIC AIR POLLUTION (KATHY LAW)**

Kathy explained the motivation for looking at atmospheric chemistry stating that Arctic warming is leading to new local sources of Arctic pollution and poorly quantified local emissions. It is timely for the Arctic Air Pollutions workshop because there have been a lot of results on this topic and therefore would like to build on past and on-going activities to study the combined impacts of local and remote Arctic air pollutions and to improve chemical-aerosol models and impacts.

This workshop, coordinated with Sandy Starkweather of IAOSA was proposed to be held in Toronto, Canada for 2/3 days in October or November 2014.

*The presentation is given in ANNEX 3.2.1.*

### **3.2.2 THE 2<sup>ND</sup> INTERNATIONAL CONFERENCE 'POLAR CLIMATE AND ENVIRONMENTAL CHANGE IN THE LAST MILLENNIUM' (RAJMUND PRZYBYLAK)**

The success of the 1<sup>st</sup> International Conference, which was hosted in Torun from 1 - 4 February 2010, has led to a decision of having this Conference every 5 years. The 2<sup>nd</sup> International Conference is scheduled to be on 24 - 26 August 2015, Torun. There will be 50 – 100 participants, with early career researchers, whose costs will be covered, from developing countries such as Russia, Ukraine, Belarus, Czech Republic, Poland and Asian countries. The objectives and scope of this initiative is to summarize the current state of the climate and environmental changes in the Polar Regions; and to broaden knowledge about Arctic and Antarctic climate systems. Rajmund warmly invited all working group members to participate in this workshop.

*The presentation is given in ANNEX 3.2.2.*

### **3.2.3 THE DYNAMICS OF ATMOSPHERE – ICE – OCEAN INTERACTIONS IN HIGH LATITUDES (THOMAS SPENGLER)**

Thomas, coordinating with John Cassano and Ian Renfew, presented a workshop to be hosted in 23 – 27 March 2015, Rosendal Fjordhotel, an isolated location in close proximity to Bergen, Norway for about 80-90 participants. It will be a 4 day workshop and the main objective is to bring together international scientists to explore the connections between their areas of expertise encompassed of operational forecasting, observational and theoretical research, climate dynamics, predictability and the impact of severe weather events in the Polar Regions. A specific focus of the workshop will be on the processes acting

in the couple atmosphere-ocean-ice system and their state of the art modeling and understanding.

*The presentation is given in ANNEX 3.2.3.*

### **3.2.4 EGU SESSION: ARCTIC CLIMATE CHANGE AND MID-LATITUDE WEATHER PHENOMENA (JAMES OVERLAND)**

The purposed workshop is to be held in 12 – 17 April 2015 during the EGU General Assembly, and the funding from IASC will be used to organize the session, especially to bring 2 - 3 prominent Arctic atmospheric Scientists as invited speakers

### **3.2.5 LUNAR PHOTOMETRY IN THE ARCTIC (VITO VITALE)**

Night-time measurements of AOD are needed to fill gaps in climatologies and to improve understanding of processes that impact the Arctic surface radiation budget through direct and indirect aerosol effects. Today, due to the availability of high-precision exo-atmospheric lunar irradiance (EAI), lunar photometry is an emerging technology to fill gaps in the Arctic AOD climatology, and a lunar photometer network is being established. A program has been established in Barrow, Alaska and recently in Ny-Ålesund, Svalbard, with others planned for the winter 2014/15 in Eureka, Canada and ALOMAR, Norway. The proposed workshop will bring the community together, to further establish the network, develop calibration and data processing protocols and optimize use of limited resources Vito requested roughly between 7,000 – 10,000 Euros to fund 4/5 people to the workshop and for solar and lunar instruments.

*The presentation is given in ANNEX 3.2.5.*

### **3.2.6 OTHER IDEAS**

No other ideas were presented.

## **4 NEXT MEETING**

### **4.1 ASSW 2015 (YOO KYUNG LEE)**

Yoo Kyung Lee reported that 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.

### **4.2 ASSW 2016**

The 2016 meeting of the WG will be held in conjunction with the ASSW 2016 in Fairbanks, Alaska, USA.

