Workshop: "Towards an Interdisciplinary Research Agenda for Arctic Air Pollution"

Host: Air Pollution in the Arctic: Climate Environment and Societies (PACES) – WG2 "Arctic Air Pollution and Societies"

Location: ASSW 2017 Clarion Congress Hotel, Prague, Czech Republic (Stella Room)

Date: April 2, 2017

Time: 8:30am to 5:00pm

Attendees: International scientists and experts on natural and social sciences who contribute to PACES-relevant research

The Arctic is increasingly considered an Anthropocene climate frontier, as the man-made consequences of global warming look set to first and foremost impact the circumpolar hemisphere. The region is expected to become increasingly important as climatic changes look set to spark industrial-scale resource extraction and increased transport and commodity shipping, in turn, spelling severe impacts for the regions ecological and cultural landscapes due to industrialisation and consequent increases in pollution emissions from local sources related to mining and shipping. Simultaneously, the IPCC has called for enhanced involvement of the social sciences in formulating research responses to climate change as part of furthering collaboration between the natural and social sciences. In studying the developments that are happening right now, research exchange and collaboration is timely not only between academic disciplines, but also increasingly, with relevant local partners and society at large.

The objectives of this workshop are:

a) to develop joint and concrete research questions among social and natural sciences on local Arctic air pollution sources and their impacts in the,
b) to identify the geographical, cultural and scientific scope of the WG activities
c) to gain members for the interdisciplinary working group within the PACES activity on the theme "Arctic Air Pollution and Societies" that will be in charge of facilitating the inter- and transdisciplinary research in the coming years (Working Group 2).

Specific topics to be discussed will be how to:

a) explore politics and policy contexts that impact Arctic air pollution,
b) explore community based observing (CBO) in pilot programs in key regions and opportunities for further efforts,
c) explore topics related to legal frameworks, service delivery, health impacts, communication, and broader issues of trust,
d) develop ways to understand in-Arctic air pollution sources and their development trajectories through natural-social science collaboration.

Agenda:

8:30 to 10:00

Welcome by the Co-Chairs (Schmale, Starkweather, Tjesner, Tynkkynen)

Self-Introduction of Participants

Keynote I: Arctic Air Pollution – Global and Local Contributions (Arnold)

Keynote II: Arctic Air Pollution – Global and Regional Policy Context (Tynkkynen)

Workshop Charge (Starkweather)

10:00 – 10:30 Coffee

10:30 – 12:00 Session I: Science-Informed Regulatory Frameworks (moderator:Tynkkynen)

Keynote: Yulia Yamineva (WHITE Project)

The aim of the session "Science-Informed Regulatory Frameworks" is to discuss Arctic air pollution from legal, policy and politics perspectives.

Session questions:

What are the normative tools available and what are their limitations to reduce both GHG and short-lived climate forcers in the Arctic?

How do international and national policy contexts influence the implementation of previous legal packages and to introduce new ones?

How do national energy and environmental politics frame the success or failure of needed normative and policy processes?

12:00 – 1:15 Lunch

1:15 – 3:00 Session II: Local Observers, Local Sources (moderator: Schmale)

Keynote 1: Pelle Tjesner (TBD)

Keynote 2: Alexandra Lavrillier (TBD)

This session explores the Arctic as an Anthropocene climate frontier by focusing on experiences made and further potential for engaging local communities in creating interdisciplinary synergies vital to research projects and agendas aimed at addressing these developments.

Session questions:

What are the key challenges and opportunities for instigating collaboration, not only between the natural and social sciences, but also for involving community stakeholders as equal partners in our research?

How can local societies benefit from interdisciplinary research in terms of social sustainability, health and future mitigation challenges?

How can physical scientists gain greater insights into local sources of air pollutants and local processes through community partnership?

3:00 – 3:30 Coffee

3:30 – 4:45 Session III: Open Topics on Impacts, Science-Informed Services/Indices, Health Impacts of Air Pollution and Best Practices for Knowledge Exchange (moderator: Starkweather)

Interested participants should contact the moderator to present 1-2 slides to prompt discussion

Discussion Questions:

What aspects of air pollution are most concerning or most relevant to Arctic residents?

How do they seek information? And what contributes to trusted information sources?

What models or mechanisms should be pursued to increase the credibility and salience of this information to the public?

4:45 – 5:15 Wrap Up

Background

This workshop will provide a forum for focused discussions, building on ideas from two previous PACES meetings held in 2015 (Boulder and Helsinki, see http://www.igacproject.org/PACES) and the "Air pollution and Arctic Societies" workshop in Fairbanks during ASSW 2016, a preparatory meeting to the proposed activity. Follow-up meetings on research ideas, methodological development, development of community based monitoring approaches specific to the theme, as well as establishing connections to Arctic communities are planned for 2017 and 2018. This timeline is aligned with the schedule for dedicated atmospheric chemistry measurement campaigns under PACES. A white paper draft for WG 2 activities will be available by then.

PACES is a

- **New international initiative (2015- ..) :** Under auspices of **International Atmospheric Chemistry Project** (IGAC/Future Earth) & **International Arctic Science Committee** (Atmosphere WG and Social Human WG)
- **Community initiative following workshop** (Boulder, Feb. 2015) (sponsored by IGAC/IASC) → **White Paper (**http://www.elementascience.org/articles/104, **Elementa)**
- **Exploring links** to other international initiatives (PEEX, IASOA, AMAP, HTAP, MOSAiC, Year of Polar Prediction (YOPP), Arctic Obs Summit (AOS), ArcticStar, …)
- **Second workshop** in Helsinki, October 2015 (joint AMAP/BORNET-PEEX) to identify first set of **PACES actions**

3 Co-chairs:

- Steve Arnold, School of Earth and Environment, University of Leeds, UK
- Kathy Law, LATMOS/CNRS, Paris, France
- Chuck Brock, NOAA Earth System Research Laboratory, Boulder, US

Scientific Steering Committee:

Sandy Starkweather (NOAA, US), Jennie Thomas (CNRS, France), Hiroshi Tanimoto (NIES, Japan), Sangeeta Sharma (Environ. Canada), Marianne Lund (CICERO, Norway), Jim Gamble (Aleut Int. Assoc., US), Andreas Stohl (NILU, Norway), Tuukka Petäjä (U. Helsinki, Finland), Knut von Salzen (Environ. Canada), Julia Schmale (PSI, Switzerland)

Key Research Topics

- **Sources** of air pollution in the Arctic – **remote and local**
- **Processing**, **fate, and impacts** on climate, ecosystems & health
- Interactions and **feedbacks** between anthropogenic pollution and natural sources
- Arctic **climate response** to forcing within and outside of Arctic
- **Societal perspectives:** health, ecosystems, sustainability, adaptation, economics, politics

Goals of PACES

- Assess current understanding and provide recommendations for policymakers and research agencies, to guide future research in Arctic air pollution and its effects across the atmosphere, cryosphere, ocean, land surface and local societies
- Coordinate research efforts on Arctic air pollution – link to past, current and upcoming programs
- Foster inter-disciplinary research by organizing workshops and supplying on-line resources
- Encourage and coordinate collaborative, international, coupled measurement-modeling projects on specific Arctic air pollution topics