

Workshop Report

Julia Schmale (Julia.schmale@psi.ch), Sandy Starkweather (sandy.starkweather@noaa.gov)

“Towards an Interdisciplinary Research Agenda for Arctic Air Pollution”

Highlights

1. The workshop engaged researchers from humanities, social and natural sciences into discussing Arctic air pollution from a multi-disciplinary perspective
2. Participants from three IASC working groups submitted a successful cross-cutting proposal to follow up with concrete on the ground research plans
3. A multi-scale framework of air pollution drivers, impacts and related decision making was created

1 Paragraph Description:

This workshop provided a forum for focused discussions on how to combine research methodologies from humanities, social and natural sciences to understand current and future air pollution in the Arctic with the aim of proposing mitigation options. The conversations built on ideas from two previous PACES meetings held in 2015 (Boulder and Helsinki, see <http://pacesproject.org/meetings>) and the “Air pollution and Arctic Societies” workshop in Fairbanks during ASSW 2016. Participants designed a multi-scale framework in which research methodologies of drivers, impacts and related decision making of air pollution were identified at the local, regional and global level. Specific examples that were discussed included local waste burning, the fragmented nature of the regulatory landscape to control air pollution at the regional scale, and the potential future exploitation of natural resources driven by global needs.

Workshop summary

Using the Arctic Science Summit Week as a platform, the international project PACES – Air Pollution in the Arctic: Climate, Environment and Societies – brought together researchers from the social sciences, humanities and natural sciences to discuss an interdisciplinary research Agenda for Arctic air pollution.

The Arctic is increasingly considered an Anthropocene climate frontier, as the 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 were:

- 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 PACES activities, and
- 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.

Results

Participants organized the drivers and sources of air pollution, the relevant decision-making allays and resulting impacts across the local, regional and global level in a multi-scale framework (Figure 1).

To be able to combine the different research perspectives on air pollution of each discipline the framework was populated with methodological approaches applied at the various levels (Figure 2).

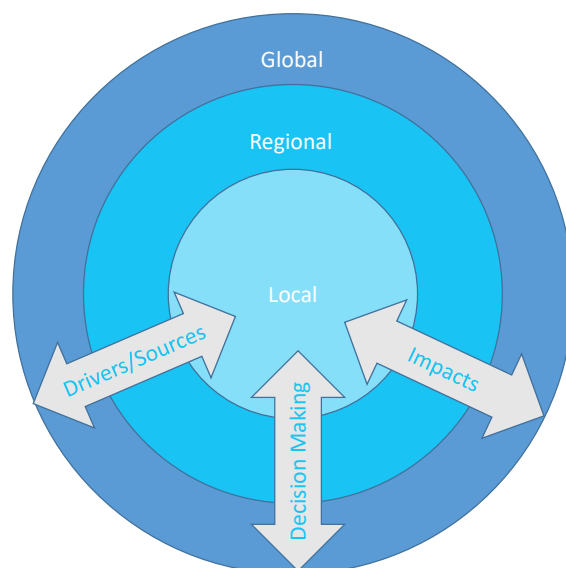


Figure 1: Multi-scale framework sketch

Scale	Key Issues: Drivers (Sources), Impacts and Decision Making	Methodologies
Local	<p><u>Impacts</u>: “Air Pollution” is nested within a holistic set of observations and “collective representations” about environmental change;</p> <p><u>Impacts/Drivers</u>: Different “knowledge systems” needed to understand and contextualize drivers of local change & impacts;</p> <p><u>Drivers/Decision Making</u>: Lack of participatory approaches impacts “sustainable societies”, stalls local decision making.</p>	<ul style="list-style-type: none"> • Cultural Anthropology • Health Sciences • Community Based Observing and Indigenous Knowledge • Sustainability
Regional	<p><u>Impacts/Drivers</u>: Arctic “Air Pollution” sits at the confluence of long-range transport, local sources AND Arctic natural processes;</p> <p><u>Drivers/Decision Making</u>: Complex of regional issues (e.g. lack of infrastructure or “curse of resources”) leads to distinct emission sources (e.g. trash burning, uranium dust) which global inventories have overlooked;</p> <p><u>Decision Making</u>: Regulatory landscape consists of “fragmented parallel efforts”.</p>	<ul style="list-style-type: none"> • Regulatory/Legal Research • Sustainable Governance • Social Indicators
Global	<p><u>Drivers/Decision Making</u>: “Air Pollution” is situated within “discourses on state power” that impact trajectory of future “Air Pollution” and policy tools available (e.g. certificates);</p> <p><u>Drivers/Impacts/Decision Making</u>: Regional development serving global demand can lead local communities as “Spectators in their own development”.</p>	<ul style="list-style-type: none"> • Political Geography • Cultural Anthropology • Sustainable Governance • Social Indicators

Figure 2: Preliminary identification of key issues and discipline specific research methodologies to address current and future Arctic air pollution

PACES members that are also actively involved in the International Arctic Science Committee (IASC) Working Groups for the Atmosphere, Terrestrial environment and Social and Human dimensions submitted a joint cross-cutting proposal to IASC to further develop the research agenda to plan an on the ground field campaign in the Arctic. The proposal was funded and the next workshop is planned for spring 2019.