



Improving Arctic Observation Systems through coordination – examples from the first State of Environmental Science in Svalbard (SESS) report

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The Norwegian archipelago Svalbard in the European High Arctic is an attractive platform for research due to its location, accessibility and rich infrastructure. More than 10 nations have established world-class research infrastructure and conduct intensive research and monitoring programmes. Svalbard Integrated Arctic Earth Observing System (SIOS) is developing and maintaining a regional observational system in and around Svalbard. It addresses Earth System questions related to global change by bringing together existing and new research infrastructure owned by a large number of international research institutions, thereby attracting leading scientists in fields related to Earth System science.

The State of Environmental Science in Svalbard (SESS) report is the annual report produced by SIOS. It summarises the state of current knowledge of key Earth System Science parameters in the Svalbard region. The SESS report outlines the work that has been done in the previous years within the SIOS cooperation to optimise the observing system and recommends research priorities for the following year(s). It combines the long-term monitoring data that form the core of the observing system with new, innovative monitoring and research. In addition to evaluating the state of current knowledge, the SESS report highlights the questions that remain unanswered and recommends solutions.

The first SESS report, published 14 January 2019, takes us through all the spheres from the deep permafrost through the surface interfaces, into the ocean and into the upper atmosphere approaching space. It illustrates the breadth of Earth System Science questions as well as the breadth of Svalbard research. As the first report it provides a baseline for future reports that will provide comprehensive summaries of environmental developments. The current report focuses on knowledge gaps and recommendations on the future and is a strong contribution to the coordination efforts of SIOS. Many chapters gather for the first time researchers and data throughout entire Svalbard.

We will present the key findings from the first SESS report and discuss steps to further improve the Observing System for Earth System Science in Svalbard following the recommendations in the report.