

SIOS – an international partnership developing a sustained regional observing system for Arctic Earth System Science

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Svalbard Integrated Arctic Earth Observing System (SIOS) is an international consortium that cooperates to develop and maintain a regional observing system in and around the Norwegian archipelago Svalbard in the European High-Arctic. Svalbard is an ideal platform for environmental research due to its location, accessibility and well-developed infrastructure leading to establishment of high-quality research programmes by many institutions. SIOS brings together the existing research infrastructure and resulting data of its currently 24 members from 9 nations into a multidisciplinary network dedicated to addressing Earth System Science (ESS) questions related to environmental change. The focus lies on cross-disciplinary processes and interactions between the spheres that make up the Earth system (biosphere, geosphere, atmosphere, cryosphere, and hydrosphere).

SIOS publishes an annual report on the State of Environmental Science in Svalbard (SESS report), compiled by authors from multidisciplinary and international scientific community. The report summarises the state of current knowledge of key Earth System Science parameters in the Svalbard region, highlights unanswered questions and gaps in observation, and eventually recommends research priorities for the following year(s). The SESS report is an important mechanism for developing the integrated observing system and prioritising funding needs. It is also an important outreach tool towards stakeholders and policy makers. SIOS has defined a set of core data, based on essential variables and the needs of scientists, modelers and its member institutions. These core data, together with a research infrastructure optimisation strategy and the extensive existing observation facilities, build a solid base for the Earth System Observing System in Svalbard. SIOS Knowledge Centre supports this work through a set of services, including a distributed data management system, an open access programme to better utilise the research infrastructure of SIOS members, the promotion and improvement of Earth observation and remote sensing resources, logistical support, training and networking activities. These services are delivered in collaboration with representatives from SIOS's international membership. SIOS working groups and task forces deliver the services in direct and structured dialogue with scientists, user groups, policy makers and other relevant stakeholders. The SIOS community works together on research proposals to secure funding that enables the members to further develop the observing system and maintain core measurements in a long-term perspective. SIOS facilitates access to Earth System data from Svalbard through a free and open data access point that enables the users to search, retrieve, visualise, transform, and harvest in situ and remotely-sensed data relevant to Svalbard stored in the distributed data centres of SIOS partners. SIOS also maintains an overview of observation facilities, which is a lightweight implementation of the international metadata standards set by WIGOS.

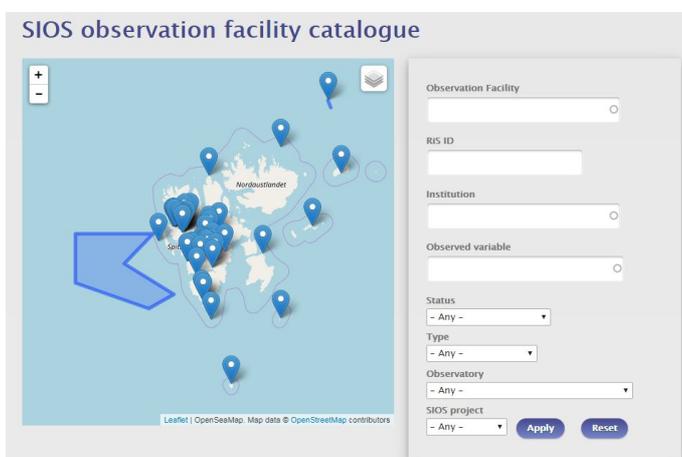


Figure 1: SIOS observation facility catalogue

References:

SIOS (2020) www.sios-svalbard.org