



Lead Author e-mail: Taneil.Uttal@gmail.com

Title: *A Data Access Portal for the International Arctic Systems for Observing the Atmosphere and Surface (IASOA-S) to investigate Arctic Climate Change*

Sandy Starkweather¹, Taneil Uttal²

¹*University of Colorado Cooperative Institute for Research in the Environmental Sciences*

²*NOAA Earth Systems Research Laboratory*

The International Arctic Systems for Observing the Atmosphere and Surface (IASOA-S) was initiated as an International Polar Year (IPY) project to address key atmospheric science questions through coordinating the considerable atmospheric observing assets at nine pan-Arctic observatories. The post-IPY mission of IASOA is to continue to advance cross-site research objectives from independent Arctic atmospheric observatories through (1) strategically developing comprehensive observational capacity, (2) facilitating data access and usability through a single gateway, and (3) mobilizing contributions to synergistic science and socially-relevant services derived from IASOA assets and expertise. As a starting point for IPY legacy activities, the IASOA steering committee identified enhanced, cross-site data sharing through an IASOA-specific data portal as a focus for on-going consortium activities. The original IASOA data portal was developed in an ad hoc fashion based on observational inventories from the IASOA member observatories. The collection of information was not organized in a hierarchical fashion and the categories were a heterogeneous mix of physical parameters, instrument types and network types.

Data discovery and data understanding are two vital and distinct facets of successful data sharing. Data discovery supports the function of cataloguing what data is available and for many metadata standards systems this is the end goal. The more challenging data understanding goal supplies the additional advanced documentation (e.g. file formats, calibration schemes, uncertainty measures and direct access links) that enables successful cross-site and future third-party use.

Our implementation plan will employ the International Standards Organization (ISO) 19115 metadata standard with an emphasis on interoperability with the World Meteorological Organization (WMO) and the Sustained Arctic Observing Network (SAON) implementations. This ISO standard is adaptable to supporting standardized and interoperable, understanding metadata (in addition to discovery metadata) which has been slow to develop. Through three specific case studies, IASOA is providing implementation examples to drive new metadata standards. Data reserves from IASOA observatories are poised to mobilize contributions to synergistic science and socially-relevant services; discovery and understanding metadata are prerequisites for current cross-site and future long-term synthesis. The end goal will be to expand the usage of IASOA data between not only the



atmospheric scientists of the member observatories, but also to the broader community of modeling and management specialists. A measure of this success would be inclusion of IASOA synthesis science in the Arctic Report Card and the Intergovernmental Panel on Climate Change reports.