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THE EVOLUTION OF NSF ARCTIC DATA MANAGEMENT: CHALLENGES AND LESSONS LEARNED AFTER TWO DECADES OF SUPPORT

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The process of properly archiving and disseminating data and information is being accomplished by a number of different national and international data archive centers. They all have a primary objective to provide long term archive of and access to the remarkable data legacy from the Arctic region. The technology for exchanging data is possible via interoperability of metadata , semantic searches, and other techniques. However, one of the major challenges facing the scientists and these data centers is how foster trust between nations that then allows the free and open exchange of data. The rich data sets coming from the several nations conducting Arctic research must be allowed to be shared and integrated to understand and assess the huge changes now underway in the Arctic regions.

The NCAR Earth Observing Laboratory has been supporting a variety of international field process studies and WCRP sponsored international projects that require international data collection and exchange in order to be successful. Some of the programs include the Surface Heat Budget of the Arctic (SHEBA) International Tundra Experiment (ITEX), the Arctic Climate Systems Study (ACSYS) and the GEWEX Continental Scale Interaction Project (GCIP), the Pacific Marine Arctic Regional Synthesis and the Distributed Biological Observatory (DBO) to name a few. These projects, all with different objectives and resulting multidisciplinary data, occurred over nearly 25 years and yet have similar challenges in the international data collection, archival access and exchange of the rich data sets that are their legacy. In addition, the authors are involved in a major collaboration with the National Now and Ice Data Center (NSIDC), NCAR Computational & Information Systems Laboratory (CISL) and the UCAR Unidata Program to develop and maintain the Advanced Cooperative Arctic Data and Information System (ACADIS). The data managers have managed thousands of datasets for hundreds of Principal Investigators.

The reality of meeting this open data exchange challenge, however, is something much more difficult. The authors will provide several specific examples of successes and failures when trying to meet the needs of an international community of researchers to share and use these diverse data. The cases are focused in the areas of evolving metadata standards, international data access and exchange and the techniques that facilitate reuse of data. This is done through the context of the projects noted above in an environment of proprietary data claims, multiple formats and data collection procedures, hoarding of data, international data restrictions and mistrust of other scientists and even stealing of data.

