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Supporting NEESPI with Data Services - The SIB-ESS-C e-Infrastructure

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Data discovery and retrieval is commonly among the first steps performed for any Earth science study. The way scientific data is searched and accessed has changed significantly over the past two decades. Especially the development of the World Wide Web and the technologies that evolved along shortened the data discovery and data exchange process. On the other hand the amount of data collected and distributed by earth scientists has increased exponentially requiring new concepts for data management and sharing. One such concept to meet the demand is to build up Spatial Data Infrastructures (SDI) or e-Infrastructures. These infrastructures usually contain components for data discovery allowing users (or other systems) to query a catalogue or registry and retrieve metadata information on available data holdings and services. Data access is typically granted using FTP/HTTP protocols or, more advanced, through Web Services. A Service Oriented Architecture (SOA) approach based on standardized services enables users to benefit from interoperability among different systems and to integrate distributed services into their application. The Siberian Earth System Science Cluster (SIB-ESS-C) being established at the University of Jena (Germany) is such a spatial data infrastructure following these principles and implementing standards published by the Open Geospatial Consortium (OGC) and the International Organization for Standardization (ISO). The prime objective is to provide researchers with focus on Siberia with the technical means for data discovery, data access, data publication and data analysis. The region of interest covers the entire Asian part of the Russian Federation from the Ural to the Pacific Ocean including the Ob-, Lena- and Yenissey river catchments. The aim of SIB-ESS-C is to provide a comprehensive set of data products for Earth system science in this region. Although SIB-ESS-C will be equipped with processing capabilities for in-house data generation (mainly from Earth Observation), current data holdings of SIB-ESS-C have been created in collaboration with a number of partners in previous and ongoing research projects (e.g. SIBERIA-II, SibFORD, IRIS).
At the current development stage the SIB-ESS-C system comprises a federated metadata catalogue accessible through the SIB-ESS-C Web Portal or from any OGC-CSW compliant client. Due to full interoperability with other metadata catalogues users of the SIB-ESS-C Web Portal are able to search external metadata repositories. The Web Portal contains also a simple visualization component which will be extended to a comprehensive visualization and analysis tool in the near future. All data products are already accessible as a Web Mapping Service and will be made available as Web Feature and Web Coverage Services soon allowing users to directly incorporate the data into their application. The SIB-ESS-C infrastructure will be further developed as one node in a network of similar systems (e.g. NASA GIOVANNI) in the NEESPI region.