

EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Data Management Systems (4)

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GLOBAL HYDROLOGY RESOURCE CENTER: A FOUNDATION FOR RESEARCH USING EARTH
OBSERVATION DATA**Abstract**

Sensors on today's Earth observing satellites, aircraft, and ground-based platforms produce enormous amount of data. Archiving, processing, and publishing the data from networks of these sensors is a huge challenge. To meet this challenge, NASA established several Distributed Active Archive Centers (DAACs) that provide data services for heterogeneous Earth science data to scientists and other users worldwide. The Global Hydrology Resource Center (GHRC) is one of eleven such DAACs. The primary responsibility of the GHRC is to process, archive, document, and distribute lightning and passive microwave data from NASA and other Earth observing satellites, as well as collections of airborne and ancillary data from field experiments studying hurricanes and tropical cyclones. Like other DAACs, the GHRC serves as an operational data management provider for Earth science data and information. In addition, the GHRC provides applications and tools ranging from visualization to complex data mining and analysis. The GHRC provides data consumers with applications and tools by delivering data using current standard technologies such as Open Geospatial Consortium (OGC) Web Map and Sensor Observation Services (WMS and SOS) and OPeNDAP (Open-source Project for a Network Data Access Protocol). In addition to supporting NASA's EOS Data ClearingHouse (ECHO) and a local data search and access interface, the GHRC provides both OpenSearch and SOAP-based data discovery services. Such standard interfaces for data discovery and access improve data delivery, interoperability and usability. The online availability of the Center's data resources, as well as simple and standards-based discovery facilitates automated integration of data in various research experiments. We will describe such research experiments that include real time situational awareness tools accessing archived data from GHRC. Researchers affiliated with the center have also built data mining tools to extract important phenomena of interest from the large volumes of data for intelligent decision-making. Users have access to these data mining tools in a service oriented framework where simplified graphical workflows of data mining algorithms can be generated and executed across the volumes of data. This approach is possible due to standard data catalogs and service catalogs built around most of the available GHRC offerings so that researchers can easily identify the data and corresponding services of their needs. This paper provides a brief overview of the GHRC architecture and its functions along with various technologies and collaborative efforts. Past and current projects that have closely employed GHRC as a foundation for data and analysis are also described.