



## **Information management of international seismological data: cyberinfrastructure at the IRIS Data Management Center**

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The IRIS Data Management System is responsible for the effective management and dissemination of metadata and time series data from a variety of worldwide sources. Most of the data we manage is seismological data from the IRIS Global Seismographic Network, the PASSCAL program supporting portable seismology, data from USGS supported regional networks within the US or from the International Federation of Digital Seismographic Networks (FDSN). In addition to seismological data, the data model used by the IRIS DMC effectively manages data from 26 different kinds of sensor networks. This includes time series measurements from meteorological sensors, sensor data from structures, measurements in the water column, and various kinds of geophysical data.

We act as an international data center and have data from 73 different countries contributed to us by non-US organizations. IRIS acts as the archive and distribution point for data from several organizations that have expressed a desire for IRIS to manage their data rather than developing data systems of their own. These include both NSF and USGS funded groups such as the Ocean Bottom Seismometer Instrumentation Program (OBSIP), the ElectroMagnetic Studies Of the Continents (EMSOC), the SAFOD and the Plate Boundary Observatory components of Earthscope, and the Advanced National Seismic System (ANSS) and National Strong Motion Program of the USGS. Several international organizations also entrust IRIS to act as an archive and distribution point for their data. These include SEIS-UK, a UK based portable instrumentation program, Global Geodynamics Project (GGP) of superconducting gravimeters, and roughly 20 national and international networks of members of the FDSN.

Our collaborations with international groups have greatly strengthened our domain science.

IRIS' current developments in distributed access methods focus on CORBA based services that are in operation as well as newer web-service based methods (XML, WSDL, SOAP) to provide access to our data holdings. We currently support three fundamental services; 1) access to earthquake hypocenter information, 2) access to seismological network metadata, and 3) access to time series data. We also have a web-serviced based Product Management System that allows product ingestion, archiving and supports discovery and distribution of products by both client-based and browser based methods. The product management system is being used for management of products from the NSF funded EarthScope program in the United States. We anticipate the development of additional Service Oriented Architectures (SOA) services based upon web services that will be used to support the product management system.

The goal of these cyberinfrastructure developments are to not only support domain scientists but to make the international information holdings of IRIS available to a broader scientific audience