Global Federation of Data Services in Seismology: Extending the Concept to Interdisciplinary Science

Tim Ahern, Chad Trabant, Mike Stults, and Mick VanFossen
IRIS, Data Services, Seattle, United States (tim@iris.washington.edu)

The International Federation of Digital Seismograph Networks (FDSN) sets international standards, formats, and access protocols for global seismology. Recently the availability of an FDSN standard for web services has enabled the development of a federated model of data access. With a growing number of internationally distributed data centers supporting compatible web services the task of federation is now fully realizable. The utility of this approach is already starting to bear fruit in seismology.

This presentation will highlight the advances the seismological community has made in the past year towards federated access to seismological data including waveforms, earthquake event catalogs, and metadata describing seismic stations. It will include a discussion of an IRIS Federator as well as an emerging effort to develop an FDSN Federator that will allow seamless access to seismological information across multiple FDSN data centers.

As part of the NSF EarthCube initiative as well as the US-European data coordination project (COOPEUS), IRIS and several partners, collectively called GeoWS, have been extending the concept of standard web services to other domains. Our primary partners include Lamont Doherty Earth Observatory (marine geophysics), Caltech (tectonic plate reconstructions), SDSC (hydrology), UNAVCO (geodesy), and Unidata (atmospheric sciences). Additionally, IRIS is working with partners at NOAA's National Centers for Environmental Information (NCEI) , NEON, UTEP, WOVOdat, INTERMAGNET, Global Geodynamics Program, and the Ocean Observatory Initiative (OOI) to develop web services for those domains. The ultimate goal is to allow discovery, access, and utilization of cross-domain data sources. One of the significant outcomes of this effort is the development of a simple text and metadata representation for tabular data called GeoCSV, that allows straightforward interpretation of information from multiple domains by non-domain experts.