THREDDS/TDS

What is THREDDS?

THREDDS (Thematic Real-time Environmental Distributed Data Services) is middleware to bridge the gap between data providers and data users. The goal is to simplify the discovery and use of scientific data and to allow scientific publications and educational materials to reference scientific data.

The THREDDS effort consists of three main areas: the THREDDS Data Server (TDS) and the Common Data Model (CDM) / netCDF-Java library, and the Rosetta data translation tool.

The THREDDS Data Server

The THREDDS Data Server (TDS) provides catalog, metadata, and data access services for scientific data. Every TDS publishes THREDDS catalogs that advertise the datasets and services it makes available. THREDDS catalogs are XML documents that list datasets and the data access services available for the datasets. Catalogs may contain metadata to document details about the datasets. TDS configuration files provide the TDS with information about which datasets and data collections are available and what services are provided for the datasets. The available remote data access protocols include OPeNDAP, OGC WCS, OGC WMS, and HTTP. The ncISO service allows THREDDS catalogs to be translated into ISO metadata records.

The TDS also supports several dataset collection services including some sophisticated dataset aggregation capabilities. This allows the TDS to aggregate a collection of datasets into a single virtual dataset, greatly simplifying user access to that data collection.

The TDS is open source and runs inside the open source Tomcat Servlet container.

Want to Learn More? Need Data?

Visit: http://www.unidata.ucar.edu/software/tds

Much of the real-time data available over Unidata's Internet Data Distribution (IDD) system is available through a THREDDS Data Server hosted at Unidata. See it in action by pointing the IDV's data chooser to:

https://thredds.ucar.edu/thredds/catalog.xml

or by pointing your web browser to:

https://thredds.ucar.edu/thredds/catalog.html
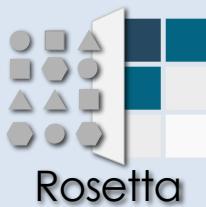
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Common Data Model

The Common Data Model (CDM) provides data access through the netCDF-Java API to a variety of data formats (e.g., netCDF, HDF, GRIB). Layered above the basic data access, the CDM uses the metadata contained in datasets to provide a higher-level interface to geoscience specific features of datasets, in particular, providing geolocation and data subsetting in coordinate space.

The TDS uses the CDM/netCDF-Java to read datasets in various formats. The CDM also provides the foundation for all the services made available through the TDS.

A pluggable framework allows other developers to add readers for their own specialized formats. The CDM also provides standard APIs for georeferencing coordinate systems, and specialized queries for scientific feature types like Grid, Point, and Radial datasets.

Want Your Own TDS?

Want to get set up with a THREDDS Data Server at your site? Unidata can help!

❖ Unidata provides comprehensive technical support services to help you install and configure your server.
To get help, contact:

   support-thredds@unidata.ucar.edu

❖ You can get various versions of the TDS in pre-built Docker containers maintained by Unidata from:

https://github.com/Unidata/thredds-docker

❖ The Community Equipment Awards program makes funds available to universities who need to purchase computer hardware in order to install Unidata server technologies. For details, visit:

https://www.unidata.ucar.edu/community/equipaward

Rosetta

The Unidata Data Translation Tool, Rosetta, is a web-based service that provides an easy, wizard-based interface for data collectors to transform their datalogger-generated ASCII output into Climate and Forecast (CF) compliant netCDF files, complete with metadata describing what data are contained in the file, the instruments used to collect the data, and other critical information that otherwise may be lost.

By storing data in CF-compliant netCDF files, we make it easy for standard data services like the TDS to make the data accessible to remote users. In addition, using a well-defined community standard data format means that a wide variety of analysis and visualization tools can work with the data without modification.

In addition to the wizard interrface, Rosetta provides a RESTful web service for bulk conversion. Rosetta builds upon netCDF-Java and the CDM, and produces files that can be served by the TDS as Point Feature Collections.