Mission Statement:
Provide data, tools, and community leadership for enhanced Earth-system education and research.

At the Unidata Program Center, we

- Facilitate [Real-time] Data Access
- Provide Tools
- Support Faculty and Staff
- Build and Advocate for a Community
Conception: Circa 1983

Current Funding Sources: Primarily NSF/ATM, with additional funding from NSF/EHR and NASA.

Governance:
- Community governed
- Policy Committee (Appointed by UCAR President)
- Users Committee
- Technical Committee(s) – as needed
About 150+ sites are participating in Unidata Internet Data Distribution (IDD) system.

Approximately 2 GB of data injected/hour from distributed sources.

Unidata IDD/LDM uses more of the Internet2 than any other advanced application.

Approx. 15 Terabytes of data transmitted each week (~4% of I2 traffic).
Volume of Data Moved by LDM each week via Internet 2 for the past year

The LDM is now ranked #3 (behind HTTP and NNTP) in Internet 2 usage.

It recently surpassed FTP.
1) McIDAS: A client/server analysis and display package that emphasizes image processing of data from satellite-borne sensors;

2) GEMPAK: An analysis, display, and product generation package for meteorological data;

3) Integrated Data Viewer: Java-based, platform-independent data analysis and 3D visualization tools;

4) NetCDF: A software interface for platform-independent access to self describing datasets;

5) Local Data Manager: Software for capturing, disseminating, and organizing data in near-real time; It is the heart of the Internet Data Distribution (IDD) system;

6) THREDDS: A project to facilitate remote access to thematic, distributed, interdisciplinary data servers;
Real-Time Monitoring

Unidata’s reach is now global.

There are sites in South America, Europe, and Asia that receive real-time data via the IDD.
Real-time Statistics

Hong Kong Univ. - HDS

Univ. Washington - ALL

Ohio State Univ. - FNEXRAD

Univ. Wisconsin - CONDUIT
The U. S. National Weather Service is now using the Unidata LDM technology *operationally* to distribute NEXRAD Level II data.

The Korean Meteorological Administration has started using the LDM for some of their internal data distribution to/from nearly 40 weather service offices.
Unidata’s LDM is used for real-time data transport
We are moving from an era of data provision towards one in which data- and related web-services are important;

Multidisciplinary integration and synthesis are emphasized.

Unidata user community is interdisciplinary - 2/3rd of sites have users outside atmospheric sciences.
Ongoing Endeavors

Community and Support Services

- **Endeavor 1.** Responding to a broader and more diverse community.
- **Endeavor 2.** Comprehensive support services

Data Services, Systems and Tools

- **Endeavor 3.** Real-time, self-managing data flows
- **Endeavor 4.** Software to analyze and visualize geoscience data
- **Endeavor 5.** Distributed, organized collections of digital material
- **Endeavor 6.** Improved data access infrastructure
Integrated Data Viewer

- IDV testing in the IHOP field project
- S-POL 3D radar reflectivity from NCAR
- Albedo (color-shaded)
- Aircraft Track
- Different sources, protocols, resolutions and time-scales
- IDV will be used in RICO
Examples of Remote Visualizations

- Upper-mantle convection
- NO$_2$ concentration
- Thunderstorm simulation
- Sea-level Pressure and Upper-level Jet
- S-POL Radar Cross-section of a thunderstorm
User applications:
e.g., McIDAS, IDV, LAS, IDL, MatLab...

DLESE
Digital Library for
Earth-System Education

To make it possible to
publish, locate, analyze,
visualize, and integrate a
variety of environmental data

- Combines IDD “push” with
  several forms of “pull” and DL
discovery
- About 25 data providers are
  partners in THREDDS

Connecting People with
Documents and Data
NetCDF/HDF5 Merger

Access to netCDF-3, netCDF-4, and HDF5 data created through netCDF-4 interface
LEAD: A Large Grid Computing Project

- Linked Environments for Atmospheric Discovery
  - Identify, Access, Assimilate, Predict, Manage, Mine, and Visualize a broad array of meteorological data and model output, independent of format and physical location
  - A range of Grid and Web Services will be developed for dynamic, on-demand, end-to-end weather prediction
Employ components of WRF prediction as a series of linked web services in a Grid Environment.