The Integrated Data Viewer – A Tool for Scientific Analysis and Visualization

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Overview

- What is the Integrated Data Viewer (IDV)?
- IDV features
- Web enabled features
  - Client/Server Data Access
  - XML Configuration and Persistence
  - Integrated HTML Viewer
  - Use of Java Web Start
- IDV as an Integrator
- Summary
What is the IDV?

- Unidata’s newest scientific analysis and visualization tool
- Freely available Java™ framework and reference application
- Built on VisAD library
- Provides 2- and 3-D displays of data (grids, in-situ, radar, satellite)
- Stand-alone or networked application
IDV Features

- Integrated displays of a variety of data types
- Support for a variety data access methods
- Multiple display types
- Interactive probes
- User defined formulas
- Bundling of user preferences
- Integrated HTML viewer
- Easy configuration
- Integrated documentation
Unique IDV Features

- Interactive probes for dataset exploration
  - Parameter readouts
  - Vertical profiles
  - Model soundings
  - Time/Height displays
- QuickTime™ capture and playback
- Incorporation of educational materials
- User defined formulas
- Extensible framework
- Extensive use of network resources
Web enabled features

- Client/Server data access
- XML Configuration
- XML Persistence
- Integrated HTML Viewer
- Use of Java Web Start
Web Enabled Features

Client/Server Data Access

- Access data from DODS/OPeNDAP or ADDE servers, as well as local files, HTTP and FTP
- Allows subsetting of large datasets
- Can use THREDDS catalogs for discovery and usage metadata
- Catalogs can be indexed in digital libraries
Web Enabled Features

XML Configuration

- IDV uses XML to configure the user experience
- Configuration files can be local or distributed across one or more web servers
- Offers flexibility to adapt the interface to different:
  - learners
  - tasks
  - data sets
  - content areas
Web Enabled Features

XML Persistence

- State of the application (loaded data sources and data depictions) can be saved in XML “bundles”
- Bundles can be loaded at startup or imported on-the-fly
- Displays can be annotated and these can be saved in the bundle as explanations
- Bundles can be distributed around the Internet (on web servers or e-mail attachments)
Web Enabled Features

Integrated HTML Viewer

- IDV includes a customized HTML viewer
- Viewer can be used to provide context with associated data displays
- IDV displays can be easily embedded in the HTML
- Can be used as a customized UI which controls the IDV
Web Enabled Features

Use of Java Web Start™

- Java Web Start can be used to load in the IDV from a web page
- JNLP files can include pointers to configuration files and bundles for customization (VGEE)
- Web Start provides automatic updates
IDV as an Integrator

- Data and configuration parameters can be loaded from multiple, distributed servers.
- VisAD data model enables computations on disparate datasets.
- Metadata (e.g., units, sampling topologies, error estimates and coordinate transforms) is carried along through mathematical operations.
- Facilitates collaborations between disciplines.
Future Development

- **New Data Types**
  - WRF model output
  - Support for additional geoscience data sets (oceanographic, geophysical)
  - GIS data

- **New Features**
  - Auto-update of displays
  - Trajectory Tracers (a la Vis5D)
  - Web log (blog) integration
Summary

Unidata’s IDV is a freely available, powerful analysis and visualization tool which can facilitate education and research by:

- Integrating diverse datasets
- Allowing customized user experiences
- Enabling collaborations
For Further Information

- Integrated Data Viewer homepage
  - [http://my.unidata.ucar.edu/content/software/IDV](http://my.unidata.ucar.edu/content/software/IDV)

- VisAD homepage
  - [http://www.ssec.wisc.edu/~billh/visad.html](http://www.ssec.wisc.edu/~billh/visad.html)

- Visual Geophysical Exploration Environment (VGEE) homepage
  - [http://www.dlese.org/vgee](http://www.dlese.org/vgee)