

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



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Unidata Summer 2003 Workshop -
Expanding Horizons

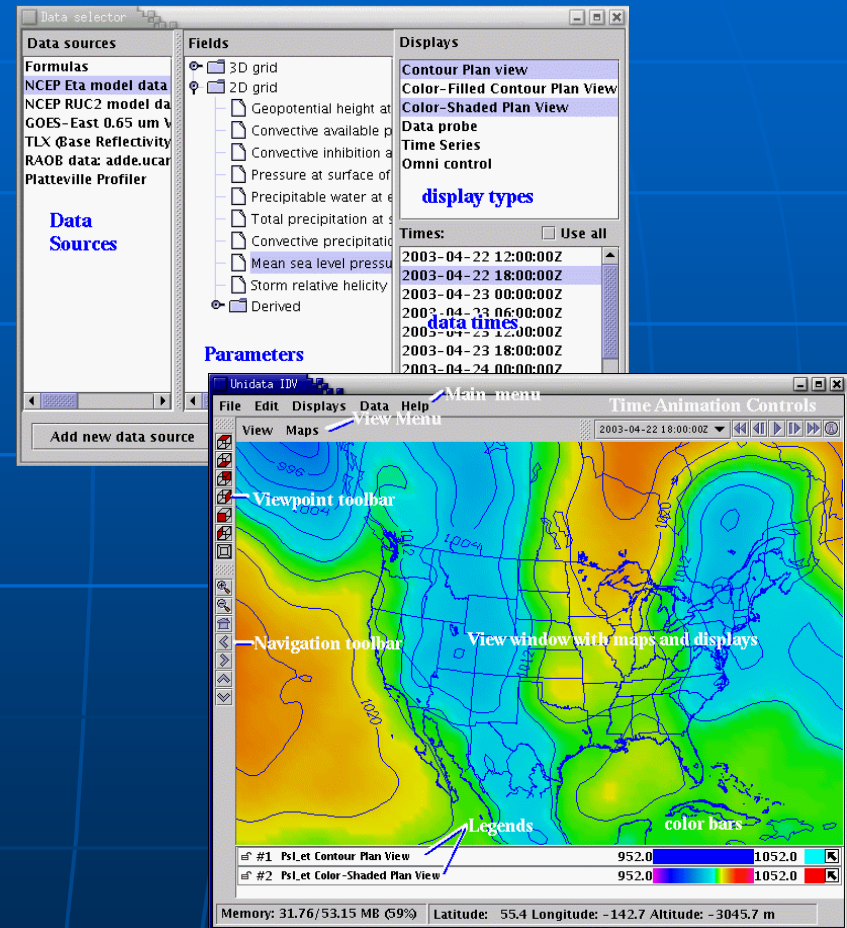


Overview

- 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



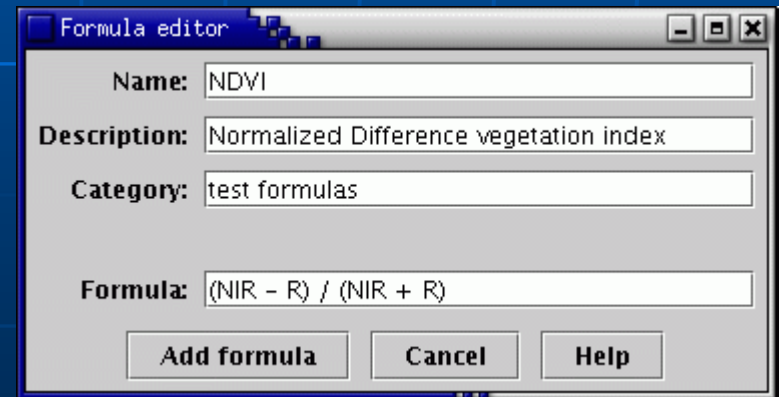
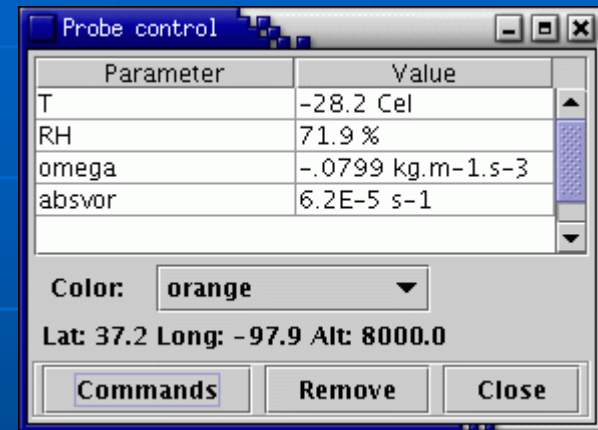
IDV Features

- 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



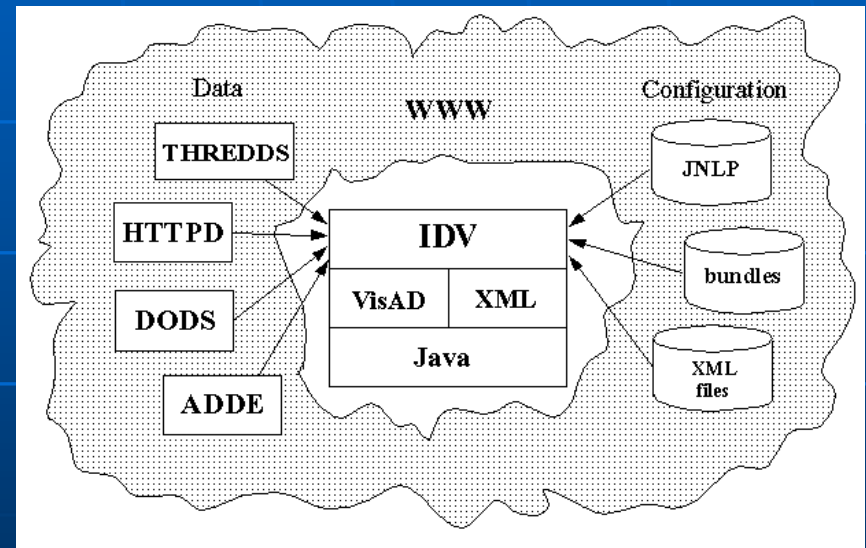
Unique IDV Features

- 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

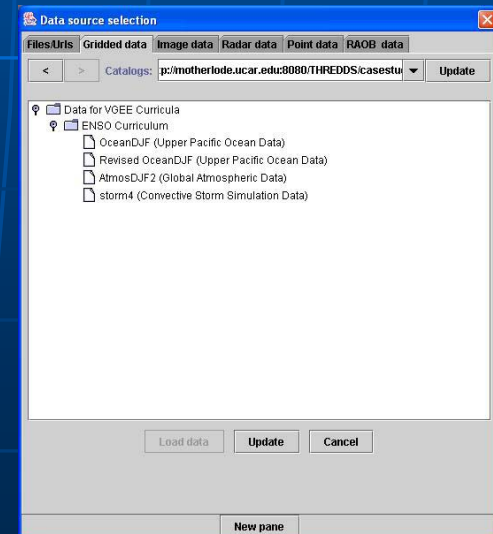
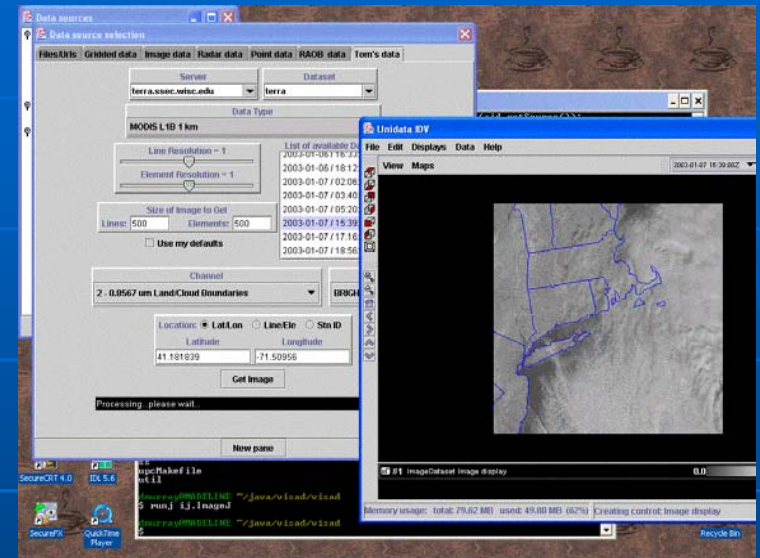
- Client/Server data access
- XML Configuration
- XML Persistence
- Integrated HTML Viewer
- Use of Java Web Start



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

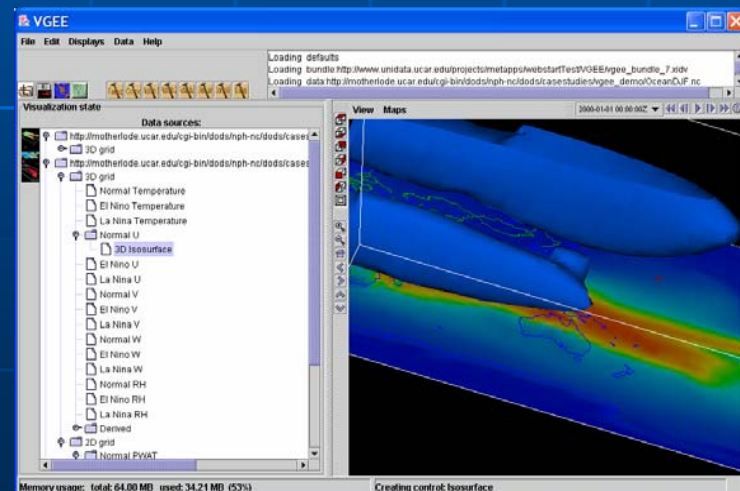
- IDV uses XML to configure the user experience
- Configuration files can be local or distributed across one or more web servers
- Offers flexibility to adapt the interface to different:
 - learners
 - tasks
 - data sets
 - content areas



```

<?xml version="1.0" encoding="utf-8"?>
<!-- XML File for VGE with Webstart Demo, October 2002 -->
<vge>
  <applet1.0>
    <!-- codebase shows the server name and top level directory path
    used by later relative file locations in this file -->
    <codebase "http://www.unidata.ucar.edu/projects/metapps/webstartTest/" href="VGE/vge_demo_1.0.jar">
    </codebase>
    <!-- the title window & icon comes up in the main Java Web Start downloading window
    and in the Java Web Start Application Manager window -->
    <title>VGE Demo with Curriculum and Data</title>
    <resources>
      <icon href="VGE/vge_demo_1.0.jar"/>
    </resources>
    <!-- how used by Web Start? -->
    <homepage href="http://www.unidata.ucar.edu/projects/metapps/webstartTest/">
    </homepage>
    <!-- where does this appear? -->
    <description>VGE Demo using Web Start</description>
    <!-- the "description kind=short" is two-line-long text that
    appears in the Java Web Start Application Manager window -->
    <description kind="short">This demo of the VGE includes
    the VGE curriculum entirely "inside" the IDV.
    </description>
    <offline-allowed/>
  </applet1.0>
  <informations>
    <!-- set Java version and max memory size for the application. -->
    <!-- indicate all jar files needed; the idv.jar is a list
    of more jar files needed by the IDV code -->
    <resources>
      <jar href="VGE/vge_demo_1.0.jar"/>
      <jar href="IDV/idv.jar"/>
      <extension name="IDV Demo" href="IDV/idv_demo_1.0.jar"/>
    </resources>
  </informations>
</vge>

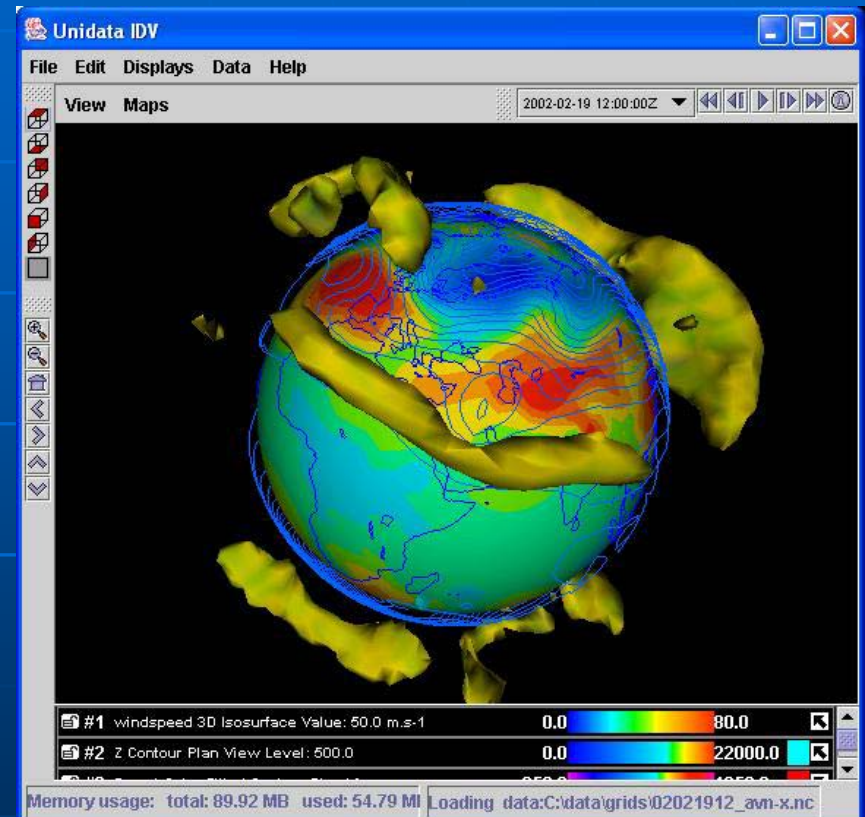
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Web Enabled Features

XML Persistence

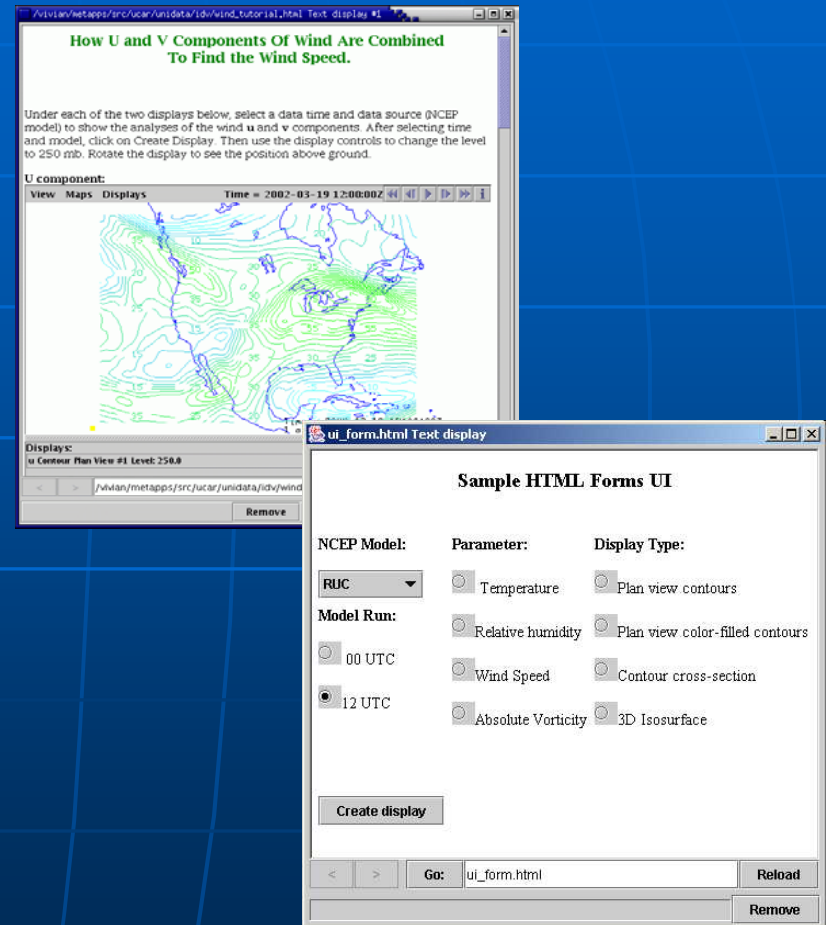
- State of the application (loaded data sources and data depictions) can be saved in XML "bundles"
- Bundles can be loaded at startup or imported on-the-fly
- Displays can be annotated and these can be saved in the bundle as explanations
- Bundles can be distributed around the Internet (on web servers 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>
- VisAD homepage
 - <http://www.ssec.wisc.edu/~billh/visad.html>
- Visual Geophysical Exploration Environment (VGEE) homepage
 - <http://www.dlese.org/vgee>