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With ReadDFG, user selected variables from the file are output in up to five PATHFINDER grids. Bresch and Mark A. IVE assumes the data to be displayed are contained in one- two-, three- or four-dimensional arrays. Many styles of time axes are supported and time manipulation routines ease the use of the time axis in MATLAB. Bill Noon (noon@snow.cit.cornell.edu) has implemented another netCDF Python module that allows easy creation, access, and browsing of netCDF data. For earlier versions, several freely-available software packages that implement a MATLAB/netCDF data. For earlier versions, several freely-available software packages that implement a MATLAB/netCDF data. interface, NetCDF reader, and fanmat. Handles dimensions without an associated variable. Eventually, it will be possible to integrate netCDF objects with the rest of the HDF tool suite. The IDL version of HOPS should run on any platform supported by IDL. Users are invited to test PnetCDF in their applications. A separate external module for IBM Data Explorer is available for use in IBM Data Explorer's Visual Program Editor. The application may be used to visualize a variety of time-varying geospatial scientific data in a simple map framework. VISAGE (VISualization, Animation, and Graphics Environment) is a turnkey 3D visualization system developed at General Electric Corporate Research and Development, (Schroeder, W] et al, "VISAGE: An Object-Oriented Scientific Visualization `92 Conference). It combines: The use of pure Java for platform independence and to support data sharing and real-time collaboration among geographically distributed users. Pomegranate can be installed on web servers as either a WSGI or CGI application to provide webification (w10n) services. Any number of dimensions in any of the Explorer coordinate types are supported. 3D graphics are built from the underlying data in real-time, and the user has interactive control of graphics, navigation, animation, and more. NCO NCO (netCDF operators) is a package of command line operator ncdiff - differencer ncea - ensemble averager ncecat - ensemble concatenator ncflint - file interpolator ncks - kitchen sink (extract, cut, paste, print data) ncpdq - permute dimensions quickly ncra - running averager ncrcat - record concatenator ncrename - renamer ncwa - weighted averager All operators may now be OPeNDAP clients. IDL now supports data in netCDF format. You may use, copy, and reproduce this software for any non-commercial purpose. MBDyn (MultiBody Dynamics) MBDyn is an open-source MultiBody Dynamics analysis system developed at the Dipartimento di Ingegneria Aerospaziale of the University "Politecnico di Milano", Italy. InterFormat runs on UNIX workstations; a version for OpenVMS is also available. Browses file using the EPIC and COARDS conventions. Most new features of netCDF-4 are implemented, such as multiple unlimited dimensions, groups and zlib data compression. For more information, see . The Slicer Dicer output. A full-featured 30-day trial version of Makai Voyager is available for download. The source is also available. Surfer's sophisticated interpolation engine transforms XYZ data into publication-quality maps. vGeo vGeo (Virtual Global Explorer and Observatory) is an end-user product from VRCO designed to be easy-to-use, yet have the power and versatility to provide for the most demanding user." PPLUS Plot-Plus (PPLUS) is a general purpose scientific graphics package, which is used in several PMEL applications. Since four-dimensional data cannot be directly displayed on a flat computer screen, it is necessary to reduced the dimensionality of the data before it is displayed. PnetCDF A group of researchers at Northwestern University and Argonne National Laboratory (Jianwei Li, Wei-keng Liao, Alok Choudhary, Robert Ross, Rajeev Thakur, William Gropp, and Rob Latham) have designed and implemented a new parallel interface for writing and reading netCDF data, tailored for use on high performance platforms with parallel I/O. The following table provides a brief overview of the main categories. As of version 6, Mathematica adds classic netCDF data to the many forms of data it can import, export, and visualize. The original functions from nctools were intended mainly for the creation, definition, and copying of fundamental netCDF elements. JSON format with the ncdump-json utility Josep Llodrà has developed a program to output the contents of a netCDF-3 or netCDF-4 file in JSON (JavaScript Object Notation). Supported file formats include netCDF and GRIB. Data is shown in an organized table, and you can choose to export everything to Excel. IRIS Explorer Module The Atmospheric and Oceanic Sciences Group at the National Center for Supercomputing Applications (NCSA) and the Mesoscale Dynamics and Precipitation Branch at NASA-Goddard Space Flight Center have developed the NCSA PATHFINDER module set for IRIS Explorer. It includes a toolset for visualizing the data stored in the space-time netCDF cube in both 2D and 3D. Features include: Slice and plot geo-gridded latitude-longitude, latitude-vertical, or time-latitude arrays from larger multidimensional variables. This software may be retrieved by anonymous FTP. Mun Woo of University of Western Australia has developed NetCDF Ninja, a graphical user interface that allows users to browse all the metadata contained in NetCDF files, scrutinise the data using an interactive graphical plot and even make small alterations or export the data in text format without having any knowledge of coding. Like python and VTK, Ncvtk is highly portable and known to run on Windows and Linux (i386, ia64, EMT64) platforms. This version of the package is the first one to be announced to the public. As an example of this technology, Takuji Kubota has established a Gfdnavi server for the Global Satellite Mapping and cartographic capabilities for which GMT is renowned is guaranteed through Mirone's ability to automatically generate GMT cshell scripts and dos batch files. Please see the project's Github page at for additional information of Kst can be found on the web page at , including numerous screenshots and all the useful download links. For more information of Kst can be found on the web page at , including numerous screenshots and all the useful download links. called the Universal File Interface (UFI); it's a database extension based on the IBM Informix Virtual Table Interface (VTI). GDAL Frank Warmerdam's GDAL is a translator library for raster geospatial data formats that is released under an X/MIT style Open Source license. Read and write parameters used during a session. For ReadDF, the format translation is handled transparently. The design of HOPS is object-oriented, rather than procedure-oriented; the operators treat the numeric data and the associated meta-data (like coordinate information) as a single object. Data may also be filtered and saved to a local netCDF file. The netCDF data format is preferred, but any other format can be read by providing an IDL (or FORTRAN or C or C++) interface. Tcl/Tk interfaces Dan Schmitt has developed cdftcl, a Tcl/Tk interface for netCDF. WebWinds is `point and click' rather than language driven and it runs well on Unix, Windows (95/98/NT) and Mac platforms. Interactively visualize column, matrix, and volumetric data sets Image global datasets as various map projections from partial data or partial projections from global data (Windows only) View and Edit HDF-EOS grid object data subset datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save the number format of datasets and data tables with a GUI dialog Change and save tables with a GUI d or subset files Attach text annotations directly to the data file Add new data objects to files and create hierarchical groups Edit or create new color palettes Generate publication-quality graphics for data presentation Noesys has an interface to IDL®, allowing data to move back and forth between Noesys and IDL with the click of a mouse. ASA ViewNcDap Applied Science Associates, Inc. For more information please send email to: pathfinder@redrock.ncsa.uiuc.edu See also the information on DDI for another way to use netCDF data with IRIS Explorer. Panoply is developed at the NASA Goddard Institute for Space Studies. One of IVE's primary capabilities involves dimension reduction or "data slicing." IVE allows the user to display lower-dimensional subsets of the data by fixing a coordinate or by averaging over the coordinate or by averaging over the coordinate. Plot Plus is now available at no charge. Origin includes a suite of features that cater to the needs of scientists and engineers alike. xray is being developed by Stephan Hoyer, Alex Kleeman, and other contributors. Provides a "tree" view of the
netCDF files for faster synchronization calculations Much faster updates of large numbers of small netCDF files. In-place updates of large netCDF files The latest version should run on Linux variants and Solaris. The framework is available both as source code and universal compiles (works on both PPC and Intel macs). HOPS is implemented in IDL, the widely-used commercial interpreted language, and also in Yorick, a public-domain interpreted language that is freely available from the Lawrence Livermore National Laboratory. DX runs on 7 major UNIX platforms as well as Windows 95/NT and is designed to take full advantage of multi-processor systems from IBM, SGI and Sun. If you have problems reading a netCDF file with ncBrowse, please send him a copy of the file and he'll get ncBrowse to read it! nccmp Remik Ziemlinski of the NOAA Geophysical Fluid Dynamics Laboratory has developed nccmp, a tool to compare two netCDF files. Features in Makai Voyager Version 1.2 include: Preprocessing LiDAR, GIS, & volumetric data from common formats into streamable files Volume rendering for large 4D (3D + time) data, such as NetCDF Analysis tools and customizable graphs WMS and other streamable formats Individual or group licenses are available for Windows (32- and 64-bit), Linux, and Mac OS X. FERRET FERRET is an interactive computer visualization and analysis environment designed to meet the needs of oceanographers and meteorologists analyzing large and complex gridded data sets. The program handles data in netCDF, HDF and GRIB format. Also available are combination functions such as iterators (which offer abstract ways to scan files and variables). ViewNcDap is a Windows application that includes temporal/time step functionality for viewing animations of data that include temporal information. The library functions allow data storage, retrieval and queries using a single applications interface, regardless of the data's source and organization. With a few simple clicks of the mouse, users can choose and extract segments of data, filter out the bad data, perform calculations (e.g. for water density, sound velocity in water, light attenuation, 1% photic depth) and apply a variety of high level graphical data visualisation techniques to produce elegant three/four-dimensional plots, water properties comparison charts etc. So, the user can easily calculate the average and sum values of the selected area (grids). For others interested in programming with netcdf.dll from VB 6, see Wieczorrek's web page on netCDF and VB .net, see netCDF and VB .net. For further details see license at . To quote the introduction: The Data Catalog is both a catalog and a library of datasets, i.e. it both helps you figure out which data you want, and helps you work with the data. Avizo Green Edition includes an advanced set of features dedicated to climate, oceanography, environmental or earth-mapped data. Dan Kelley of Dalhousie University is the author of Gri, which can read data from netCDF files as well as ASCII and native binary data. This greatly simplifies the retrieval of metadata and data from files in supported formats. DX is built upon an internal data model, which describes and provides uniform access services for any data brought into, generated by, or exported from the software. Although Mirone is written in MATLAB, a stand-alone version to run under Windows is also provided. You may order by... NetCDFPerl, Steve Emmerson's extension module, based on version 2 of the netCDF package. As well, it has been successfully ported to VMS, OS/2 and Win9*/NT (some functionality may be missing, though). To ensure that Origin meets your data analysis are built-in Currently supported formats include netCDF, HDF4, GRIB1 and GRIB2 (read only), and HDF-EOS 2 Grid and Swath data (read only), and HDF-EOS 2 Grid and Swath data (read only). Additionally, users can also export their data to text or NetCDF files for easy access in other applications. VTI is a technology that support their data to text or NetCDF files for easy access in other applications. VTI is a technology that support of their data to text or NetCDF files for easy access in other applications. GMT package is available via anonymous ftp from several servers; see gmt.soest.hawaii.edu for installation information. Questions and suggestions should be directed to Dr. Robert B. CDF convert converts regular Cylindrical Equidistant (Lat/Long) and Gaussian (Spherical) netCDF grids into either the Canadian RPN Standard File or GEMPAK file formats. HDF Explorer features include fast access to data, grid, scalar and vector views. Graphical output of (atmospheric model) data can be guickly generated in a large number of different ways, including horizontal maps at selected model or pressure levels, vertical north-south, east-west, or slant cross-sections (including zonal averages), time slices, animations, etc. It includes the ability to ingest large climate datasets in netCDF, HDF, DRS, and GrADS/GRIB format; the Visualization and Computation System (VCS) module, visually displays and animates ingested or created data; and the Library of AMIP Data Transmission Standards (LATS) module outputs data in the machine-independent netCDF or GrADS/GRIB file formats. Thus OPeNDAP-enabled NCO can operate on remote files accessible through any OPeNDAP server without transferring the files. netCdf4excel (add-in for MS Excel) Alexander Bruhns has developed a netCDF add-in written in Visual Basic for MS Excel). file. For read-only access to existing netCDF data, the CSIRO interface has a simpler syntax than the netCDF Toolbox, but the latter may also be used to create and manipulate netCDF variables and datasets. The library is an implementation of GeoAPI 3.0 interfaces and can be used for desktop or server applications. GDAL has recently included support for the netCDF-4 enhanced data model and netCDF-4 format, as well as improved support for recent additions to the CF conventions. are provided. We include information about both freely-available and licensed (commercial) software that can be used with netCDF data. The user can customize a plots, or combine several plots into a composite. These tools as well as the source for NCMEX are available from sbeus/octavex.tar (NOTE: this .tar file contains other Octave extension functions besides NCMEX.) Also see Octcdf, a netCDF toolbox for Octave. One or more variables may be selected as well as step(s) of a time series. Only the required data (e.g., the variable or hyperslab specified) are transferred. MeteoExplorer MeteoExplorer, developed by Lianqing Yu at China Meteorological Administration, is a cross-platform software application for analyzing and rendering atmospheric science data. Graphics styles included line plots, scatter plots, contour plots, color-filled contour plots, vector plots, wire frame plots, etc. VisAD is designed to support a wide variety of user interfaces, ranging from simple data browser applets to complex applets called mexcdf53. Grace runs on practically any version of Unix. See the Web site for more information. It also allows mathematical operations on the existing fields to generate new fields for further analysis, and it can be run as a batch application. It is, however, limited to retrieving data from, and information about, existing netCDF files. See the website for more information. It is being actively developed and used in the aerospace and automotive fields for dynamics analysis and simulation of complex systems. Also see the ncdx tool for making netCDF files OpenDX compliant. IDL Interface IDL (Interactive Data Language) is a scientific computing environment, developed and supported by Excelis Visual Information Solutions, that combines mathematics, advanced data visualization, scientific graphics, and a graphical user interface toolkit to analyze and visualize scientific data. The EWB currently has numerous users in the fields of meteorological research, air quality work, and groundwater remediation. The utilities within nctools were modified to compile with version 3.5 of the netCDF library, the command syntax was modified for consistency with other tools, and changes were made to accommodate ARM standard netCDF. NCL is available under an open source license or in binary form for several popular UNIX platforms, including (but not limited to) Linux, MacOSX, and Windows/Cygwin. A selected slice of netCDF data may be displayed in ArcGIS as a raster layer, feature layer, or table. Noesys includes the visual data analysis tools, Transform, T3D and Plot, for menu driven plotting, rendering, and image analysis. their shape (size and number of dimensions), rank (e.g., scalar, vector, tensor), type (float, integer, byte, etc. The package can access COARDS-compliant netCDF grids as well as ASCII, native binary, or user-defined formats. If you need help getting started, a remote tutorial is available once you've downloaded the package. Included with the software are two command line tools: "ncl converting GRIB-1/2 or HDF files to netCDF, GRIB-1/2, HDF, etc). cdf2asc: Dumps NetCDF data to an ASCII file. The tools are very similar to Konrad Hinsen's NetCDF package to Python but can read and write in a parallel way. IVE uses NetCDF for the data input format, and uses the NCAR Graphics Library to produce graphical output. DataSetEditor add-in for Microsoft Office Excel. At present, they have: a data file I/O library (epslib, which is layered on top of the netCDF library). All three Explorer coordinate systems are supported. Visual Basic and VB.net interfaces Carsten Wieczorrek has developed code in VB 6 to export chromatographic data into the netcdf/ANDI format. Even though it's written in Python, the module is up to 40% faster than Scientific.IO.NetCDF and pynetcdf. Other translators include GeoTIFF (read/write), Erdas Imagine (read/write), ESRI .BIL (read), .aux labeled raw (read/write), DTED (read), SDTS DEM (read), CEOS (read), JPEG
(read/write), PNG (read/write), PNG (read/write), PNG (read/write), PNG (read/write), PNG (read), SDTS DEM (read). UFI makes a file look like a set of database tables. More information is available on the web-page: joeckel/ncdx/index.html. HIPHOP HIPHOP, developed by Dominik Brunner, is a widget based IDL application that largely facilitates the visualization and meteorological fields. Decimate is currently bundled with the scanners, and will soon be available as a commercial product. Since most documents cannot use raw data, the server is able to deliver the data in a variety of ways: as data files (netCDF and HDF), as tables (html), and in a variety of plots (line, contour, color, vector) and plot formats (PostScript and gif). a collaborator on another machine; a data provider to automatically create a specialized analysis environment which can be downloaded (as a small script file) along with a dataset from a Website; and realtime collaboration or sharing of sessions over (even low-bandwidth) networks, including the Internet. For more details about the formats handled, program features, and pricing, see the Radio-Logic web site at < >. As with earlier versions, data in several different formats, including NetCDF, can be read a NetCDF file. The library also implements NcML, which allows you to add metadata to CDM datasets, as well as to create virtual datasets through aggregation. Some toolboxes (for atmospheric model output, trajectory display, radar data) have already been written, others might easily be added (in IDL, FORTRAN or C code). It should not be considered a GIS system, but is used to quickly preview a variety of data on a simple map. The netCDF calling interface has not changed and netCDF files stored in XDR format are readable, so existing programs and data will still be usable (although programs will need to be relinked to the new library). The WCT also provides access to weather/climate web services provided from NCEI and other organizations. Although a few interfaces are not implemented yet, the current implementation is complete enough to provide significant I/O performance improvements on parallel platforms, as described in a technical report. OPeNDAP is based on existing data access tools; rather than developing a self contained system, it makes extensive use of existing data access APIs. OPeNDAP can be used to make netCDF data files available over the Internet and it can also be used to adapt existing software which use the netCDF Toolbox for MATLAB-5 The NetCDF Toolbox for MATLAB-5, originally developed by Charles R. Panoply requires that your computer have a Java SE 6 runtimed and it can also be used to adapt existing software which use the netCDF Toolbox for MATLAB-5 environment, or better, installed. It is based on Unidata's NCDUMP utility, and it keeps the original ncdump functionality, unless the "-j" option is used to specify JSON output. ncdx is freely available without any warranty under the GNU public license (GPL). Also, it has a calculator tool. ESRI ESRI ArcGIS version 9.2 and later support accessing netCDF time-based and multidimensional data that follows CF or COARDS conventions for associating spatial locations with data. Developer extensibility in as many ways as possible. David Pierce has contributed the ncdf4 package for reading netCDF data into R and for creating new netCDF dimensions, variables, and files, or manipulating existing netCDF files from R. The package includes several step-by-step examples. The Java edition can be run in Windows, Mac OS, Linux, and Unix systems. Mark Tracy's Objective-C API for netCDF that uses and data management. Ingrid Ingrid, by M. Hyperslab OPerator Suite (HOPS), developed by R. For shaded surface rendering, the PolyPaint+ routines first compute the polygon set that describes a desired surface within the 3D data volume. NcML-Java Binding Henrique Sousa developed the NcML-Java Binding library to provide the means to quickly transform a NetCDF file into a set of classes with the same semantics. A beta version of PolyPaint+ is currently available free of charge using FTP or for a nominal fee which would cover tape distribution. See also the information on DDI for another way to use netCDF data with AVS. In addition, this version contains a capability to geo-reference some data and to read ASCII data in tabular format. There are also specialized functions for generating histograms, wind roses, meteograms, skew-T plots, weather maps. Tools The Center for Clouds Chemistry and Climate (C4) Integrated Data Systems (CIDS) group has developed several useful netCDF utilities: cdf2idl: Writes an IDL script to read a NetCDF file. nctoolbox (a MATLAB common data model interface) nctoolbox is a MATLAB interface that provides read-only access to Common Data Model datasets. xdfv Xdfv is a developer-centric visualizer for NetCDF/HDF4/HDF5 data files. ncensemble Alan Iwi, of Rutherford Appleton Laboratory, offers this command line ensemble statistics utility. Noesys runs on Windows 95/98 & NT and Power Macintosh OS. It was also included in the Octave Repository octave-forge. Support is provided for data based on ndimensional grids, where the dimensions correspond to continuous spatial coordinates. Environmental WorkBench (EWB), an easy to use visualization and analysis application targeted at environmental data. The MexEPS package 1990-01-01 00:00:00) MATLAB help and example scripts using MexEPS ASCII2MAT mexFunction, which reads a formatted file into MATLAB as a matrix The MexEPS package is freely available in PMEL's anonymous ftp directory ftp://ftp.pmel.noaa.gov/eps/mexeps/ If you have any questions or comments, please contact the author, Willa Zhu (willa@pmel.noaa.gov) or Nancy Soreide (nns@pmel.noaa.gov). Many excellent software packages have been developed recently for scientific visualizations can be viewed in stereo for added depth perspective. Since the DX data model is more comprehensive than the netCDF data model, a methodology to extend netCDF via attribute conventions (e.g., for unstructured meshes, non-scalar data and hierarchies) for use with Data Explorer is available. Explorer is available. Explorer is available. Explorer is available. users to access, process, organize and visualize large amounts of technical data. Support for accessing TIFF image files from SDS as 2D arrays will be available soon as a separate CodePlex project. The EPIC software includes over 50 programs for oceanographic display and analysis, as well as utilities for putting in-situ or observational data on-line (with on-the-fly graphics and data download) on the WWW. CVS access to the current source can be arranged. notice are assumed to be of the same type and have ty share, distribute, analyze, and visualize geophysical fluid data and knowledge. This powerful and flexible package recognizes netCDF data format, and it can extract axis labels and graph titles from the data files. The software, which runs as a standalone process or within PCMDI's Visualization and Computation System (VCS), provides climate scientists with an easy and fast method to read different file formats, and to analyze and graphically display climate data in an integrated fashion. Optional annotations: caption, axes ticks and labels (default "pretty" ticks, or override to place ticks where you want them), color legend, data-cube outline. Developed with C++, Meteo Explorer targets multiple computing platforms including Microsoft Windows, GNU Linux, and SGI IRIX operating systems. EWB system features include: Random access file structure using the netCDF-based public domain MeRAF file system with support for gridded, discrete (non-grid-based public domain MeRAF file system), and particle types Support for gridded. coordinate systems Object oriented Graphical User Interface (GUI) that is very easy to use Tools for converting model and observational data sets and data writers to netCDF Interactive rotation/translation of scenes in 3D space Time sequencing controls to step forward/backward, animate sequencing controls to step for asynchronous or non-uniform time steps Interactive slicers to select cross sections through 3D data sets Display operators available on the slices, including by data value with variable transparency level Arrow and streamline representation for vector quantities Positional reference lines at user selected intervals Color coded shapes at each grid node Multiple 3D isosurfaces at selected parameters and values with variable transparency Display of discrete data using colored spheres and labels for scalar data and arrows for vectors (with arrowheads or meteorological style) Multiple user definable color maps to which isosurface and colored field shading may be separately assigned On screen annotation for generation of report ready figures Image export in any of the common image formats (gif, tiff, encapsulated postscript, etc.) Graceful handling of missing or bad data values by all the graphics rendering routines Automatic data synchronization to allow automatic screen updating as new data arrives in real-time from a model or set of sensors Two and three dimensional interpolation from scattered observations to a grid, using the Natural Neighbor Method. HDF Explorer runs in the Microsoft Windows operating systems. ncBrowse Donald Denbo of NOAA's Pacific Marine Environmental Laboratory has developed and made available ncBrowse, a Java application (JDK1.2) that provides flexible, interactive graphical displays of data and attributes from a wide range of netCDF data file conventions. In addition to PostGIS and SpatiaLite formats, it can access data in vector formats supported by the OGR library as well as most raster formats supported by the GDAL library, including netCDF. Gfdnavi uses a metadata database for managing and analyzing data and visualizations. Hardcopy support for PostScript, PDF, GIF, and PNM formats. Animation modes: slices, space, time (any parametric
dimension), transparency, oblique slice orientation, rotation. with minimal fuss. Octave interface (Barth) Alexander Barth has contributed the following: Octcdf is a netCDF toolbox of Charles R. Multiple variables may be combined in a single lattice to generate vector data. MeteoInfo is GIS software for visualization and analysis of spatial and meteorological data. The module source code and documentation is available from the International AVS Center, in the ftp://testavs.ncsc.org/avs/AVS5/Module Src/data input/read netcdf/ directory. Develop an extensible architecture based on open standards. FWTools (GIS Binary Kit for Windows and Linux) FWTools is Frank Warmerdam's set of Open Source GIS binaries for Windows (win32) and Linux (x86 32bit) systems. IVE also can perform algebraic computations on the gridded data and can calculate derivatives. The netCDF Framework is an open source (Argonne Open Source License) MacOSX application framework that provides an Objective-C interface to the NCAR netCDF library version 3. In the latest version of NetCDF Extractor, Agrimetsoft has added two options: Sum" and "Average". You are welcome to join discussions or report issues at the CodePlex site: . Email requests to rdp-support@atd.ucar.edu. epslib allows transparent access to multiple data file formats a MATLAB MexEPS interface for using any supported EPIC file with MATLAB suite of EPIC programs for graphics and analysis of hydrographic profile data and time series data. The nctoolbox software was developed by Brian Schlining (MBARI), Rich Signell (USGS), Sachin Kumar Bhate (freelance), and Alex Crosby (RPS/ASA). EPIC NOAA's Pacific Marine Environmental Laboratory (PMEL) has developed the EPIC software package for oceanographic data. The octcdf toolbox can also be used to download data from an OpenDAP server. A Windows Installation package for SDS binaries along with DataSet Viewer and DataSet Editor are available also. Field/vector operations such as divergence, gradient and curl, dot and cross products, etc. It provides both color shaded-surface display and simple volumetric rendering in either index or true color. PMEL has been using this software on Unix and VMS several years. Rather than call the mex-file directly users are advised to employ both Chuck Denham's netCDF toolbox and the CSIRO MATLAB/netCDF interface described here. VisAD visAD is a Java class library for interactive and collaborative visualization Toolkit as the data processing and rendering engine and has a user interface written using a unique blend of Tcl/Tk and C++. More information is available at the cdfsync website. It also permits publishing data for web access and will soon support access to data on other file formats into the CDM, as well as writing to the netCDF-3 file format. ViewNcDap is a stand-alone research-based tool (with included demonstration data) that allows a user to visualize four dimensional NetCDF and OPeNDAP data. The latest version of PV-Wave supports data access in numerous formats, including netCDF. A graphical user interface allows users to interact with their data via color/transparency/contour/vector plots, apply an external sun light, overlay hydrographic and geopolitical data, rotate, zoom, etc. Interfaces to other data formats (e.g. ASCII and binary data) can be added easily. It can read data from its data catalog, a netCDF file or a directly attached model, and output the data, either by feeding it to a model, creating plots and other representations of the data. The data store accepts incoming data, stores it on disk, and makes it available to processes which need it. Installation of the software (including Java) on the PC or Mac is a process requiring one file to be downloaded and opened. Liniger at the Institute for Atmospheric Science at the Swiss Federal Institute of Technology, ETH, ZÅ¹/rich. The iCDF software is currently for XC-MS data (X: GC, LC, HPLC), but soon it will be able to import data using other detectors as well. New storage types can be added to SDS infractructure as plugins. All the new numeric data types (such as 64-bit and unsigned integer types) are implemented. Dave Brown of NCAR's Computational and Information Systems Laboratory has developed PyNIO, a Python package that allows read and/or write access to a variety of data formats using an interface modelled on netCDF. FAN FAN (File Array Notation) is Harvey Davies' package for extracting and manipulating array data from netCDF files. InterFormat is a medical image format conversion program with both Motif and character interfaces. A general description of OriginLab Corporation: "OriginLab Corporation: "OriginLab Corporation produces professional data analysis and graphing software for scientists and engineers. ncBrowse will run on any UNIX or Windows machine installed. PV-WAVE uses a fourth generation language (4GL) that analyzes and displays data as you enter commands. A few features of Grace are: User defined scaling, tick marks, labels, symbols, line styles, colors. Tcl-nap Tcl-nap (n-dimensional array processor) is a loadable extension of Tcl which provides a powerful and efficient facility for processing data in the form of n-dimensional arrays. Schmunk. This data server is designed to make data accessible to people using WWW clients (viewers) and to serve as a data resource for WWW documents. Save to file single variable as a "cdl" text file. Dynamic linking of user-defined modules is heavily exploited to let users extend the feature library. A source-code only distribution synced up to version 0.6.1 is available for GNUstep for use on Linux and other Unix platforms. André Gosselin of the Institut Maurice-Lamontagne, Péches & Océans Canada, has implemented pycdf, a new Python interface to the netCDF library. More details and information about ordering Noesys are available from < . OPeNDAP also provides tools for transforming existing applications into OPeNDAP clients, enabling them to remotely access OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPeNDAP also provides tools for transforming existing applications into OPENDAP also provides tools for transforming existing communication and presentation. Pomegranate is open source software and can be downloaded from . FWTools aims to track the latest development versions of the packages included as opposed to official releases, "to give folks a chance to use the latest and greatest". It will read most standard ascii or binary files, as well as netCDF file format, which used by the TOGA-TAO Project and the EPIC system for management display and analysis. Packages for Windows, various Linux distributions and Mac OS X are available, as well as the complete source code and CMake-based build files. The software is under development by members of the GFD Dennou Club, including T. Intel Array Visualizer The Intel® Array Visualizer and Intel® Array Viewer are available as free downloads for Windows platforms. For developers, the open-source (GPL V3 license) can be downloaded directly or checked out with Mercurial. DataSetEditor provides ability to view and modify the contents of any data set as Excel worksheets. Handles character variables. R interface The R Project for Statistical Computing has developed R, a language and environment for statistical computing and graphics. For questions or comments on EzGet, contact Karl Taylor (taylor13@llnl.gov). The project is available from GitHub at . PPLUS is an interactive, command driven, scientific graphics package which includes features such as Mercator projection, Polar Stereographic projection, color or gray scale area-fill contour plotting, and support for many devices: X-windows, PostScript, HP, Tektronix, and others. The software has a gradual learning curve, allowing the novice user to quickly obtain useful results. It employs a data-flow driven client-server execution model and provides a graphical program editor that allows the user to create a visualization using a point and click interface. Save plots to disk in GIF, JPEG, PNG or TIFF bitmap images or as PDF or PostScript graphics files. NetCDF Ninja is available on Windows and Macintosh platforms, as standalone executable software as well as an App for use within Matlab. It supports CF Conventions version 1.6 (lon-lat-alt-time axis and trajectory). The implementation builds on the MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many
optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in use and allowing users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in users to leverage the many optimizations built into MPI-IO interface, providing portability to most platforms in users to leverage the many optimizations built into MPI-IO interface, providing GRIB2, and felt). Smith with help from a global set of volunteers, and is supported by the National Science Foundation. UFI is a BCS database table. NCL comes with many useful built-in functions and procedures for processing and manipulating data Additional data sets can be overlaid on shaded surfaces by color coding the data according to a specified color ramp. Note that HOPS is not a general purpose netCDF tormats. More information is available on the web-page: joeckel/ncregrid/index.html. Tools for doing cartographic projections and registration as well as earth, space and environmental sciences examples are available at Cornell University via info.tc.cornell.edu. ANTS The ARM Program has developed ANTS (ARM NetCDF tools and utilities providing various means of creating and modifying netcdf files. The other HDF interfaces are currently being modified to allow multi-file access, closer integration with the netCDF interface will probably be delayed until the end of that project. Python information and sources can be obtained from . The goals of the ParaView project include the following: Develop an open-source, multi-platform visualization application. Documentation and code for PnetCDF is now available for testing. The SIS metadata module forms the base of the library and enables the creation of metadata objects which comply with the ISO 19139 compliant XML documents. Objective-C API, available here: www.paleoterra.com/software. The data model has been adapted to netCDF, FITS, HDF-EOS, McIDAS, Vis5D, GIF and JPEG file formats. The source code has also been compiled by users for the GNUStep environment. For more information, see the paper Skov T and Bro R. PolyPaint+ is an interactive scientific visualization tool that displays complex structures within three-dimensional data fields. Fimex also enables you to change the projection and interpolation of scalar and vector grids, to subset the gridded data, and to extract only parts of the files. SNCTOOLS is a set of higher-level m-files that sit atop MEXNC, shielding the user from such low level netCDF details as file IDs variable IDs, and dimension IDs. The general philosophy behind SNCTOOLS is providing the ability to read and write data without trying to invent a new syntax. User-definable conversion tables make the extension of the package to different datasets possible. DataSetViewer application for visualization of data sets. Finally, the client can also access cross-sections of variable data without paging large amounts of data across the network (as you would have to do with NFS, for example). The structure of more complicated to IVE via user supplied "transforms," which define the mapping between physical space and the array indices. NCL can generate contours, XY plots, vectors, streamlines, and can overlay these plots on many different map projections. You can read the Getting Started document at for a more detailed introduction to the Scientific DataSet software. There are now several netCDF interfaces for Python. In addition, most data can be subset or subsampled on load, making it possible to visualize very large multidimensional and/or multispectral datasets. MexEPS PMEL has developed a MATLAB interface, MexEPS, which supports several netCDF file conventions, including those adopted by PMEL. The source may be downloaded from ftp://cirrus.ucsd.edu/pub/ncview/. Data may be overlaid on a variety of display types, including constant altitude planes, vertical cross-sections, X-Y graphs, Skew-T plots and time-height profiles. iCDF (imports chromatographic netCDF data into MATLAB) Klavs M. Export lon-lat map plots in KMZ format. To obtain the EPIC software, please see Web pages at . Ingrid is currently running as a WWW daemon that can be accessed through to see some of its capabilities on a climate data catalog maintained by the Climate Group of the Lamont-Doherty Earth Observatory of Columbia University. It allows one to feed the data contained in NetCDF variables (or HDF4 SDS) to the tools designed to open netCDF files from many different instruments (e.g. Agilent, Bruker) and many chromatographic software packages (e.g. ChemStation). These data export features promote the interoperability of weather and climate information with various scientific communities and common software packages such as ArcGIS, R and many more FME's read and write support for netCDF allows users to move data into the netCDF common standard, regardless of its source, and conversely enables end-users to consume netCDF data for use in their preferred systems. Once in AVS, there are hundreds of analysis and display modules available for image processing, isosurface rendering, arbitrary slicing, alpha blending, streamline and vorticity calculation, particle advection, etc. The algorithm handles data on rectangular latitude/longitude grids of arbitrary resolution. GE has another application called "Decimate" that does polygon reduction/decimation (Schroeder,WJ et al, "Decimation of Triangle Meshes", Proceedings of SIGGRAPH `92). MEXNC is a mexfile interface to NetCDF files for MATLAB that has roughly a one-to-one equivalence with the C API for netCDF. HDF is an extensible data format for self-describing files. Originally developed for use with ANFOG NetCDF data, it has now been expanded to handle NetCDF data files from IOOS (U.S. Integrated Ocean Observing System) and EGO (Everyone's Gliding Observatories) also. AgriMetSoft Netcdf-Extractor NetCDF Extractor NetCDF Extractor is a windows software for view, convert, merge, and extract data from .nc and .nc4 files. This highly flexible system allows scientific investigators to interactively superimpose and highlight diverse data sets; thus aiding data interpretation. Excel add-in for Excel, and a Scientific Dataset (SDS) Library that supports a DataSetEditor add-in for Excel to view and modify various forms of data, including netCDF. Mathematica Mathematica is a technical computing environment that provides advanced numerical and symbolic computation. The STATPACK library is also freely Available. Create an open, flexible, and intuitive user interface. Freely Available Software Commercial or Licensed Packages Freely Available. has developed ANDX (ARM NetCDF Data eXtract), a command-line utility designed for routine examination and extraction of data from netcdf files. These tools include GPhys software to handle GRIB, GrADS, and netCDF data uniformly. The NetCDF file should loosely follow the CF metadata conventions. PyNGL and PyNIO NCAR's Computational and Information Systems Laboratory has developed PyNGL, a python package for scientific visualization and data analysis and PyNIO, a Python package for scientific visualization and data analysis and PyNIO, a Python package supporting access to a variety of formats, including netCDF. It accepts data in a variety of formats with the user to specify how multiple files and variables are mapped into a data source. Previous versions use the GNU Lesser General Public License (LGPL). All interactive activities are tracked in a script, allowing quick reconstruction of anything done as well as running ARGOS in batch script mode. SDS uses native NetCDF library built from version 4.0.1 both for 32 and 64-bit Windows platforms. has made the ASA View NC/Dap application freely available for download. There is also a new m2gif utility which produces GIF files from PPLUS metacode files. For more information visit . Contact epic@pmel.noaa.gov, or Nancy Soreide, nns@noaapmel.gov, for more information. Uses perl lists for representing netCDF variables. Information about copyright and licensing conditions are available. Since any analysis operation can be set to automatically recalculate, you can reuse your projects as templates for future work, thereby simplifying your daily routine. Systems currently supported include Win95, WinNT, OS/2, IBM RS/6000, Silicon Graphics, HP and SUN workstations GrADS GrADS (Grid Analysis and Display System) is an interactive desktop tool from COLA/IGES that is currently in use worldwide for the analysis and display of earth science data. Zebra is currently in use worldwide for the analysis and display of earth science data. lowest levels of the system using Java RMI distributed objects. The developers are
interested in coordinating with others who may be developing oceanographic software for use with netCDF files. cdfsync, a program that allows users to rapidly synchronize a set of netCDF files over a network. Support distributed computation models to process large data sets. Max_diff_nc This is a program which compares two NetCDF files. You can FTP a demo version of IDL, including the netCDF interface, by following the instructions in pub/idl/README available via anonymous FTP from gateway.rsinc.com or boulder.colorado.edu. A license agreement must be signed in order to use it. Applications linked to this framework have no external dependencies (other than Mac OS X itself). Other software packages that use or interoperate with IDL to access netCDF data includes ARGOS, CIDS Tools, DDI, HIPHOP, Hyperslab OPerator Suite (HOPS), and Noesys Highly recommended for regression testing with large datasets. Tutorials which range from very simple visualizations to complex combinations of data sets provide an array-processing facility with much of the functionality of languages such as APL, Fortran-90, IDL, J, matlab, and octave. Under the hood, nctoolbox uses Unidata's NetCDF-Java as the data access layer. ncregrid Patrick Jöckel of the Max Planck Institute for Chemistry has developed ncregrid, a tool (written in FORTRAN-90) for data transfer of gridded 2- and 3-dimensional (spatial) geophysical/geochemical scalar fields between grids of different resolutions. GXSM The GXSM is the Gnome X Scanning Microscopy project, it is a bit more than just a piece of software (the GXSM itself), there is full hardware support for DSP cards including open source DSP software and a growing set of SPM related electronics. xray is a higher-level interface that uses netcdf4-python internally to implement a pandas-like package for N-D labelled arrays for scientific data. The related OGR library (which lives within the GDAL source tree) provides a similar capability for simple features vector data. Surfer Surfer is a full-function contouring, gridding and 3D surface mapping visualization software package. HDF-EOS to netCDF/CF converter for the following products, making them easier to use in the Unidata IDV and McIDAS-V: AIRS Level 2 (scene) profiles of moisture, air temperature and trace gases AIRS Level 3 (global grid) profiles of moisture, air temperature and trace gases OMI UV-B at the surface TOMS ozone and aerosols Instructions are available for searching and converting these data. EzGet A FORTRAN library called EzGet has been developed at PCMDI to facilitate retrieval of modeled and observed climate data stored in popular formats including DRS, netCDF, GrADS, and, if a control file is supplied, GRIB. NCL The NCAR Command Language for scientific data analysis and visualization developed and maintained in NCAR's Computational and Information Systems Laboratory. Mun Woo at ANFOG (Australian National Facility for Ocean Gliders) has developed Gliderscope. It allows users to examine data set schema, copy data sets, modify their metadata. AVS runs on many different platforms (Stardent, DEC, Cray, Convex, E and S, SET, Sun, IBM, SGI, HP, FPS and WaveTracer), and it has a flexible data model capable of handling multidimensional data on non-Cartesian grids. It has options for automatically handling missing values, scale factors, and permutation of hyperslabs. See also the information on DDI for another way to use netCDF data with PV-Wave. (BCS) has developed a product that addresses one of the main objections heard from "technologists" (e.g., scientists, addresses) and permutation of hyperslabs. engineers, and other researchers) who avoid using databases to manage their data: "my very large data files are too cumbersome/difficult/slow/costly to load into a database". Data probing, picking, arbitrary surface and volume sampling, and arbitrary surface and volume sampling. curvilinear grids. The package is especially useful for large datasets that don't fit into memory, because data is processed in chunks. Such an integration will then allow tools written for HDF to both interact intelligently with the new data files. or real, complex, quaternion), where the data are located in space (positions), ups (e.g., hierarchies, series, composites, multizone grids, etc.). It is available by anonymous ftp from abyss.pmel.noaa.gov for a number of computer systems: SUN (Solaris and SUNOS), DECstation (Ultrix and OSF/1), SGI, VAX/VMS and Macintosh (limited support), and IBM how the locations are related to each other (connections), aggregates or gro RS-6000 (soon to be released). There are interfaces to the HDF and netCDF file formats commonly used for such data, especially in Earth sciences such as Oceanography and Meteorology. Support for two distinct communities: developers who create domain-specific systems. The EzGet library comprises a set of subroutines that can be linked to any FORTRAN program. Compared to the Unidata-provided Fortran 90 netCDF files can be found here. Saravanan at NCAR, is a bilingual, multi-platform software package for processing data in netCDF files conforming to the NCAR-CCM format or the NCAR Ocean Model format. A library (fanlib) is also included that supports the use of FAN from C programs. To learn more about w10n of science data files, please visit . It supports the use of FAN from C programs. datasets of different formats (netCDF, netCDF data format. Staggered meshes can also be accommodated by setting "attributes" in the input data. In addition, the Command Line Interface (CLI) module allows CDAT to receive argument and function input via the command line, and the Graphical User Interface (GUI) allows CDAT to receive argument. In principle, any program written using netCDF can be adapted to read data from an OPeNDAP server - in other words any program which uses netCDF can become a client in the OPeNDAP client-server system. The input/output data format is netCDF. The details of the data model are hidden at the user level. Documentation and additional information on NCL are available from the NCL website, which contains hundreds of application examples for one to download. LeoNetCDF LeoNetCDF is a Windows application (Windows96/NT and higher) for editing netCDF files. Mirone: A multi-purpose tool for exploring grid data. See Visualizing the Space Time Cube for strategies to allow you to look at cube contents. Features include: Designed to work with arbitrary netCDF files. Uses sgt graphics to perform 1 and 2 dimensional cuts through data. More information on AIRS products is available at . The library implements a Common Data Model (CDM), a generalization of the netCDF files generated by a number of sources, including NCEP and ECMWF. The visualizations are publicationquality and highly customizable, with hundreds of options available for tweaking the looks of your graphics. For more information and to download the source code, see the NetCDFLabview web site. MEXNC and SNCTOOLS John Evans of Rutgers University maintains MEXNC and developed SNCTOOLS. Grace Grace is a tool to make two-dimensional plots of scientific data, including 1D netCDF variables. VISAGE is used at GE Corporate R & D, GE Aircraft Engine, GE Canada, GE Power Generation, as well as ETH Zurich, Switzerland, MQS In Chieti, Italy, and Rensselaer Polytechnic Institute in Troy, New York. Currently PolyPaint+ accepts only data which is in the NetCDF file format. The currently packaged tools are: a couple of simple shell wrappers over the respective NetCDF functions (ncattget and ncattput); a more sophisticated ncget tool. User-Contributed software and documentation related to the netCDF library. ncregrid is freely available without any warranty under the GNU public license (GPL). Emerging Hot Spot Analysis then takes the cube as input and identifies statistically significant hot and cold spot trends over time. Denham. The SIS referencing module will enable the construction of geodetic data structures for geospatial referencing based on the ISO 19111 model such as axis, projection and coordinate reference system definitions, along with the associated operations which enable the mathematical conversion of coordinates between different systems of reference. Gliderscope is an IMOS (Integrated Marine Observing System) oceanographic software package allow users guick easy visualisation of ocean glider data, via a convenient graphical user interface. OPeNDAP (formerly DODS) The OPeNDAP (formerly known as DODS) is an Open-source Project for a Network Data Access Protocol that makes local data and subsets of local plots geo-gridded and other arrays from netCDF, HDF, GRIB, and other datasets. Objects rendered volumetrically may be viewed along with shaded surfaces. More complicated computations can be performed in user supplied subroutines. data types are supported, but the enum and opaque data types are not. Pierce at dpierce@ucsd.edu. The Groovy script to run the software, so users can write Groovy script to run the software, so users can write Groovy script to run the software. plotting. This allows nctoolbox to access to netCDF, OPeNDAP, HDF5, GRIB, GRIB2, HDF4, and many (15+) other file formats and services using the same API. For installation instructions, see the README file inside the .tar file. CDO (Climate Data Operators) Uwe Schulzweida at the Max Planck Institute for Meteorology has developed CDO, a collection of Operators to manipulate and analyze Climate Data files. This add-in simplifies the use of NetCDF data in Excel, providing a ready to use solution for manipulating this type of data. Functions have been added to support execution of arithmetic and logical operations, bundling or splitting netCDF files, comparing the structure or content of files, and so on. For more information, contact the author, Charlie Zender. Whether displayed graphically or extracted as ASCII, results can be saved to disk or viewed on screen. Testing so far has been on Linux
platforms with ROMIO and IBM SP machines using IBM's MPI. The Data Viewer in particular demonstrates the power of the Ingrid daemon. This octave toolbox is written in C++ calling directly the netCDF library. Apache Spatial Information System (SIS) is a Java library for developing geospatial applications. Noesys can be used to: Access and organize complex technical data Export data objects to text and binary View and edit large multidimensional data sets (up to 7D) in a spreadsheet-like environment Manipulate and process data using IDL®, the Interactive Data Language, from Research Systems, Inc. For more information, check the HOPS home page. xray adopts the Common Data Model for self-describing scientific data in widespread use in the Earth sciences (e.g., netCDF and OPeNDAP): xray.Dataset is an in-memory representation of a netCDF file. A general display model that supports interactive 3-D, data fusion, multiple data views, direct manipulation, collaboration, and virtual reality. For more information on the NCSA PATHFINDER project and other available modules, visit the WWW/Mosaic PATHFINDER Home Page at The ReadDF module may be downloaded either via the WWW server or anonymous ftp at redrock.ncsa.uiuc.edu in the /pub/PATHFINDER directory. (Please continue reading even if you don't have Informix.) A demo that uses UFI to access wind speeds can be seen here. Up to five unique lattices may be generated from the file (as these files can contain multiple data fields) using a single module. Benno Blumenthal , is designed to manipulate large datasets and model input/output. AVS AVS (Application Visualization System) is a visualization application software and development environment. Email: plot plus@halcvon.com Postal mail: c/o Donald Denbo 2138 N 186th St Shoreline, WA 98133 Fax and Voice: (206) 366-0624 PV-Wave is a software environment from Visual Numerics for solving problems requiring the application of graphics, mathematics, numerics and statistics to data and equations. GDL supports the netCDF-3 API. Beginning with Version 4.0, it also supports the ability to overlay meteorological fields on a number of different satellite images, and to draw air parcel trajectories. The WCT allows the visualization and data export of weather and climate data, including Radar, Satellite and Model data. It provides the necessary tools to diagnose, validate, and intercompare large observational and global climate model data sets. The WCT provides tools for background maps, animations and basic filtering. Two of the modules, ReadDFG (to output Grids), and ReadDF (to output Lattices) are capable of reading from NCSA HDF files, MFHDF/3.3 files, and Unidata netCDF files. CSIRO MATLAB/netCDF interface The CSIRO MATLAB/netCDF interface is now available from the CSIRO Marine Laboratories. SIS enables representation of coordinates for searching, data clustering, archiving, or any other relevant spatial needs. The library is a prototype for the netCDF-4 project, which provides a C language API for the "data access layer" of the CDM, on top of the HDF5 file format. VisAD was written by programmers at the SSEC Visualization Project at the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and Engineering Center, and the University of Wisconsin-Madison Space Science and the University of Wisconsin-Madison Space Science and the University of Wisconsin-Madison Space Science and the University of Wisconsin-Ma Unix, Mac OSX, and Windows and supports numerous vector, raster, and database formats and functionalities. The main advantages of using EzGet instead of the lower level cdunif library include: Substantial error trapping capabilities and detailed error messages Versatile capability of conveniently selecting data from specified regions (e.g., oceans, North America, all land areas north of 45 degrees latitude, etc.) Ability to map data to a new grid at the time it is retrieved by EzGet Automatic creation of ``weights'' for use in subsequent averaging or masking of data Increased control in specifying the domain of the data to be retrieved. GrADS provides an integrated environment for access, manipulation, and display of earth science data in several forms, including GRIB and netCDF. Three applications are built on top of SDS: sds command line utility. This Python's package called "PyPnetCDF" allows access to NetCDF files using MPI and the library PnetCDF" allows access to NetCDF. displays, including the animations. These visualization tools can be used to understand the structure of the cube, how the cube aggregation process works, and to visualize the analytical results added to the cube Map Services (WTMS). For a more detailed list of features of the QGIS desktop, browser, server, and client, see the QGIS features page. The Yorick version too runs on most common UNIX platforms, such as Sun, SGI, Cray, and LINUX computers. For more information, see www.avizo3d.com. You can also drag a netCDF file from Windows Explorer and drop it in an ESRI application such as ArcMap. The calling syntax is identical, so scripts using NCMEX in MATLAB should in theory to browse or download metadata or data in netCDF, JSON, or other formats by clicking on data folder and document icons. In addition to netCDF, it also reads HDF, CDF, VOGL, and SGI GL. Where practical, we like to include links to information about these packages the list. InterFormat can automatically identify and convert most popular medical image formats and write output files in many standard medical image formats, or in formats such as netCDF that are suitable for input to leading scientific visualization. CDF convert The MRG CDF convert package provided by the Mesoscale Research Group, McGill University/SUNY Albany, is designed to address data conversion issues for gridded datasets stored under the COARDS convention. SDS provides a unified API for convenient access to various data storages. It is freely available and the source code is released under the (MIT-style) netCDF C library license. CDAT includes a set of pre-defined functions to allow the user to manipulate the data and send the output to a file which can be viewed as an image, or as a collection of images in an animation. Gri Gri is an extensible plotts, and image for producing scientific graphs, such as x-y plots, contour plots, and image plots. When a user wants to extract several files of nc format simultaneously, he/she requires to load them at a same time with together, loading the files one by one will be a time consuming and tedious process and prone to error. (2008) Solving fundamental problems in chromatographic analysis Analytical And Bioanalytical Chemistry, 390 (1): 281-285. An application library is available for data handling. Python interfaces Python is an interpreted, object-oriented language that is supported on a wide range of hardware and operating systems. Ruby interface for Ruby, an interpreted, object-oriented scripting language. GMT supports 30 map projections and transformations and comes with support data such as coastlines, rivers, and political boundaries. The NetCDF Toolbox is in bug-fix-only mode, and is maintained by John.G.Evans.NE@gmail.com, on the MEXNC, SNCTOOLS, and the NetCDF Toolbox web page. Its user interface is similar to standard 3D earth visualizing software. It currently requires JDK 1.1. To download a copy of this release, go to xray (Python N-D labelled arrays) xray is an open source project and Python package that aims to bring the labeled data power of pandas to the physical sciences, by providing N-dimensional variants of the core pandas data structures, Series and DataFrame: the xray DataArray and Dataset. A highly optimized graphical user interface allows quick and elegant creation of even complex 3D graphics (volume rendering, isosurfaces,...), including Z-buffered overlays (with hidden lines), light and data shading, Xray images, 3D trajectories, animations and virtual flights around your data, all documented in a full on-line html-help. A file conversion utility which converts from raw binary data to netCDf is a part of the application. SIS supports creating ISO 19115 metadata from metadata in a netCDF store from a given file, URL, stream, or NetcdfFile object. NCL has robust file input and output capabilities. They offer an application and a set of software tools and
components, which include C, Fortran, and .Net libraries, for developing scientific visualization applications and for creating interactive graphs of array data in various formats, including HDF and netCDF. It is available from where you will find the install files, installation instructions, extensive documentation in text and html format, and examples. If no coordinate variable exists, then the resulting field file will be uniform. Visualizations features include: Perspective view of data rendered on interactively selected orthogonal slices, and projected maximum, minimum, maximum absolute, or minimum absolute). The web page for this program is: max diff nc This is a freely available tool. Designed for use by scientists and scientific application developers, IDL's array-oriented, fourth-generation programming language allows you to prototype and developers, IDL's array-oriented, fourth-generation programming language allows you to prototype and develop complete applications. The DX Import module, which reads data for use within Data Explorer directly utilizes data in netCDF as well as other formats (e.g., HDF, CDF). Plots are of publication quality. DataSetViewer has support for interactive slicing of multidimensional data along any dimension. The package is available via anonymous FTP from ftp://ftp.unidata.ucar.edu/pub/netcdf/contrib/fan.tar.Z. Questions and comments may be sent to Harvey Davies, harvey.davies@csiro.au. PolyPaint+ contains a wide variety of options that control lighting, viewing, and shading. You can also contact Mary Haley, at haley@ucar.edu for more information. Data in conventional netCDFs are directly imported. These include color and opacity mapping (e.g., for surface and volume rendering), contours and isosurfaces, histograms, two-dimensional and three-dimensional plotting, surface deformation, etc. Support for dynamic module loading. Any data level or range of levels can be painted with an arbitrary color. For example, a raster image can exist in the same file as a netCDF object, but you have to use the Raster Image interface to read the image and the

netCDF interface to read the netCDF object. Its first version was released on Aug 5 2014. It handles multiple netCDF files as well as automatic max-min calculations, time-varying gridded, particle, and discrete data, logical groupings for discrete data, logical groupings for discrete data, logical groupings for discrete data, and an overall simplified and flexible interface for storing scientific data. A full list is available in Supported Formats. Regular and irregular, deformed or curvilinear, structured data as well as "missing" or invalid data are supported. Octave, a port of Chuck Denham's MATLAB NCMEX to Octave. IVE currently has the capability to display scalar fields as 2D scalar plots 1D scalar plots vertical soundings a single point value vector fields as 2D vector plots, loop plots, and control a wide variety of display parameters. With a client program accessing data from a netCDF server, it is possible to access a small subset of a large dataset over the Internet without copying the entire dataset (as you would have to do with FTP or AFS). NCSTAT The NCSTAT software is a collection of many operators for complex statistical processing and analysis of huge climate model outputs and datasets. As a result DX operations or modules are polymorphic and appear typeless. Noesys loss software for desktop science data access and visualization. As an example of the use of GDAL, converting an ArcInfo ASCII grid to netCDF (GMT conventions) as easy as: gdal translate arc ascii.grd -of GMT gmt grid.nc GDL (SNU Data Language). A presentation Introducing Gfdnavi describes the architecture and shows examples of use. Kst is characterized by the following features: Outstanding performance: curves with millions of points are no problem Plotting of live streams Out-of-the box support for a variety of formats (currently ASCII, netCDF, dirfile, Qimage-supported types, fits images) User-friendly with a modern and consistent user interface A set of unique tools to boost efficiency, including a data import wizard, capacity to edit multiple objects at once or the "Change Data File" tool to compare multiple experiments easily An active community Easily expandable for new data formats or data analysis algorithms thanks to a plugin-based architecture Available on Windows, Linux, and Mac OSX Labview interface A netCDF Labview interface, implemented in the Labview programming language is available. GMT is developed and maintained by Paul Wessel and Walter H. Mixtures of compound and vlen data types (compound types) are not supported. Documentation and downloads are available from the fimex web site. By default, the numbers within these arrays are assumed to represent grid point values of some field variable (such as pressure) on a rectangular evenly spaced grid. DX supports a number of realization techniques for generating renderable geometry from data. On-line contextual help provides easy access to more detail about the software. A cross section of the data volume can be viewed in a 2D window as a 2D contour plot, a vector interface The NetCDF-Java 4.2 Library is a Java interface to netCDF files, as well as to many other types of scientific data formats. ncdx Patrick Jöckel of the Max Planck Institute for Chemistry has developed ncdx, a tool (written in FORTRAN-90) that scans a netCDF file and makes it OpenDX compliant. Supported formats include netCDF, HDF4, HDF5, GRIB and FITS. GMT GMT (Generic Mapping Tools) is an open source collection of about 60 tools for manipulating geographic and Cartesian data sets (including filtering, trend fitting, gridding, projecting, etc.) and producing Encapsulated PostScript File (EPS) illustrations ranging from simple x-y plots via contour maps to artificially illuminated surfaces and 3-D perspective views. Ncvtk was designed from the ground up with the aim of offering a high degree of interactivity to scientists who have a need to explore structured, three-dimensional, time-dependent climate data on the sphere. There is currently no support for the mixing of HDF and netCDF structures. For more information, see: . If 1D coordinate variables exist (a variable that has the same name as a dimension) then the coordinate variable will be used to specify the coordinate va do the extract process. Two arrays may be combined in one plot by differencing, summing, or averaging. In addition to several new analysis tools, the current fourth version does automatic scripting. Ingrid currently runs on Linux, for which binaries are available. Data handling capabilities permit external analysis programs to be easily linked with display and data storage processes. Weather and Climate Toolkit (WCT) NOAA's Weather and Climate Toolkit (WCT) is free, platform independent software distributed from NOAA's National Centers for Environmental Information (NCEI). NCL has many features common to modern programming languages, including types, variables, operators, expressions, conditional statements, loops, and functions and procedures. In this calculator by entering latitude and longitude of the desirable region, the user can view of the grid number of that region. NCL doesn't place any restrictions or conventions on the organization of input netCDF files. As a library, it presents a single abstract data model to the calling application for all supported formats. Nishizawa (RIMS, Kyoto U.), and colleagues. The source for these utilities can be downloaded from CIDS NetCDF Visualization Tools site. Zebra Zebra (formerly named Zeb) is a system for data ingest, storage, integration and display, designed to operate in both real time and postprocessing modes. For simple usage, Fimex also comes with the command line program fimex. DioVISTA/Storm DioVISTA/Storm of a 3D virtual earth. MBDyn features the integrated multidisciplinary analysis of multibody, multiphysics systems, including nonlinear mechanics of rigid and flexible constrained bodies, smart materials, electric networks, active control, hydraulic networks, essential fixed-wing and rotorcraft aerodynamics. HDF interface to their Hierarchical Data Format (HDF) software. Sørensen, Thomas Skov and Rasmus Bro (Faculty of Life Sciences, University of Copenhagen) have developed iCDF, a free and documented toolbox for importing chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chromatographic data in the netCDF-based format that most manufacturers of chroma metadata along with methods to manipulate those data structures. The data is just a click of the mouse away. SIS netCDF storage is intended to be a bridge between NetCDF tools is a free software package consisting of a few tools operating on NetCDF and, by utilizing the compatibility API, HDF4 files, which are intended to be usable from Shell scripts. NetcdfStep is framework for using the netCDF library in object-oriented programming with Objective-C. Pupynere (PUre PYthon NEtcdf REader) Roberto De Almeida has developed pupynere, a PUre PYthon NEtcdf REader that allows readaccess to netCDF files using the same syntax as the Scientific.IO.NetCDF Python module. Subsetting of data can be done easily by selecting the data by index or geographic coordinate. QGIS is an official project of the Open Source Geospatial Foundation (OSGeo). Consequently, users of UFI can perform SQL queries on their files without having to first load them into a database. In this way then, this open-source collection of tools also represents a library of coding examples for fundamental netCDF tasks. This tool is flexible to run for various datasets such as CMIP5 models, AgMERRA, Aphrodite, CRU, and etc. It does require licensing on a per computer basis, but the license is at no cost. Noesys also includes an HDF-EOS Grid Editor. Paraview and vtkCSCSNetCDF ParaView is an application designed with the need to visualize large data sets in mind. The raster package can be used for reading, writing, manipulating, analyzing and modeling gridded spatial data. File information (info, sinfo, diff, ...) File operations (copy, cat, merge split*, ...) Selection (selcode, selvar, sellevel, seltimestep, ...) Missing values (setctomiss) Arithmetic (add, sub, mul, div, ...) Vertical functions (ifthen, ifnotthen, ifnotthen, ifnotthenc) Field statistics (fldsum, fldavg, fldstd, fldmin, fldmax, ...) Vertical statistics (vertsum, vertavg, vertstd, vertmin, ...) Time range statistics (timavg, yearavg, monavg, ayavg, ...) Field interpolation (ml2pl, ml2hl) Time interpolation (remapbil, remapcon, remapdis, ...) Vertical interpolation (remapbil, remapcon, remapdis, ...) Vertical interpolation (ml2pl, ml2hl) Time interpolation (remapbil, remapcon, remapdis, ...) Vertical interpolation (ml2pl, ml2hl) Time interpolation (ml2pl, ml2hl) Time interpolation (remapbil, remapcon, remapdis, ...) Vertical interpolation (ml2pl, ml2hl) Time interpolation (ml2pl, ml2 with relative time axis (for usage with GrADS) cdo -r -f nc copy file.grb file.nc or using ECMWF reanalysis on a reduced grid cdo -R -f nc copy file.grb file.nc More information is available as source via anonymous ftp; and as binary on request for licensees of NCAR graphics. Non-gridded or scattered data may be interpolated to an arbitrary grid or triangulated, depending on the analysis requirements. ARM added others which focus on manipulation of data within existing netCDF dataset, e.g. when new records are added (which would not be possible with FTP). Overlay continent outlines or masks on lon-lat plots. FME FME, developed by Safe Software Inc., is a tool for transforming data for exchange between over 300 different formats and models, including netCDF. As an example, here is how to read data from a netCDF variable named GP in a file named "data/aprin.nc" into an IDL variable named gp using the IDL language: id = ncdf open('data/april.nc') ncdf varget,id, ncdf varid(id, 'GP'), gp Now you can visualize the data in the gp variable on the web-page: . This application uses netCDF as a preferred format. Versions 7.7 and later of MATLAB have built-in support for reading and writing netCDF data. Slicer Dicer Slicer Dicer is a volumetric data visualization tool, currently available for Windows and under development for other platforms. In addition to the base NetCDF library interface, this package includes a simple toolbox to automate the reading and writing of NetCDF files within Octave using NCMEX. Each grid can consist of scalar data from one variable or vector data from multiple variables. Its main purpose is to provide users with an easy-to-use graphical interface to manipulate GMT grids. You can specify how the data should be structured and whether it should undergo a grid transformation before you receive it, even when you know little about the original structure of the stored data (e.g., its original dimension order, grid, and domain). The EPIC software is available via anonymous FTP from ftp.noaapmel.gov in the epic/ and /eps directories. The length, area or volume of various geometries may also be computed. Noesys can import HDF, HDF-EOS, netCDF, ASCII, Binary, DTED, GeoTIFF, SDTS, TIFF, PICT, and BMP files, create annotations, macros, images, projections and color palettes specific to the data and save it the result as an HDF file. A project page on freshmeat.net. You might use the Emerging Hot Spot Analysis tool to analyze crime or disease outbreak data in order to locate new, intensifying, persistent, or sporadic hot spot patterns at different time-step intervals. Grace is a descendant of ACE/gr. Fully documented graphics are produced with a single command. MeteoInfo For better cross-platform support, MeteoInfo has recently been re-developed using Unidata's NetCDF Java library. SIS is under development as an Apache project. Ingrid has a number of filters which allow simple data manipulations, such as adding two datasets together, smoothing, averaging, and regridding to a new coordinate. Export animations as AVI or MOV video or as a collection of individual frame images. Lon-lat data may be plotted as global maps (using any of over 75 map projections) or as zonal average plots. netCDF Ninja Dr L. The kits are intended to be easy for end users to install and get going with, and include OpenEV, GDAL, MapServer, PROJ.4 and OGDI as well as some supporting components. For more information about EzGet, including instructions for downloading the documentation or software, see the EzGet home page at . Release 0.3 is currently available for download. The internal data structure is called a NAO (n-dimensional array object) and contains similar information to that of HDF SDSs and netCDF, these files come in a variety of formats (HDF5, GRIB, NITFS, etc.). QGIS supports a desktop, browser, server, and client for viewing, editing, analysis, serving, and accessing data. Decimate is currently licensed to Cyberware, Inc., makers of 3D laser digitizing hardware. The package was developed and is maintained by L. EPIC provides graphical display and data field manipulation for multi-dimensional netCDF files (up to 4 dimensions). Mirone (Windows MATLAB-based display) Joaquim Luis of Universidade do Algarve has developed Mirone, a Windows MATLAB-based framework tool that allows the display and manipulation of a large number of grid/images formats through its interface with the GDAL library. IVE IVE (Interactive Visualization Environment) is a software package designed to interactively display and manipulation of a large number of grid/images formats through its interface with the GDAL library. parallel, multithreaded software written in Fortran 2003 based on the OpenMP standard, using the NetCDF Fortran90 interface of the NetCDF library (also multithreaded and Fortran 2003) for numerical computations. The interface allows you to make plots, tables, and files from any dataset, its subsets, or processed versions thereof. Calculations may be applied over arbitrarily shaped regions. Typically you would use netCDF files in tree style control and permits editing its parameters in a standard Windows interface environment. OPeNDAPE files. It can display content of netCDF files. enables network transparent data access to any OPeNDAP server. The SIS storage modules will provide a common approach to the reading and writing of grid coverages applicable to simple imagery and multidimensional data structures. data, empirical orthogonal functions, Fourier coefficients, wavelets, singular value decomposition, 1-, 2-, and 3-dimensional interpolation, approximation, and regridding, and computer analysis of scalar and vector global geophysical quantities. Currently supported 3D visualizations are the following: Shaded isosurface Transparent contour shells or isosurfaces at varying levels Volumetric or density plot Planes Contour ribbons Topographic surface from 2D geographic data sets 3D data volumes may be sliced in the X, Y, or Z plane using an interactive cutting plane. ParaView runs on distributed and shared memory parallel as well as single processor systems and has been successfully tested on Windows, Linux and various Unix workstations and clusters. Processing of the data, particularly averaging, can be requested as well. Data analysis and computation integrated with visualization to support computational steering and other complex interaction modes. between files. ncregrid can be used as a "stand-alone" program, and/or linked as an interface to a model, in order to re-grid automatically the input from an arbitrary grid space onto the required grid resolution. If you know of corrections or additions, please send them to us. It can extract several nc files, simultaneously. Voyager Makai Voyager developed by Makai Ocean Engineering, Inc., is 3D/4D geospatial visualization software that enables users to import, fuse, view, and analyze large earth, ocean, and atmosphere scientific data as it is collected or simulated in a global geo-referenced GIS platform. It works with MATLAB 2008a and later. More information and source for Noon's Python netCDF module are available from . Built-in animation viewer supports speed and image size controls, single-step, forward, backward, loop, and back-and-forth modes. ARGOS (interActive thRee-dimensional Graphics ObServatory) is a new IDL-based interactive 3D visualization tool, developed by David N. It now supports the full functionality forward, backward, loop, and back-and-forth modes. of netCDF 3.6.2. A complete Mac OS X distribution including pre-built static library and online documentation are available. The user interface provides direct manipulation tools for specifying the eye position, center of view, light sources, and color ramps. Additional functions have special support for multi-dimensional data such as "slicing" cross sections from multi-dimensional variable data or joining lesser-dimensional fields to form multi-dimensional fields to form multi-dimensi fields to form multi-dimens from and exports to a multitude of file formats, including NetCDF grids. The source code is freely available from the NCO bome page, as is the NCO User's Guide. In order to build NCMEX, a compiled C NetCDF library must already be installed. More information is on the web page . Computers & Geosciences, 33, 31-41, 2007. Stretched rectangular grids (which occur when the stretching along a given coordinate is a function only of the value of that coordinate) can be accommodated by specifying one-dimensional arrays containing the grid-point locations along the stretched coordinate as part of the IVE input data. Regrettably this version is not as efficient as the native MATLAB code but provides a solution for users that don't have MATLAB. You can view simple movies of the data, view along various dimensions, take a look at the actual data values, change color maps, invert the data, etc. Being interactive, Gliderscope speaks to users via an onscreen dialogue box, helping the user decide what to do. The ncget tool implements functionalility that is similar to hdp dumpsds (for NetCDF, which lacks such a tool), or complements it in the case of HDF4. Numeric arrays are handled by the "NArray" multi-dimensional array for Ruby. The application writes netCDF files that can be read by CHROMELEON, for example. MeRAF is being used by the DOE at the Hanford-Meteorological Site for observational data and will be used for their weather-modeling. For more information, please contact the author, David W. Fimex Heiko Klein (Norwegian Meteorological Institute) has developed the fimex (File Interpolation, Manipulation, and EXtraction) C++ library for gridded geospatial data. We haven't necessarily used or tested this software; we make it available "as is". Luis. Automated installation scripts are available for Windows and UNIX. The CSIRO MATLAB/netCDF interface is run from within MATLAB and has a simple syntax. See also the Ruby-based GPhys software and Gfdnavi tool for accessing GRIB, GrADS, and netCDF data uniformly. The key differentiator of Makai Voyager is its level-of-detail (LOD) technology that enables users to stream big data rapidly over a network or the web. The criteria for inclusion in the netCDF community. Small size Infrequent need for updates Free availability Commercial or Licensed Packages The Space Time Pattern Mining toolbox contains statistical tools for analyzing data distributions and patterns in the context of both space and time. NetCDF dimensions, attributes and variables are Octave objects and can be accessed, sliced and changed just as regular variables. HDF Explorer offers a simple yet powerful interface for the visualization of HDF and netCDF (read/write). PolyPaint+ is a joint effort of the University of Colorado and NCAR (National Center for Atmospheric Research) funded by the NASA AISRP program. More information about Ruby is available from the Ruby web site. HOPS is not a monolithic program, but a suite of operators that act on data units called "hyperslabs". The display model has been adapted to Java3D and Java2D and used in an ImmersaDesk virtual reality display. Pavel Michna has contributed another package, RNetCDF, that also provides access to netCDF data and to udunits calendar functions from R. Three types of storages are supported by the first release: NetCDF files, CSV text files and volatile in-memory datasets. Quantum GIS (QGIS) is an Open Source Geographic Information System (GIS) licensed under the GNU General Public License. NCL also has features that are not found in other programming languages, including those that handle the manipulation of visualizations, the import of data from a variety of data formats, and an algebra that supports array operations. Gliderscope is available on Windows and Macintosh platforms, as standalone executable software as well as an App for use within Matlab. You can also build core class libraries and the sds utility under Mono. VISAGE is designed to interface with a wide variety of data, and uses netCDF as the preferred format. for scalar data. It provides high-level support for the netCDF format, a dedicated Earth visualization module, and a set of advanced geographical projections applicable to a wide range of fast 2D and 3D data representations. Zebra was developed by Jonathan Corbet and nonlinear modelling statistical tests, time series analysis, classification, and clustering. The bindings also use the udunits library to do unit conversions. For more information, check out the README file; you can also see a representative screen image (GIF, 66K) of neurois of the series analysis, classification, and clustering. The bindings also use the udunits library to do unit conversions. For more information, check out the README file; you can also see a representative screen image (GIF, 66K) of neurois of the udunits library to do unit conversions. For more information, check out the README file; you can also see a representative screen image (GIF, 66K) of neurois of the udunits library to do unit conversions. 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For more information, check out the neurois of the udunits library to do unit conversions. For more information, check out the neurois of the udunits library to do unit conversions. For more information, check out the neurois of the udunits library to do unit conversions. For more information, check out the neurois of the udunits library to do unit conversions. For more information, check out the neurois of performance and ease of use. Currently uses Java 2 and Swing. InstallAnywhere scripts for UNIX, Win32, and MacOS. There are more than 350 operators available. Realizations may be annotated with ribbons, tubes, axes, glyphs, text and display of data locations, meshes and boundaries. Tcl-nap was developed as part of the CSIRO CAPS project, but can be loaded and used without the (satellite oriented) CAPS extension. It is released under the GNU General Public License. MATLAB is an integrated technical computation, advanced graphics and visualization, and a high-level programming language. It runs on UNIX platforms under X11, R4 or higher. Included in the source and binary distributions are two freely available programs that have already been modified (re-linked). ANAX (ARM NetCDF ASCII data. All features of ANDX -- it is designed to only extract ASCII data. All features of ANDX -- it is designed to only extract ASCII data. includes the three utilities nc2text, text2nc, and ncrob for printing selected data from netCDF arrays, copying ASCII data into netCDF arrays, splines, running averages, DFT/FFT, cross/auto-correlation, ... Create Space Time Cube takes point datasets and builds a multidimensional cube data structure (netCDF) for analysis. Vicente Galiano of Miguel Hernandez University has developed a Python interface to place data into an HDF file. The export of images and movies is provided in multiple formats. It allows users to simulate the behavior of heterogeneous mechanical, aero-servo-elastic systems based on first principles equations. vGeo is available for IRIX, Linux and Windows platforms and supports displays ranging from desktop monitors to multi-walled projection systems. visualized in a variety of ways. A variety of dimensionalities and data types are supported also. For information about EPIC, please see the Web pages at . It runs under the X Window System and OSF Motif (recent versions of LessTif are, by and large, fine, too). Zebra's primary use is for the superpositioning of observational data sets (such as those collected by satellite, radar, mesonet and aircraft) and analysis products (such as model results, dual-Doppler synthesis or algorithm output). Perl interfaces for Perl: PDL::NetCDF, Doug Hunt's perl interfaces to run the software. It uses netCDF as its primary output format. Scientific DataSet (SDS) Library The Scientific DataSet Library and Tools project, developed jointly by Microsoft Research Cambridge and Moscow State University, is aimed at manipulation and visualization of multidimensional data sets. It handles CF conventions and includes some aliasing features that could permit additional formats to be read. The Utilities toolset enables you to visualize the data and analysis results stored in the space-time cube in two and three dimensions. OPeNDAP software is freely available in both source form or binary form for selected platforms. For more information about licensing, see source and documentation are available via anonymous FTP from ftp://ftp.halcyon.com/pub/users/dwd/pplus1 3 2.tar.gz and ftp://ftp.pmel.noaa.gov/epic/manual-dir/pplus.pdf. It can use MPI, include/exclude specific variables or metadata and operates quickly. The animations are created by generating a PPLUS plot for each frame, transforming the PPLUS metacode files into HDF format with the PPLUS m2hdf filter, and then displaying the resulting bit maps as an animation with the XDataSlice utility, which is freely available on Internet from the National Center for Supercomputing Applications, at anonymous@ftp.ncsa.uiuc.edu (141.142.20.50). Tools for data manipulation such as removal of data points, subsetting by position, sub/supersampling, grid construction, mapping, interpolation, regridding, transposition, etc. It has some known bugs and limitations, but it's proved to be guite usable. The AVS user can point and click to specify the name of the variable in the selected netCDF file, as well as selecting the hyperslab. IDV (Integrated Data Viewer) Unidata's Integrated Data Viewer (IDV) is a Java application (for Java 1.4 or later) that can be used to display a variety of netCDF files, particularly well formatted, geolocated datasets. All data is projected according to the coordinates specified by the user for the cross section window. Robert Hijmans (with additional contributors) has created the R raster package for geographic data analysis and modeling. See Introduction to the 'raster' package for more information. A general description of Origin Pro: features include: Graphics layer management (navigation and animation) Objective analysis of physical elements in surface or upperair soundings data Isoline analysis of wind field Streamline analysis of physical elements in surface or upperair soundings data process and display MICAPS data process and display Satellite nephogram data display and animation, support AWX, GPF and HDF format Interactive composition of synoptic chart (command undo/redo, automatic save) Map zoom, pan, projection and clipping Full screen display and zoom to area Quick navigation via thumbnail view of graphics layers Save screen shot as image file (support formats: BMP, IPG, PNG) Vector graphics exported to clipboard or saved as EMF file (Windows version only) Remote desktop connection support staff via meteoexplorer@hotmail.com . More details are available on the netcdf4excel web site. The fields for display, color tables, contour intervals and various other display options are defined using an icon based user-interface. FERRET offers a Mathematica-like approach to analysis; new variables may be defined interactively as mathematical expressions involving data set variables. ANTS is based on nctools written by Chuck Denham. MATLAB version 2012a includes the netCDF 4.1.2 library with OPeNDAP client supported by OPeNDAP client support turned on, so remote access to netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library with OPeNDAP client support turned on a construction of the netCDF 4.1.2 library support turned on a construction of the netCDF 4.1.2 library support turned on a construction of the netCDF 4.1.2 library support turned on a construction of the netCDF 4.1.2 library support turned on a construction of the netCDF 4.1.2 library support turned on a construction of the netCDF 4.1.2 library support turned on a construction of the and installation, please E-mail to: bresch@atmos.umnw.ethz.ch CDAT The Climate Data Analysis Tool (CDAT), developed by the Program for Climate Model Diagnosis and Intercomparison (PCMDI) at Lawrence Livermore National Laboratory, provides the capabilities needed to analyze model data, perform complex mathematical calculations, and graphically display the results. Its server complies with the OGC WMS 1.3 standard. A user-friendly interface provides control and information about the contents of the files. This tool allows a selected part of a NetCDF variable or an HDF4 scientific data set (SDS) to be extracted in either an ASCII or binary form, applying the transformation specified by the usual scale factor and add offset attributes. Essentially every type of netCDF library function call is exercised in ANTS. NetCDF95, a new alternative Fortran interface to the NetCDF library. Agrimetsoft support all the users until they can extract the data. EzGet reads files through the cdunif interface, but use of EzGet does not require familiarity with cdunif. Ability to read or write netCDF data. Also new is the ability to read or write netCDF data. Also new is the ability to read or write netCDF data. data and isosurfaces. This document provides references to software packages that can be used for manipulating or displaying netCDF data. GrADS is implemented on all commonly available UNIX workstations, Apple Macintosh, and DOS or Linux based PCs, and is freely available via anonymous ftp. Device-independent Type1 font rastering. It supports popular data formats including WMO GRIB1/GRIB2, NetCDF, and MICAPS, and provides basic GIS functionalities. It also supports those entities required for graphics and imaging operations within the context of Data Explorer. Novtk is written in python and is based on the Visualization Toolkit (VTK). An AVS module has been written that allows multi-dimensional netCDF data sets to read into AVS as uniform or rectilinear field files. The program also tells you at what location (the subscript list of the array) the maximum difference is reached. The add-in is written in VBA 6.0 (so it won't work with Office 2010 64 bits) and is designed for Excel 2007 running with the Microsoft Windows operating system. The Local Outlier Analysis tool takes the cube as input to identify statistically significant clusters of high or low values as well as outliers that have values that are statistically different than their neighbors in space and time. built into your applications. This robust volume based method yields results far superior to distance weighting schemes. OpenDX (formerly IBM Data Explorer, also known as simply DX) is a general-purpose software package for data visualization and analysis. Features include: Access to local and remote netCDF files and a variety of other data formats Slicing and probing of multidimensional data Support for netCDF conventions (CF, COARDS, NUWG, AWIPS) Installanywhere installers for easy download and installation Save display state to a bundle for easy recreation of views Support for non-gridded data through the Common Data Model (CDM) The IDV uses the VisAD Java library for interactive and collaborative visualization and analysis and the netCDF Java library for reading and manipulating netCDF files. DX supports a number of non-graphical functions such as point-wise mathematical expressions (e.g., arithmetic, transcendental, boolean, type conversion, etc.), univariate statistics and image processing (e.g., transformation, filter, warp, edge detection, convolution, equalization, blending, morphological operations, etc.). Map outlines can be used as a background for 2D cross section plots of geographic data. It allows the use of "wildcards" (*) or ranges (1-4) in the subscript notation, and use of name references instead of variable IDs. Contact dan@computer.org for more information. A substantial set of applications and utilities based on HDF is available; these support raster-image manipulation and display and browsing through multidimensional scientific data. ncvtk Ncvtk is a program for exploring planetary data stored in a NetCDF file. Scientific DataSet (or SDS in short) is a .NET class library for manipulating scientific data and their metadata. This scripting requires no knowledge of the scripting language syntax. The data export feature supports conversion of data to a variety of common formats including GeoJSON, KMZ, Shapefile, Well-Known Text, GeoTIFF, ESRI Grid and Gridded NetCDF. An implementation is now available that provides the netCDF interface to HDF. The program and source are available from . If the data points are not evenly spaced on a rectangular grid, IVE must be informed of the grid structure, either by specifying "attributes" in the data input or by specify 7289 (Margi Klemp) : 303-497-8159 (Bill Boyd) U.S. MAIL : Margi Klemp University of Colorado / LASP 1234 Innovation Dr. Boulder, CO 80303 USA E-MAIL : margi@aries.colorado.edu Pomegranate The P9E Team at NASA JPL has developed Pomegranate, a python application that "webifies" science data files. Version 2 of the framework will provide classes for accessing multiple netCDF files, working with in-memory data slabs using standard notation, and some support for multithreading. Multi-sheet workspace for you to import data, create and annotate graphs, explore and analyze data, and publish your work. pycdf requires the Numeric python package, and installs through the simple "python setyp.py install" command. It can be seen as a complement to the ncdump tool (included in both the NetCDF and HDF4 distributions) as well. NetCDF is supported both as an input and an output format. Contact Steve Hankin, hankin@noaapmel.gov, for more information. SSESCO has implemented a meta-file layer on top of the netCDF library, called MeRAF. Horinouchi (RISH, Kyoto U.), S. A general mathematical data model that can be adapted to virtually any numerical data, that supports data sharing among different users, different data sources and different scientific disciplines, and that provides transparent access to data independent of storage format and location (i.e., memory, disk or remote). Denham, combined netCDF-3 with MATLAB to form an interface that used MATLAB operator-syntax for arithmetic, logical, and subscripting operations on netCDF entities. PPLUS is supported for most Unix systems and for VAX/VMS, and is in use at many oceanographic institutes in the US (e.g., (PMEL, Harvard, WHOI, Scripps, NCAR, NASA, University of Rhode Island, University data formats. WebWinds WebWinds is a free Java-based science visualization and analysis package. In addition it offers a wide range of tools dedicated to topics in the earth magnetic field computations and magnetic Parker inversions, Euler rotations and poles computations, plate tectonic reconstructions, and seismicity and focal mechanism plotting. For each such couple of the absolute value of the relative difference. Gliderccope Dr L. This software was developed on Sun/Unix and is also supported for DEC/Ultrix and VAX/VMS as a system for data management, display and analysis system for observational oceanographic data. Gfdnavi is dependent on two technologies: Ruby on Rails, a framework for web applications, and the Dennou Ruby Project, a collection of tools for geophysical data. Avizo Avizo software is a powerful tool for 3D data visualization and analysis. The octcdf source code is available at . HDF Explorer HDF, HDF5 and netCDF data file formats (including netCDF data file formats (including netCDF data). Finex supports a growing list of other features, including support for most NcML features and for netCDF-4 compression. The features that make FERRET distinctive among these packages are Mathematica-like flexibility, geophysical formatting (latitude/longitude/date), "intelligent" connection to its data base, special memory management for very large calculations, and symmetrical processing in 4 dimensions. Detailed controls over plot characteristics, page layout and overlays are provided. Jeff Whitaker of the NOAA Earth System Research Lab has developed a netCDF-4 module for python: . Hwang of Sun Yat-sen University in China. For more information, see the GrADS User's Guide. Additional information on ncBrowse and download instructions are available at .

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