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Visualization Environment for Rich Data Interpretation (VERDI)

A visual analysis tool for evaluating and plotting gridded air quality model results

What is VERDI?

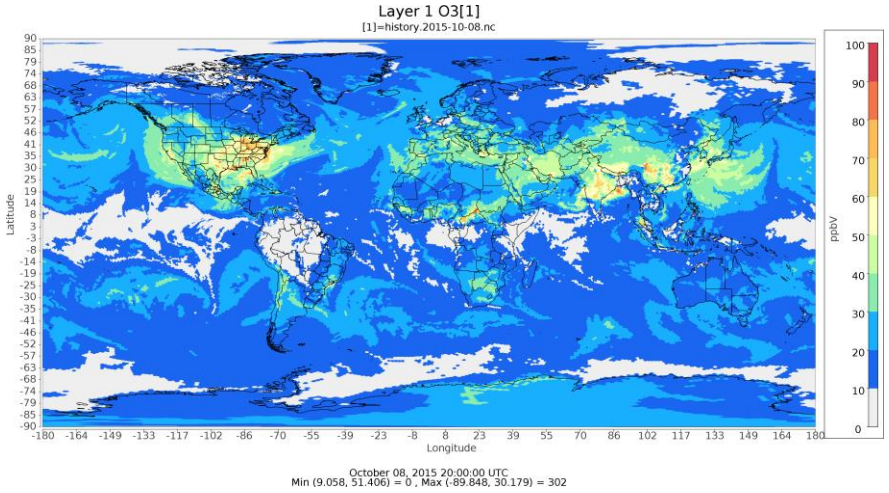
The Visualization Environment for Rich Data Interpretation (VERDI) is a software program for analyzing and visualizing outputs from meteorological and air quality models, making it easier to understand and explain these multivariate gridded results. Because VERDI is written in open-source Java, it can run on a variety of computer operating systems (i.e., Linux, 64-bit Windows, and Mac).

VERDI can ingest results from several models, including the Community Multiscale Air Quality (CMAQ) modeling system (epa.gov/cmaq), the Weather Research and Forecasting (WRF) model, the Model for Prediction Across Scales (MPAS), and the Comprehensive Air Quality Model with Extensions (CAMx).

VERDI Input Features

VERDI includes an interactive graphical user interface and command line scripting that makes it easy to import datasets, create formulas, and generate and save plots.

For inputs from models, VERDI supports Models-3 Input/Output Applications Programming Interface (Models-3 I/O API), Network Common Data Form (NetCDF), and Urban Airshed Model (UAM-IV). For inputs from observations, VERDI supports American Standard Code for Information Interchange (ASCII), Models-3 I/O API, and NetCDF.



VERDI Output Features

- **Map Projections** - VERDI supports Lambert Conformal conic, Mercator, Universal Transverse Mercator, and polar stereographic.
- **Formulas** – VERDI allows users to create formulas from model variables.
- **Plots** – VERDI allows users to create various types of plots including spatial tile, areal interpolation based on shapefiles, vertical cross section, time series, scatter, and 3-D contour.
- **Overlays** – VERDI outputs can include overlays of observations and wind vectors.
- **GIS Layers** - VERDI outputs can include GIS layers such as state boundaries, rivers, and roads.
- **Save Formats** – VERDI plots can be saved as raster images (e.g., PNG) of a specified size, vector images (EPS), or animated GIFs.
- **Export** – VERDI spatial outputs can be exported as shapefiles, and data can be exported as comma separated variables.
- **Statistics** – For displayed variables, VERDI can compute statistics such as mean, quartiles, variance, standard deviation, timesteps of minimum and maximum, hours of non-compliance, and many others.
- **Additional features** - Additional VERDI output features include the abilities to display grid cell boundaries, specify spatial and temporal ranges, include a footer showing minimum and maximum values, and allow users to zoom in on areas of interest.

For more information, visit:

VERDI Site:
www.cmascenter.org/verdi

VERDI on CMAS User Forum:
forum.cmascenter.org/c/verdi

VERDI Source Code on GitHub:
github.com/CEMPD/VERDI

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