CLIMATE AND FORECAST (CF) CONVENTIONS FOR NETCDF -- THE FOUNDATION OF GODAE DATA INTEROPERABILITY

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Abstract

A key element in the success of GODAE has been the ability to share and intercompare data – ocean model outputs, remote sensed observations and in-situ measurements. This fusion of data types has been possible because the GODAE data management strategy utilizes the Climate and Forecast (CF) conventions and netCDF files. With this poster we document the role of CF in GODAE through illustrations of the data that are made inter-operable by CF: model outputs from HYCOM, FOAM, etc.; GHRSST, AVHRR and satellite altimetry products; and in-situ ocean observations such as Argo profiles (http://www-argo.ucsd.edu/) and OceanSites time series (http://www.oceansites.org/). Recently GOSUD (http://www.ifremer.fr/gosud/) and SAMOS (http://samos.coaps.fsu.edu/html/) are working to develop CF-compliant representations for underway ship observations as well.

Files that utilize CF conventions are said to be "self-describing"; they include those elements of metadata that are essential to the utilization of the data. CF files describe the coordinate structure of the data without requiring references to external tables and documentation. CF contains "use metadata", such as array dimensions, machine-interpretable (standardized) variable names and standardized units. Coordinate systems may be any number of dimensions -- 1 through 4 in space-time and higher. Coordinate concepts include rectilinear and curvilinear horizontal coordinate systems; and fixed-Z, sigma, and hybrid vertical coordinate systems. One-dimensional CF coordinate systems describe time series, vertical profiles, and trajectories (e.g. a surface drifter or ship track). When used in conjunction with the OPeNDAP protocol (http://www.opendap.org/), CF becomes much more than a convention for formatted files; it provides a complete specification for network access to remote data.

CF today is an open, volunteer-driven standard. The scope of the standard is continually increasing – a boon to data interoperability, but creating ever greater needs for careful coordination of the growing technical

content. Lawrence Livermore National Laboratories generously provides support for the CF Web site (http://cf-pcmdi.llnl.gov/) and the British Atmospheric Data Center (BADC) generously provides a ½ time individual to coordinate the development of the CF Standard Names list. Community discussions of technical enhancements on the CF Web site are organized by topic using the "trac" software (http://trac.edgewall.org/). The volunteer CF Governance Committee (http://cf-pcmdi.llnl.gov/governance), that provides strategic guidance for CF, recognizes the need for a ½ time funded technical coordinator as well, and is actively seeking additional funding to support this position.