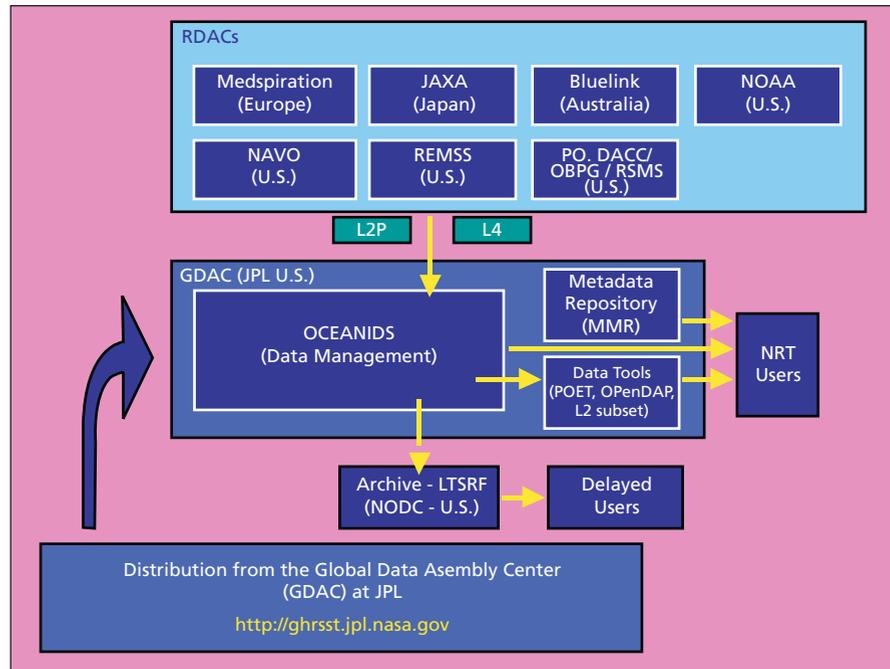


Master Metadata Repository and Metadata-Management System

NASA's Jet Propulsion Laboratory, Pasadena, California

A master metadata repository (MMR) software system manages the storage and searching of metadata pertaining to data from national and international satellite sources of the Global Ocean Data Assimilation Experiment (GODAE) High Resolution Sea Surface Temperature Pilot Project [GHRSSST-PP]. These sources (see figure) produce a total of hundreds of data files daily, each file classified as one of more than ten data products representing global sea-surface temperatures. The MMR is a relational database wherein the metadata are divided into granule-level records [denoted file records (FRs)] for individual satellite files and collection-level records [denoted data set descriptions (DSDs)] that describe metadata common to all the files from a specific data product. FRs and DSDs adhere to the NASA Directory Interchange Format (DIF). The FRs and DSDs are contained in separate sub-databases linked by a common field.

The MMR is configured in MySQL database software with custom Practical Extraction and Reporting Language (PERL) programs to validate and ingest the metadata records. The database contents are converted into the Federal Geographic Data Committee (FGDC) standard format by use of the Extensible



An Overview of the GHRSSST-PP is shown and the JPL Global Data Assembly Center (GDAC). Note NRT is near real time.

Markup Language (XML). A Web interface enables users to search for availability of data from all sources.

This software was written by Edward Armstrong of Caltech and Nate Reed and Wen Zhang of Raytheon ITSS for NASA's Jet

Propulsion Laboratory. Further information is contained in a TSP (see page 1).

This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-44552.

Collaborative Resource Allocation

NASA's Jet Propulsion Laboratory, Pasadena, California

Collaborative Resource Allocation Networking Environment (CRANE) Version 0.5 is a prototype created to prove the newest concept of using a distributed environment to schedule Deep Space Network (DSN) antenna times in a collaborative fashion. This program is for all space-flight and terrestrial science project users and DSN schedulers to perform scheduling activities and conflict resolution, both synchronously and asynchronously. Project schedulers can, for the first time, participate directly in scheduling their tracking times into the official DSN schedule, and negotiate directly with other projects in an integrated scheduling system.

A master schedule covers long-range,

mid-range, near-real-time, and real-time scheduling time frames all in one, rather than the current method of separate functions that are supported by different processes and tools. CRANE also provides private workspaces (both dynamic and static), data sharing, scenario management, user control, rapid messaging (based on Java Message Service), data/time synchronization, workflow management, notification (including e-mails), conflict checking, and a linkage to a schedule generation engine.

The data structure with corresponding database design combines object trees with multiple associated mortal instances and relational database to provide unprecedented traceability and simplify the existing DSN XML schedule

representation. These technologies are used to provide traceability, schedule negotiation, conflict resolution, and load forecasting from real-time operations to long-range loading analysis up to 20 years in the future. CRANE includes a database, a stored procedure layer, an agent-based middle tier, a Web service wrapper, a Windows Integrated Analysis Environment (IAE), a Java application, and a Web page interface.

This program was written by Yeou-Fang Wang, Allan Wax, Raymond Lam, John Baldwin, and Chester Borden of Caltech for NASA's Jet Propulsion Laboratory.

This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-44053.