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IRCCM - A New Integrated Data Management Approach

A. Schäfer (1), V. Unnithan (2), M. Diepenbroek (3) and P. Baumann (4)

(1,2,4) International University Bremen, P.O. Box 750561, 28725 Bremen, Germany, (3) MARUM - Institute for Marine Environmental Sciences, University Bremen, P.O. Box 330 440, 28359 Bremen, Germany (Contact: a.schaefer@iu-bremen.de)

The International Research Consortium on Continental Margins (IRCCM) is a scientific and industrial partnership in marine research and education. The objectives of the consortium are to study processes on continental margins, such as fluid flow, the methane/carbon cycle, as well as surface and subsurface imaging. The IRCCM with the help of partners is in the process of developing technology to facilitate internet controlled, long-term seabed observatories. These observatories will provide scientists with online and real-time access to data from a variety of sensors. The storage and archiving of this large data volume needs a comprehensive and integrated data management strategy flexible enough to meet the changing demands of users, technology and digital standards. This poster highlights the basic concepts and components of the IRCCM data model and management strategy.

IRCCM is developing a system based on MarineXML (eXtended Markup Language). Data from instruments will be wrapped in a MarineXML metadata header complying with international ISO standards. This data package can be sent via the internet to users for direct analysis and to World Data Centers such as WDC-MARE/PANGAEA for long-term archival in relational databases. The WDC-MARE will also provide DOI registry and library catalogues largely based on ISO, OGC, W3C standards and recommendations. In addition, data will be coupled to a Geo Information System (GIS) providing an interactive environment for data analysis, modeling, visualization and data management.

Since most large relational databases deal with geo-coded vector data, a new concept has been developed for integrating image or raster data. IRCCM partners along

with the SME RASDAMAN are implementing the development of a raster (image) relational database which will complement vector databases. This technology will be able to store and access a very large (10 Terabyte or more) raster relational database quickly and efficiently. The database will allow uniform access to combined 2-D and 3-D earth observation, oceanographic, and sub-seabed geophysical raster data. It will also provide users with the functionality to process and visualize data on the fly.

A GIS based WebMap Server combined with a MetaData Server will provide access for IRCCM members to enhance data sharing and information exchange for ongoing scientific analysis and modeling activities.