

## **Data Management Protocols for Operational Ocean Observing System Off Oman**

M. Stoessel<sup>1</sup>, L. Belabbassi<sup>2</sup>, A. E. Jochens<sup>1</sup>, M. K. Howard<sup>1</sup>, S. F. DiMarco<sup>1</sup>, K. Du Vall<sup>2</sup>

<sup>1</sup> Department of Oceanography, Texas A & M University, College Station, TX

<sup>2</sup> Lighthouse R & D Enterprises, Inc. Houston, TX

Sustained operational ocean observing systems require comprehensive data management protocols. A data management procedure for data acquisition and data processing has been developed for two cabled, real-time, ocean observing arrays consisting of RDCPs and RCM11 current meters, some supplemented with oxygen, turbidity, temperature, conductivity, and pressure sensors. Lighthouse R&D Enterprises, Inc., deployed these arrays off the coast of Oman. One array, off Abu Bakara near Shinaz, has been in operation since 2005; the other is installed off Cape Ras Al Hadd. The real-time data are sent to Lighthouse in Houston, TX, via satellite for monitoring and recording purposes. Data are forwarded monthly to Texas A&M University for processing. The data management protocols consist of steps that take the sensor data from the various instruments through several quality control and quality assurance steps to final data sets ready for further analysis and synthesis. These procedures have to be robust, logical and straightforward. They include regular communication with the Lighthouse data acquisition group to identify and resolve problems such as data inconsistencies, recording errors, instrument failure or drift, changes after instrument servicing, or changes in instrumentation. The ultimate goal for the data processing protocols is to have an automated procedure, which includes the identification and handling of special cases. The automation is programmed in a modular format, which allows objective and autonomous processing without human intervention. The modules are not data-set-specific and so are reusable for other data sets. Modules include conversion to engineering units, timestamp verification, QAQC processing, production of data products from the QAQC data, gap filling of QAQC data, and production of further analysis products. Data and analysis products are examined to verify data quality, as well as used for scientific interpretation. The application of automated comprehensive data management protocols on the processing of large sets of real-time data from sustained operational ocean observing systems results in reliable and accurate data sets as well as saving the researcher's time so that more effort can be applied to interpretation and scientific discovery.

M. Stoessel, L. Belabbassi, A. E. Jochens, M. K. Howard, S. F. DiMarco, K. Du Vall. 2010. Data Management Protocols for Operational Ocean Observing System off Oman. EOS Transactions of AGU. Vol. 91 (26), Ocean Sciences Meeting Supplement, Abstract IT25L-04.