

The Prototyping of a Flexible Data System for Monitoring
Ocean Surface Wind Fields Measured by Spaceborne Scatterometers

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Advances in information system technology has made possible to release scientists from tedious tasks of digesting large volume of Earth Science data sets usually with heterogeneity of data format and in distributed systems. In this study, we focus on technology of providing a seamless computing environment for user-defined processes on ocean surface wind vector fields measured by scatterometers. The uniqueness of the proposed system is to allow users to define their specific needs in terms of user-defined process through a web-based interface to access data remotely. The system supports both metadata-based broad search and content-based deep search for users to find the data precisely they need, facilitates complete data service of subsetting, resampling, reformatting, etc. for users to get the data ready to use, and gives users full control of distributed computing to perform online data analysis. The characteristics of the system are object-oriented with user-defined type for complex earth science data and user-defined process for complex earth science process, and relational with relational data model for the storage of data and process information and SQL expression for query of data and invocation of process. Some special processes, for example, "hurricane watch", will be built in the system to illustrate the technologies. Wind data measured by SeaWinds scatterometer on QuikSCAT will be used for demonstration.