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Web-based Hydrodynamic Forecast System for Singapore Strait

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This paper describes an integrated web-based system facilitating the tidal hydrodynamic operational forecast in Singapore Strait. The paper focuses on structure of Internet applications that provide intuitive interactive user interface to forecasted data. Computational core of the system can be chosen out of set of two- and three-dimensional hydrodynamic models, either in-house developed or ready-made. A basic review of utilized hydrodynamic models and data visualization techniques is provided. Model integration and data exchange mechanisms are important for the successful operation of the system.

The forecast server can be a platform-independent multiprocessor/multicomputer cluster solution making use of the parallel computation techniques; therefore, a special attention is paid to the system controlling and synchronizing distributed computational tasks. To improve portability and scalability the forecast system uses standard file formats (XML and netCDF), programming languages (Java and Fortran) and technologies (JSP, RMI and MPI).