

## Web-Based Visualization of Marine Environment Data

HE Ya-wen

### Abstract:

As the long-term marine survey and research, prodigious amounts of complex marine environment data featured as multi-source, heterogeneous, multi-dimensional, dynamic in structure and temporal are accumulated, especially with the development of marine environment monitoring technologies, such data has been generated rapidly. The visualization and sharing of such data is critical for the marine research. On the one hand, the visualization of marine environment data can enhance the image direction. On the other hand, the sharing can develop a joint use of marine environment data. After a brief introduction to the web services, marine information grid and the visualization methods for marine environment data, this paper proposes the “one stop” integration visualization architecture. It is then shown how the massive, distributed, multi-source, heterogeneous marine data can be organized based on the multi-dimensional space and process-oriented visualization methods, and how the organized data can be represented for use with web services and stored in a reusable fashion. Finally, the integration visualization architecture is illustrated on integrated visualization prototype system of marine environment data in the South China Sea that also highlight the multi-dimensional space and process-oriented visualization methods, the prototype system provides visualization of Argo floats, sea surface temperature fields, sea current fields, salinity, in-situ investigation data and ocean stations. Many interesting oceanographic phenomena can be demonstrated with the system, making it a tool that facilitates oceanographic teaching and research.

**Keywords :** marine environment data , marine geographic information systems , Web Services , marine information Grid , visualization , process-oriented

---

### <sup>1</sup>Yawen HE

Institute State Key Laboratory of Resource and Environment Information System  
Institute of Geographical Sciences and Natural Resources Research Chinese Academy of Science  
Datun Road 11A, Beijing 100101 P R China

Tel: 86-10-64889132

Fax: 86-10-64889630

Email: [heyw@reis.ac.cn](mailto:heyw@reis.ac.cn)