

WebODV: Providing Ocean Data View Services over the Internet

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Ocean Data View (ODV) is a widely used software package for the analysis, exploration and visualisation of oceanographic and other environmental data. One strength of ODV is the flexible and efficient handling of diverse and large data collections often consisting of millions of stations on standard computer hardware. By design, ODV is a stand-alone application that has to be installed on local computers and operates on locally stored datasets. This concept is optimal for cases where datasets are not widely shared and do not change often. Also, because software and data both reside on the end-user's computer, ODV can be used during expeditions and in remote regions, when Internet connections are slow or non-existing. However, the stand-alone configuration is not ideal when users want to work with large community datasets that are changing constantly because of corrections of existing data or the addition of new data. The disadvantages are that users have to download the typically large datasets to their local computers and that the local copies of the datasets quickly become outdated because changes in the dataset master copy are not transmitted to the local copy. Users would have to download the modified master dataset again to synchronize with the latest version.

To address these issues we are planning to develop an on-line version of the ODV software called *WebODV*, and provide typical ODV functionality in form of Web services. This will be done in the context of the ongoing and planned EMODNET and SeaDataCloud projects. The idea is to provide clients with *ODV-like* interfaces in their web-browser and access datasets that are centrally maintained and administered on a server. Obviously, this setup requires Internet connection. Users will always work with the latest version of the datasets and will not have to download and store the data on the local computer. This will allow analysis and exploration of marine data on less capable hardware, such as tablets and smartphones.

The new *WebODV* service will be designed and implemented with emphasis on intuitive design and responsiveness. In a first step, we address the typical and basic user request of filtering existing datasets by region, time or data availability and extracting subsets of the data. Emphasis will also be placed on minimization of network traffic, speed and an intuitive web interface, adapted for the scientific user's needs. The way ODV is designed enables full functionality on the command-line and control via XML (Extensible Markup Language) view files, allowing usage of ODV on the server-side implementation. Thus, it is expected to offer a high degree of compatibility to the stand-alone version, which comprises e.g. graphical output, but also the exchange of XML files between ODV and *WebODV* is conceivable.

On the client-side we will use a range of functions of the jQuery framework to provide a fast dynamical interaction between the user and the *WebODV* front-end, which comprises e.g. image manipulation routines. The client-server interaction will be realised using AJAX (Asynchronous JavaScript and XML), which enables asynchronous data exchange between client and server, and thus dynamically changing web content without reloading the complete page.

WebODV will be dynamically evolving, and additional functionality will be implemented step by step. Examples are upload and download of data, on-line quality control, data plotting on maps, as time series or section profiles and more.

The long-term vision is to establish *WebODV* as an easily operated Web service for the analysis of oceanographic and other environmental data, without installing software or storing data locally. This will enable comfortable, reliable and efficient working conditions on large community data sets (and private datasets) from any computer of the world, which is connected to the Internet.