ODV-online Getting Started

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ODV-online is a browser user interface for the interactive analysis and visualization of web-based datasets served by a webODV data hub, such as https://explore.webodv.awi.de/. By design, ODV-online mimics the interface of the *Ocean Data View* desktop software (https://odv.awi.de). Previous ODV users will find it easy to start working with ODV-online. Please familiarize yourself with the elements of the interface and the crucial role of mouse or trackpad.

ODV-online runs on all modern browsers, such as Chrome, Firefox, Safari, Edge (v79 or higher) on desktop computers, laptops, tablets or smartphones. Microsoft Internet Explorer is not supported.

Important note: On macOS systems the *Secondary click* feature of the trackpad or mouse must be enabled (*System preferences > Trackpad*) and used to trigger right-click events. Pressing *Ctrl+Click* does not work, and context menus will not show up.

User Interface

Interactivity

Left-clicking on station and sample locations selects the respective station or sample, while right-clicking on elements provides context menus with options for the manipulation of the clicked element.

Metadata of the current station, data of the current sample, and isosurface values for the current station are shown in the list windows on the right.

Interactive zooming, Z-zooming and point getter operations work by dragging the active edges or corners of the zoom boxes and by left-clicking a sequence of points. To terminate zoom and point getter operations, you click the *Apply* or *Cancel* buttons in the status bar or press the *Enter* or *Esc* keyboard keys.

Clickable metadata, data or info values, such as links to cruise reports, info files or other types of documents, are opened in a separate browser tab. You return to your ODV-online session by clicking on the respective browser tab.

Tooltips

Popup boxes showing more detailed information appear automatically if you rest the mouse over the ODV icon, the collection name in the title bar or over a variable name in the lists on the right side of the window.

Views

All data collections come with sets of prepared views on the data. Activating one of these views via *View > Load View* is the easiest way to get started with the exploration of the data. You can modify the view and save the modifications via *View > Save View As* and specifying a descriptive name, e.g., *Oxygen_at_500m*. Modified views are saved on your computer as part of your browser's data and will exist until you clear the browser data. If you are using ODV-online after login (e.g., as a named user), your modified views are saved on our server and will persist, even after clearing your browser data. Saved views appear as *private* views in the *Load View* trees. These views are invisible to other users.

Image files

High-resolution image files of the entire canvas, a particular data window or the map are obtained by right-clicking on the canvas (white background area) or the particular window and choosing *Save Canvas As* (or *Save Plot As / Save Map As*). A file save dialog will open, which lets you choose target directory and file name of the image file on your computer.

Close

Choose *View > Close Session* or close the browser tab to close your ODV-online session. Your last view settings are automatically saved and will be restored when you return. A session is automatically terminated after 60 minutes of inactivity.

Further reading

Detailed hands-on procedures for creating different kinds of graphics can be found in the ODV-online HowTo document. In-depth information about *Ocean Data View* can be found in the ODV User's Guide and at https://odv.awi.de/documentation/.

Types of Data Windows

In addition to the station map, ODV-online supports four types of data windows: STATION, SCATTER, SECTION and SURFACE. Examples are shown in the figure below.
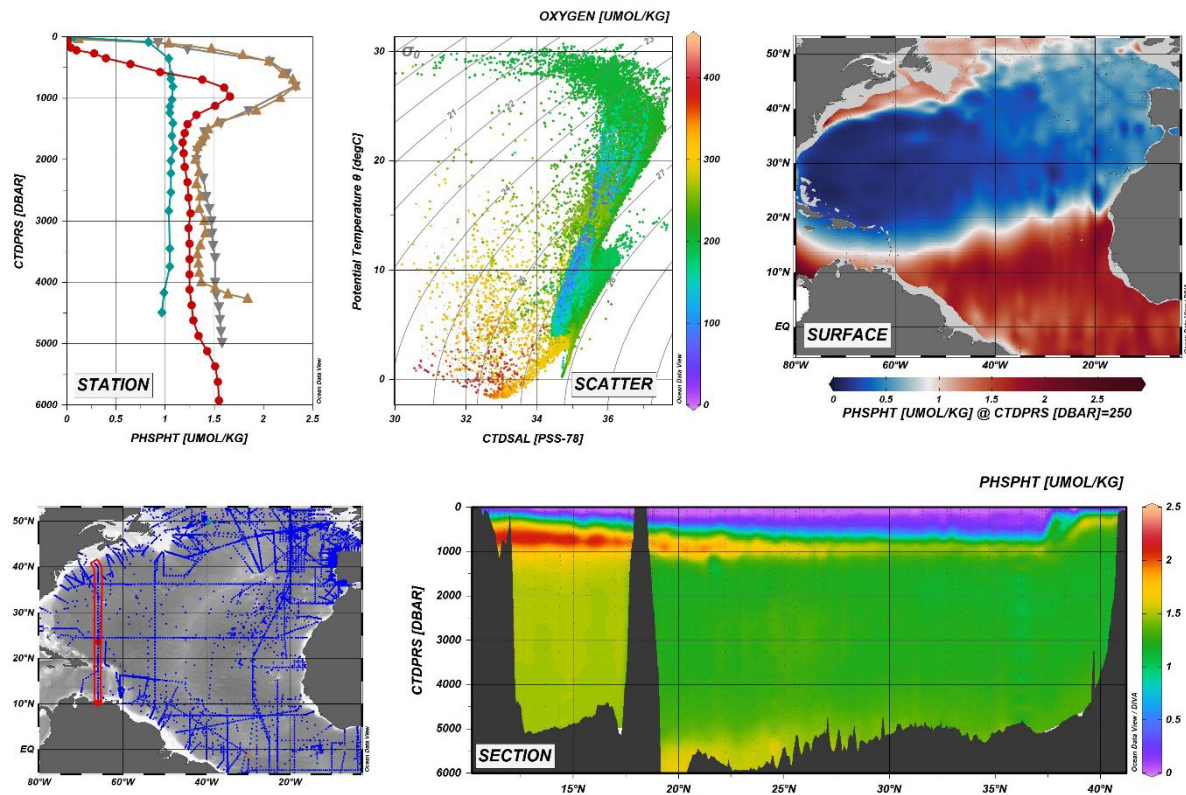
STATION data windows provide X/Y plots showing only the data of stations belonging to the *pick list* of the map. Stations are drawn with different symbol and color. You add the current station to the pick list by pressing the + (plus) button, or remove it by pressing the - (minus) button. Arbitrary data variables can be assigned to the X and Y axes. For easy identification, picked stations are marked in the map using the same symbol and color as in the data windows.

SCATTER data windows show the data of all stations currently shown in the map. SCATTER plots provide overviews over potentially very large data sets, and are particularly suited for data quality control. SCATTER windows can have a Z variable, in addition to variables on X and Y. Values of the Z variable determine the colors drawn at given X/Y data locations.

SECTION data windows show the data of all stations belonging to the section currently defined in the map, e.g., all stations inside the red section band. Sections are defined or modified using the *Manage Section* options of the map context menu. SECTION data windows are used to show along-track distributions or X/Y/Z plots for the stations inside the current section band.

SURFACE data windows show isosurface values, such as *Phosphate @ Depth [m] = 250*, for all stations in the map.

A data window of any kind with *Longitude* and *Latitude* assigned to X and Y becomes a map, and inherits map properties, such as projection or coastline and bathymetry settings, from the station map. To change map properties of the data window you must modify the properties of the station map.

Data windows with Z-variables (SCATTER, SECTION and SURFACE) can show the data in two ways: (1) by placing colored dots at the X/Y locations (this is the default; see SCATTER window above) or (2) as continuous gridded fields, estimated on the basis of the observed data (see SECTION and SURFACE windows above). Gridded fields can be color shaded and/or contoured. Users may choose among three gridding algorithms; DIVA (http://modb.oce.ulg.ac.be/mediawiki/index.php/DIVA) is the recommended method.

Canvas Layout

ODV-online canvas layouts always contain a station map. The map can be moved and resized, but not deleted. In addition, layouts may also contain an unlimited number of data windows. Predefined layout templates containing various types and numbers of data windows can be chosen via *View > Layout > Layout Templates*.

Size and position of the station map or a given data window on the canvas are modified by right-clicking on the respective window and choosing an option from the *Layout* sub-menu. You add a new data window by right-clicking the canvas (white area between map and data windows) or a data window and choosing *Layout > Create New Window*.

Properties of the station map or the data windows are modified by right-clicking on the respective window and choosing the *Properties* option. Examples of such changes are explained in the ODV-online HowTo document.

Station and Sample Filters

A wide range of station and sample filters can be applied to the station map and each data window individually to subset the number of stations shown in the map or the number of samples shown in a given data window. You invoke these filters via the map or the data window context menus and choosing *Station Filter* or *Sample Filter*.

Station filtering can be by cruise and station names, date/time ranges, seasons, data availability or meta variable values. Sample filtering can be by data quality or specified range for given data variables, such as depth or pressure. Examples of filter usage are explained in the ODV-online HowTo document.

Derived Variables

In addition to the data variables stored in the data collections (basic data variables), ODV-online can calculate a large number of derived variables on demand. Once defined, these derived variables are available for analysis and visualization in the same way as the basic data variables. Derived variables can be added, edited or deleted via *View > Derived Variables*.

Exporting Data

The data of the current station set shown in the map as well as X/Y/Z data of given data windows can be exported and transmitted to the user's computer via the *Export* main menu. For the *Data* export users can select the output format (ASCII spreadsheet, ODV collection, or netCDF) and subset the number of meta- and data variables, for which output is requested. In addition, a sample filter can be applied to the export, for instance when only good quality data or data for a given depth range should be exported.

Window Data are always exported as ASCII spreadsheet containing the X / Y / Z data of the window in separate columns. Additional columns containing station metadata are included on request. In case the given data window is using gridding, gridding misfits at the data locations or the estimated values at the grid nodes can be exported.

Trackpad, Mouse and Keyboard Actions

General

ODV-online is an interactive user interface that offers a wide range of data analysis and visualization features. You operate the interface and get access to this rich functionality by using your mouse, trackpad and keyboard. For a summary of mouse actions and shortcut keys see the ODV-online shortcut keys document.

Main and context menus

All ODV-online functionality is accessed via dropdown menus that open when the mouse is over one of the main menu items on the right side of the title bar or when a right-click occurs on the canvas, station map, a data window, or a list window on the right side. Some menu items have sub-menus that open when the mouse is over the parent menu item. Use *Alt-right-click* on an overlay window to obtain the context menu of the underlying parent window. Use *Shift-right-click* or *Ctrl-right-click* to obtain the *Extras* and *Layout* menus of the canvas, map and data windows directly. A menu option is chosen by left-clicking it. Menus disappear automatically when an option is chosen, or a left click occurs anywhere in the browser window.

Dialogs

Many clicked menu options, bring up dialogs that are used for modifying settings of station map, data window or station and sample filters. Any changes made by the user are applied when the *Apply* button in the lower left corner of the dialog is clicked. Changes are discarded by clicking the x button in the top-right corner, by a left click anywhere in the browser window, or pressing the *Esc* key.

Quick-zoom into map or data window

Move the mouse to a corner of the desired final zoom box in the map or any data window, press and hold down the *Ctrl* key, also press and hold down the left mouse button and drag the mouse to the desired opposite zoom box corner. Release *Ctrl* key and left mouse button.

Zoom into map, data window or color bar of a data window

Initiate the zoom operation by right-clicking the map or data window, then choose the *Zoom* or *Z-Zoom* option. Drag the active edges or corners of the zoom box to change the size of the box. Move the mouse inside the box and drag the box to the desired location. Terminate the zoom operation and accept the new x/y ranges (z range in case of *Z-Zoom*) by clicking the *Apply* button in the status bar, pressing the *Enter* key, or double-clicking anywhere on the canvas. Abort the zoom operation and leave the x/y/z ranges unmodified by clicking the *Cancel* button in the status bar or pressing the *Esc* key.

Full domain map and full range data window

Enlarge the map domain to the full domain of the given data collection by right-clicking on the map and choosing *Full Domain*. Enlarge the X/Y/Z ranges of a given data window to encompass all data values by right-clicking on the data window and choosing *Full Range*. Right-click on the canvas and choose *Full Range All Windows* to set all data windows to full range.

Manage sections

ODV-online sections are bands of certain width that follow given ship or instrument tracks. Once defined, all stations inside the section band are included in SECTION-type data windows, stations outside the section band are excluded. A section is defined, loaded, saved, removed, or its properties changed via right-clicking on the station map and choosing one of the options the *Manage Section* sub-menu.

For defining a new section spine choose *Manage Section > Define Section*. Note that the *Get Points* mode is entered and the cursor changed to cross-hair. Move the cursor to the intended start of the section and left-click the mouse. Follow the track towards the end and left-click repeatedly until you reach the end of the section. Make sure to click and add points where track orientation changes. Terminate section definition by clicking the *Apply* button in the status bar, by pressing the *Enter* key, or by defining the last point using a left double-click. Abort section definition by clicking the *Cancel* button in the status bar, or by pressing the *Esc* key.

Note that the same *Get Points* procedures are also used to define station filter polygons or for drawing line, polyline or polygon graphics objects.

On the Section Properties dialog choose one the available *Section Coordinates* and, if necessary, adjust the *Mean Width*, the source of the section bathymetry data and the bathymetry color. You may also specify a section name. Then click *Apply*. Note the section band appearing in the map. The section properties can be modified at any time via *Manage Section > Properties*. If you anticipate using the same section again later, save the section as a named section via *Manage Section > Save Section As*. Saved sections can be loaded via *Manage Section > Load Section*. Choose *Manage Section > Remove Section* to remove the section from the map. Note that SECTION data windows will remain empty until you define or load another section.

Define isosurface variables

Isosurface variables are special quantities that describe the values of a variable (display variable) on a specific isosurface. Examples of isosurfaces are layers of constant depth or density (isopycnals). ODV-online allows definition of an unlimited number of such isosurface variables via *View > Isosurface Variables*. Before defining isopycnals, define a potential density derived variable first.

On the *Isosurface Variables* dialog compose a new isosurface variable in the *New* box, and click *Add* to add this to the list of *Already Defined* variables. Delete existing isosurface variables by selecting variables in the *Already Defined* list and pressing *Delete*.

You use isosurface variables on the X, Y, and Z axes of SURFACE data windows.