

# Ocean Data View User's Guide for Yokoyama Lab

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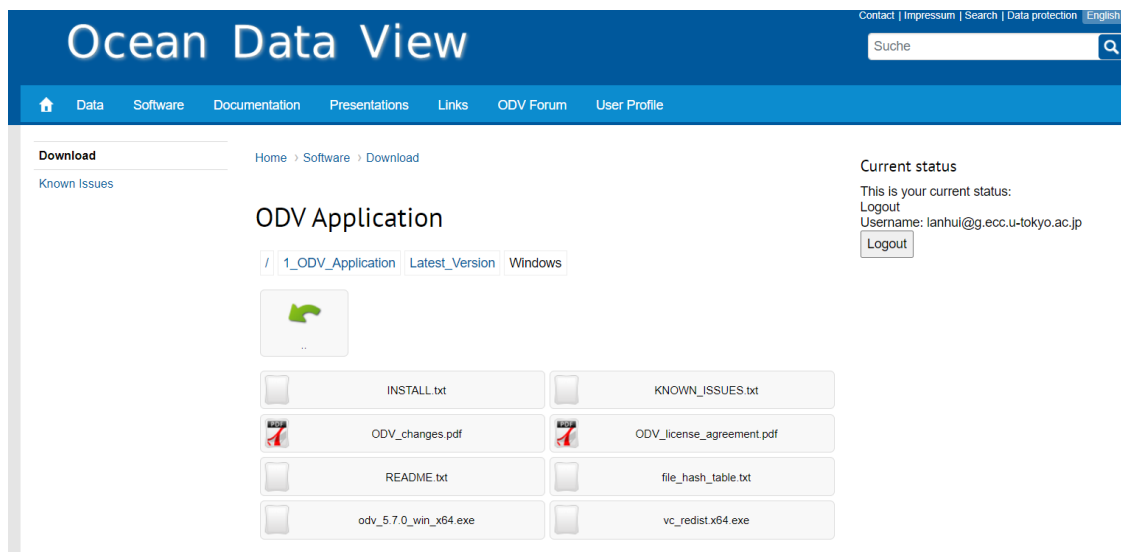
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\*This manual is a simplified manual for drawing maps, cross-sectional diagrams, and T-S diagrams with ODV (but I think it can meet most needs). You can also create various other types of diagrams by using ODV (see [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.jodc.go.jp/jodcweb/info/odv/odvGuide\\_V562.pdf](https://www.jodc.go.jp/jodcweb/info/odv/odvGuide_V562.pdf) in Japanese and [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://odv.awi.de/fileadmin/user\\_upload/odv/misc/odvGuide.pdf](https://odv.awi.de/fileadmin/user_upload/odv/misc/odvGuide.pdf) in English). If you have any questions, please feel free to contact me ([lanhui0710@163.com](mailto:lanhui0710@163.com)).

## 1. Installation

- Register on the ODV homepage (<http://odv.awi.de/en/software/download/>).
- Log in using the ID and password used for registration.
- The ODV homepage → Software → 1\_ODV\_Application → Latest\_Version  
→ Click the package that matches your PC (Windows or Mac) → Download the software (files) and install it on your PC.



- Download coastline data: The ODV homepage → Software → 3\_Optional\_Packages → Version4 → Click the package that matches your PC (Windows or Mac) → Install packages you need on your PC (\*I suggest to download all).

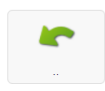
**Download**  
Known Issues















Home > Software > Download

**Current status**  
This is your current status:  
Logout  
Username: lanhui@g.ecc.u-tokyo.ac.jp  
Logout

## ODV Application

/ 3\_Optional\_Packages Version4 Windows



 INSTALL.txt	 RegionalCoastlinePackages.gif
 SampleFiles.zip	 odvOP_ETOPO2_6m_w32.exe
 odvOP_coast_Gre...ierReef_w32.exe	 odvOP_coast_Gul...ibbean_w32.exe
 odvOP_coast_IBCAO_w32.exe	 odvOP_coast_NorthAtlantic_w32.exe
 odvOP_coast_Nor...Pacifc_w32.exe	 odvOP_coast_Regional2_w32.exe
 odvOP_coast_Regional_w32.exe	 odvOP_coast_SouthAmerica_w32.exe
 odvOP_coast_Sou...tantic_w32.exe	 odvOP_eWOCE-V3_w32.exe

## 2. Creating data for ODV and reading with ODV

### 2.1 Creating data for ODV

- Organize the data you want to plot using Microsoft Excel.
- Enter the following information in each column of the Excel table: Cruise name (column A), station name (column B), latitude (column C), longitude (column D), bottom depth (column E), and the data you want to plot from column F (e.g. pressure, salinity, water temperature, etc.). The data from column F should be accompanied by a column QF (Quality Factor; “0” for available data and “1” for unavailable data).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Cruise	Station	Latitude	Longitude	Bot. Depth [m]	PrDM	QF	DepSM	QF	T090C	QF	Sal00	QF	Sal. Corrected	QF	Sbeox0ML/L
2	KH-22-5	P3	30.33933333	132.0078333	3168	2	0	1.989	0	21.4313	0	34.5984	0	34.5955583	0	4.7654
3	KH-22-5	P3	30.33933333	132.0078333	3168	3	0	2.98	0	21.4318	0	34.5986	0	34.59575793	0	4.756
4	KH-22-5	P3	30.33933333	132.0078333	3168	4	0	3.975	0	21.4318	0	34.5994	0	34.59655645	0	4.7599
5	KH-22-5	P3	30.33933333	132.0078333	3168	5	0	4.966	0	21.432	0	34.603	0	34.60014982	0	4.7586
6	KH-22-5	P3	30.33933333	132.0078333	3168	6	0	5.958	0	21.4325	0	34.6013	0	34.60014982	0	4.7649
7	KH-22-5	P3	30.33933333	132.0078333	3168	7	0	6.953	0	21.4331	0	34.5983	0	34.60014982	0	4.7614
8	KH-22-5	P3	30.33933333	132.0078333	3168	8	0	7.946	0	21.4347	0	34.5978	0	34.60014982	0	4.7508
9	KH-22-5	P3	30.33933333	132.0078333	3168	9	0	8.939	0	21.4342	0	34.5976	0	34.60014982	0	4.7548
10	KH-22-5	P3	30.33933333	132.0078333	3168	10	0	9.928	0	21.4343	0	34.5976	0	34.60014982	0	4.7604
11	KH-22-5	P3	30.33933333	132.0078333	3168	11	0	10.922	0	21.4346	0	34.5979	0	34.60014982	0	4.7565
12	KH-22-5	P3	30.33933333	132.0078333	3168	12	0	11.92	0	21.435	0	34.5979	0	34.60014982	0	4.7599
13	KH-22-5	P3	30.33933333	132.0078333	3168	13	0	12.912	0	21.4341	0	34.598	0	34.60014982	0	4.7593
14	KH-22-5	P3	30.33933333	132.0078333	3168	14	0	13.901	0	21.4337	0	34.598	0	34.60014982	0	4.7436
15	KH-22-5	P3	30.33933333	132.0078333	3168	15	0	14.897	0	21.4294	0	34.5977	0	34.60014982	0	4.7556
16	KH-22-5	P3	30.33933333	132.0078333	3168	16	0	15.889	0	21.4219	0	34.5962	0	34.60014982	0	4.7635
17	KH-22-5	P3	30.33933333	132.0078333	3168	17	0	16.886	0	21.4157	0	34.596	0	34.60014982	0	4.7575
18	KH-22-5	P3	30.33933333	132.0078333	3168	18	0	17.876	0	21.4193	0	34.5965	0	34.60014982	0	4.7455
19	KH-22-5	P3	30.33933333	132.0078333	3168	19	0	18.868	0	21.4201	0	34.5961	0	34.60014982	0	4.7444

R	S	T	U	V	W	X	Y	Z	AA	AB	AC
Sigma-?0	QF	SvDM	QF	Potemp190C	QF	Δ 14C	QF	SeaTurbMtr	QF	Chl a	QF
24.0705	0	1524.94	0	21.4308	0		1	0.261	0		1
24.0706	0	1524.96	0	21.4312	0		1	0.133	0		1
24.0712	0	1524.98	0	21.431	0		1	0.14	0		1
24.0739	0	1525	0	21.431	0		1	0.145	0		1
24.0726	0	1525.01	0	21.4313	0		1	0.152	0		1
24.0702	0	1525.03	0	21.4318	0		1	0.148	0		1
24.0694	0	1525.05	0	21.4332	0		1	0.137	0		1
24.0694	0	1525.06	0	21.4324	0		1	0.138	0		1
24.0695	0	1525.08	0	21.4324	0	26	0	0.132	0	0.67	0
24.0697	0	1525.1	0	21.4325	0		1	0.147	0		1
24.0696	0	1525.12	0	21.4327	0		1	0.149	0		1
24.07	0	1525.13	0	21.4316	0		1	0.137	0		1
24.0702	0	1525.14	0	21.431	0		1	0.146	0		1
24.0712	0	1525.15	0	21.4265	0		1	0.142	0		1
24.0721	0	1525.14	0	21.4188	0		1	0.143	0		1
24.0737	0	1525.14	0	21.4124	0		1	0.149	0		1
24.0732	0	1525.17	0	21.4158	0		1	0.137	0		1
24.0727	0	1525.19	0	21.4164	0		1	0.135	0		1
24.0739	0	1525.19	0	21.4109	0		1	0.166	0	0.724	0
24.0748	0	1525.2	0	21.4074	0		1	0.139	0		1

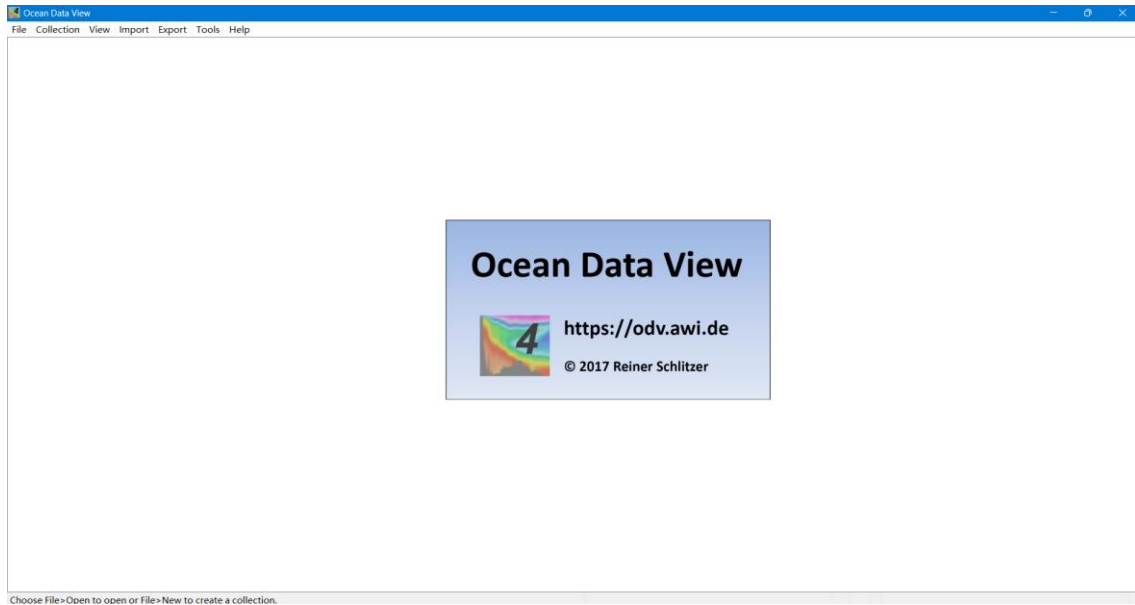
- Save the Excel file as a text file.

\*Please use only alphanumeric characters for the file name, Japanese cannot be used.

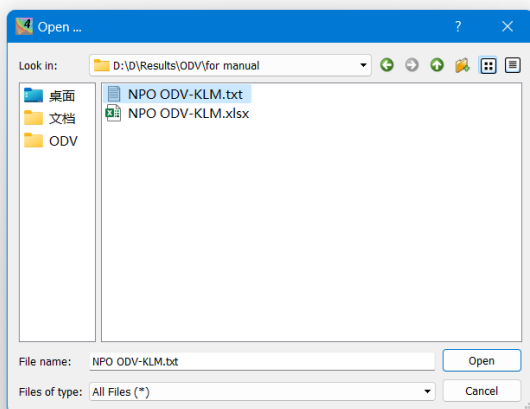
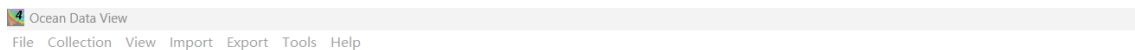
\* Please properly specify the storage location of the ODV text data. Subsequent changes in the data storage location may cause problems such as the loss of the pictures you have made.

## 2.2 Reading data with ODV

- Open ODV. There is an ODV icon in the application folder and double-click on it.



- Select "Open" from "File" and set "File of type" to "All Files (\*)" to select the text file you created earlier. Then, click "Open".



- In order, you will open small windows called “Spreadsheet File Properties”, “Metadata and Data Variables”, "Collection Properties", "Meta Variable Association", and "Import". Please all click “OK”.
- If the screen as shown below appears, it means that you have successfully used ODV to read the data!

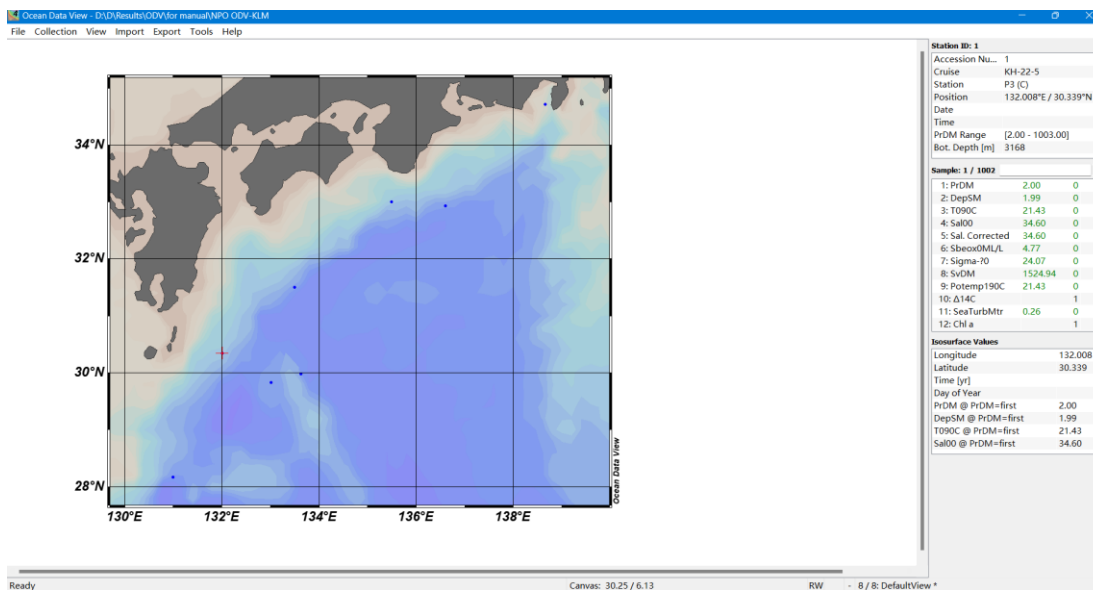
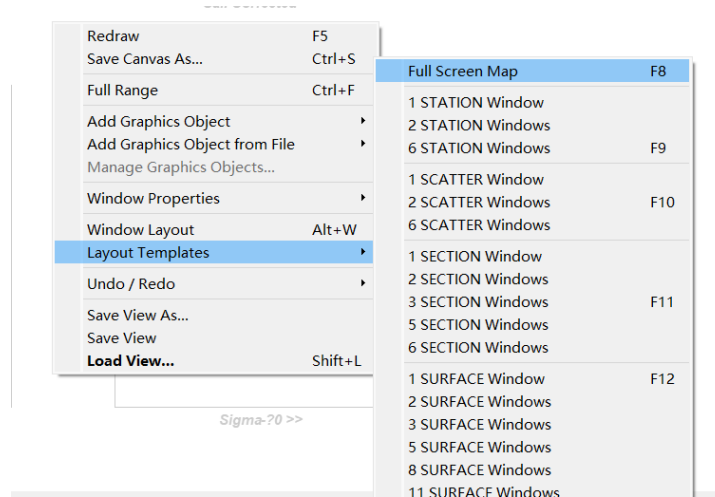
The screenshot displays the Ocean Data View (ODV) software interface. The main window shows a grid of six small plots, each titled "Window 1 STATION" through "Window 6 STATION". Each plot contains the text "Press ENTER to add the data of the current station to the plot." and a variable name: DepSM, Sal00, Sal. Corrected, T090C, SbeoxM/L, and Sigma-T0. A map in the bottom-left corner shows the station location in the Pacific Ocean, with coordinates ranging from 28°N to 34°N latitude and 130°E to 138°E longitude. The right-hand panel displays station metadata for Station ID: 1, including Accession Number (KH-22-5), Station (P3 (C)), Position (132.008°E / 30.339°N), Date, Time, PrDM Range (2.00 - 1003.00), and Bot. Depth (3168). Below this, a table shows sample data for Sample 1 / 1002, listing variables like PrDM, DepSM, T090C, Sal00, Sal. Corrected, SbeoxM/L, Sigma-T0, Potemp190C, Δ14C, SeaTurbMtr, and Chl a with their respective values.

Sample: 1 / 1002	Value	Unit
1: PrDM	2.00	0
2: DepSM	1.99	0
3: T090C	21.43	0
4: Sal00	34.60	0
5: Sal. Corrected	34.60	0
6: SbeoxM/L	4.77	0
7: Sigma-T0	24.03	0
8: SvDM	1524.94	0
9: Potemp190C	21.43	0
10: Δ14C	1	
11: SeaTurbMtr	0.26	0
12: Chl a	1	

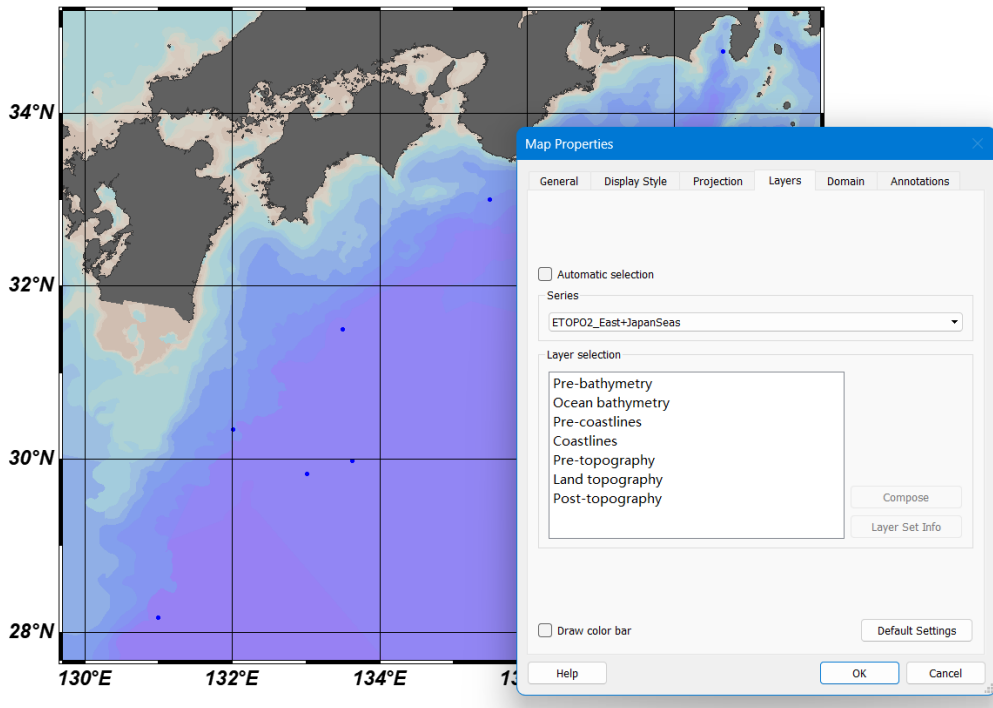
Accession Values	
Longitude	132.008
Latitude	30.339
Time [yr]	
Day of Year	
PrDM @ PrDM=first	2.00
DepSM @ PrDM=first	1.99
T090C @ PrDM=first	21.43
Sal00 @ PrDM=first	34.60

### 3. How to draw a station map

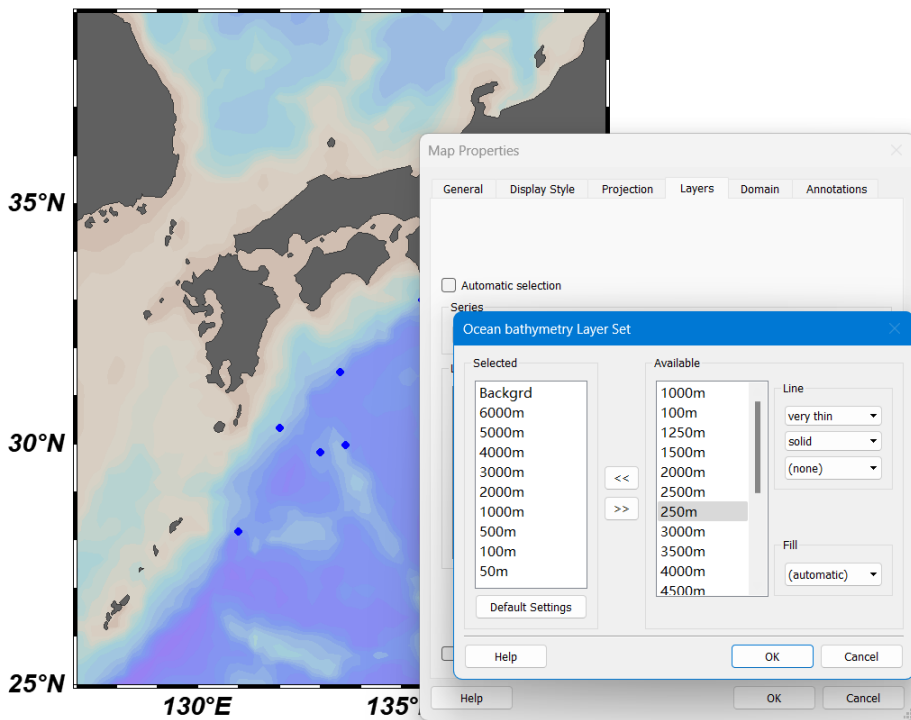
- Right-click an empty area and select "Layout templates" from the menu and select "Full Screen Map".



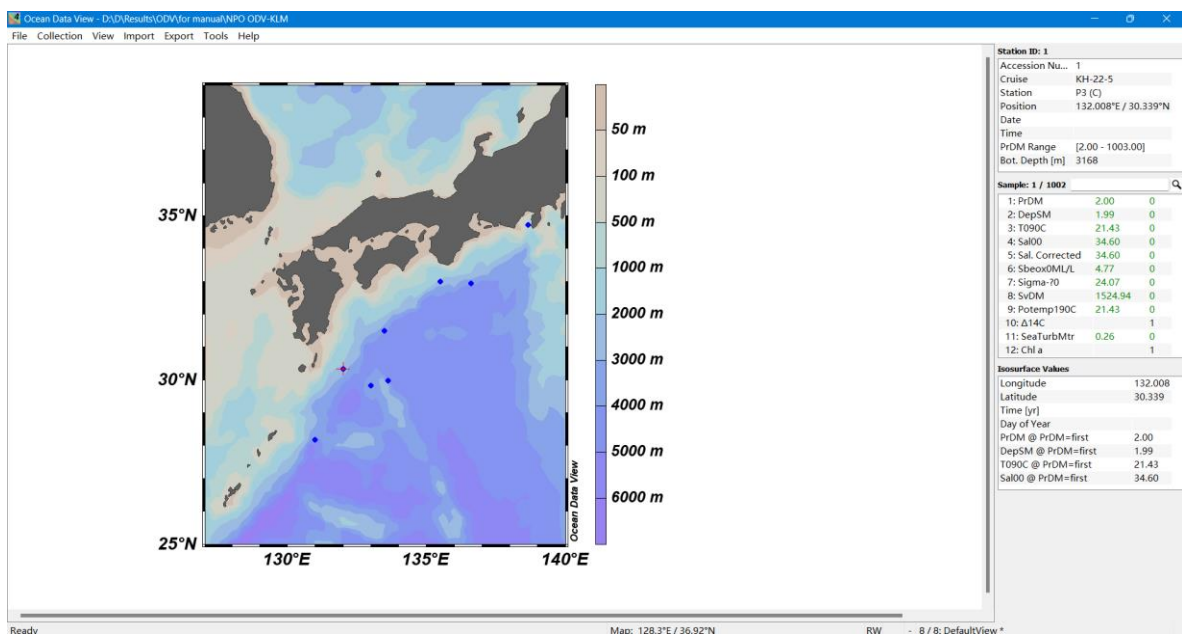
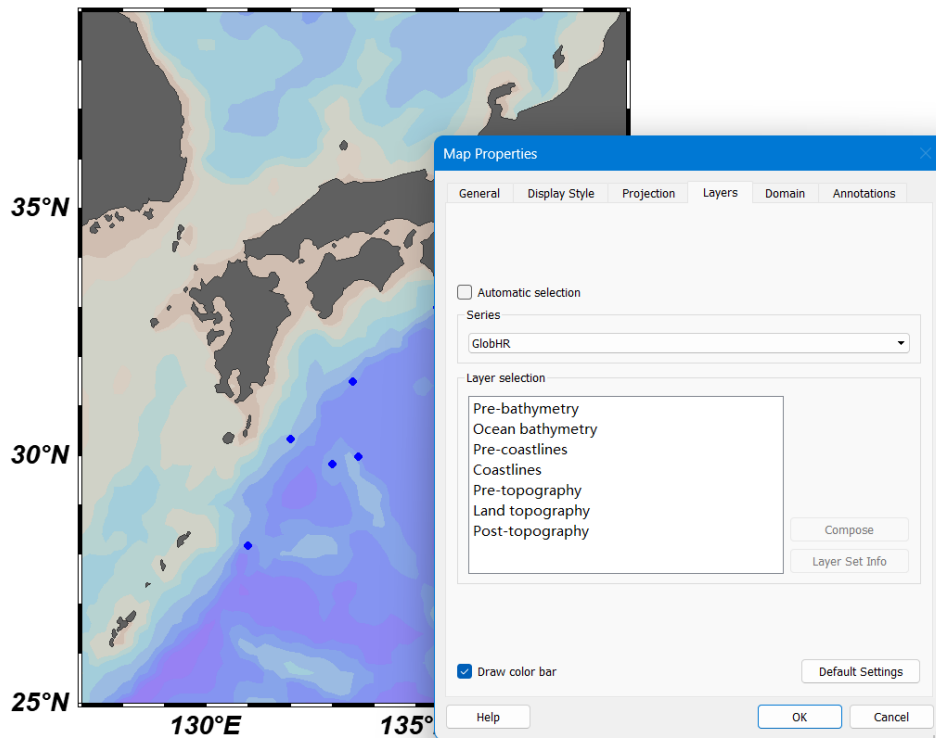
- Right-click on the map and select "Properties".
- Select "Layers", and remove the "Automatic selection" checkbox. Choose a proper series based on the site location and click OK.



- To add the ocean bathymetry bar: Right-click on the map and select "Properties"
  - ➔ "Layers" ➔ "Ocean bathymetry" ➔ "Compose" ➔ Determine the selected depth by moving each depth left or right (left column shows selected depths) ➔ "OK" ➔ Check "Draw color bar" ➔ "OK"

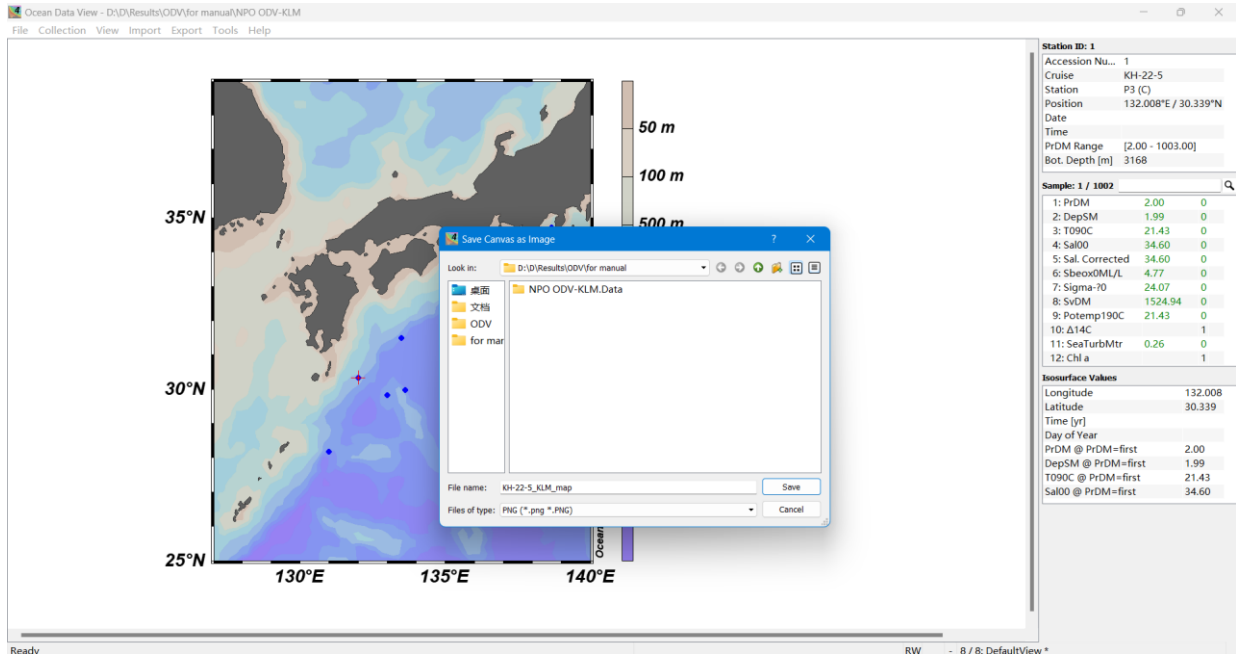




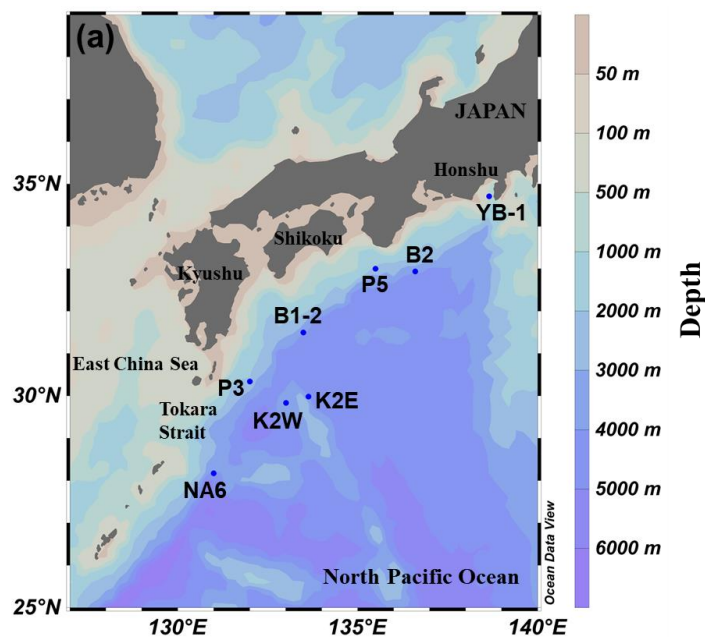


- To do the detailed editing of the map, right-click on the map and select "Properties" (\* Please try it yourself to understand what each option does).
- Coloring the water depth: click "General" → "Palette".
- Font size: click "General" → "Font size factor".
- The color and size of the measurement point: click "Display Style".

- The range of the map: click "Domain".
- When the map is complete, right-click on an empty area and select "Save Canvas As...". Name the map, select the image file format, and right-click "Save". After that, save the image by specifying the resolution in the small window.

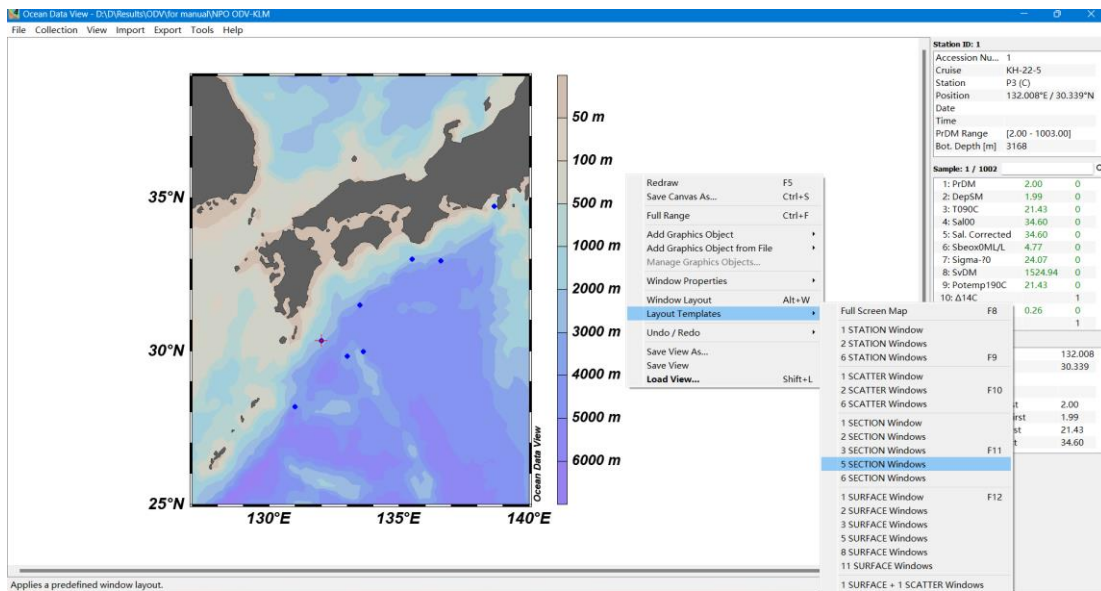


- You can further process the picture through Microsoft Powerpoint, and the final product used in a journal article is as shown below (detailed figure information can be found in Lan et al. (2024)).

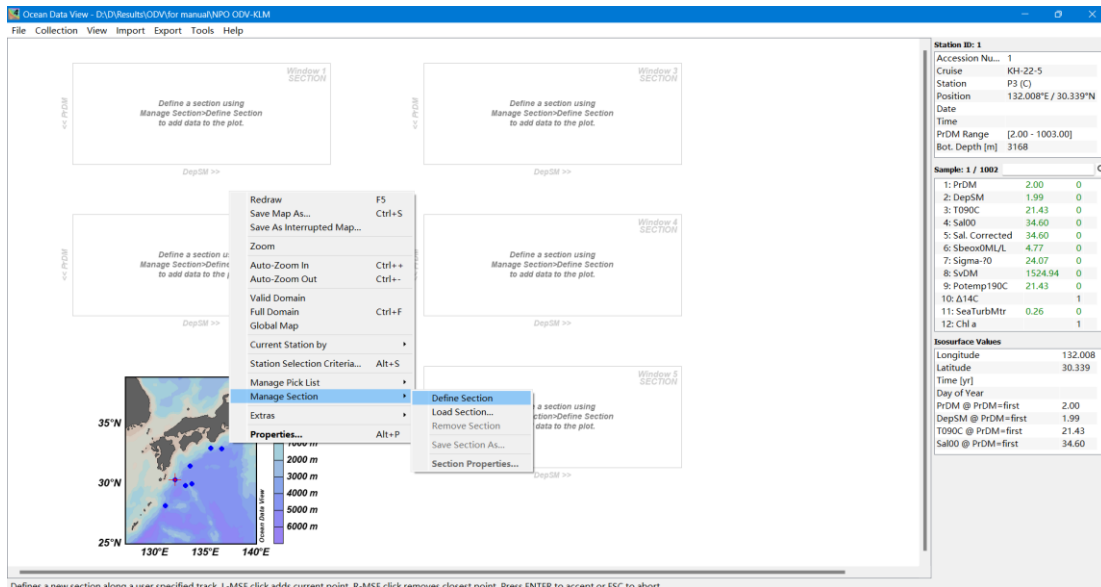


#### 4. How to draw a cross-sectional diagram

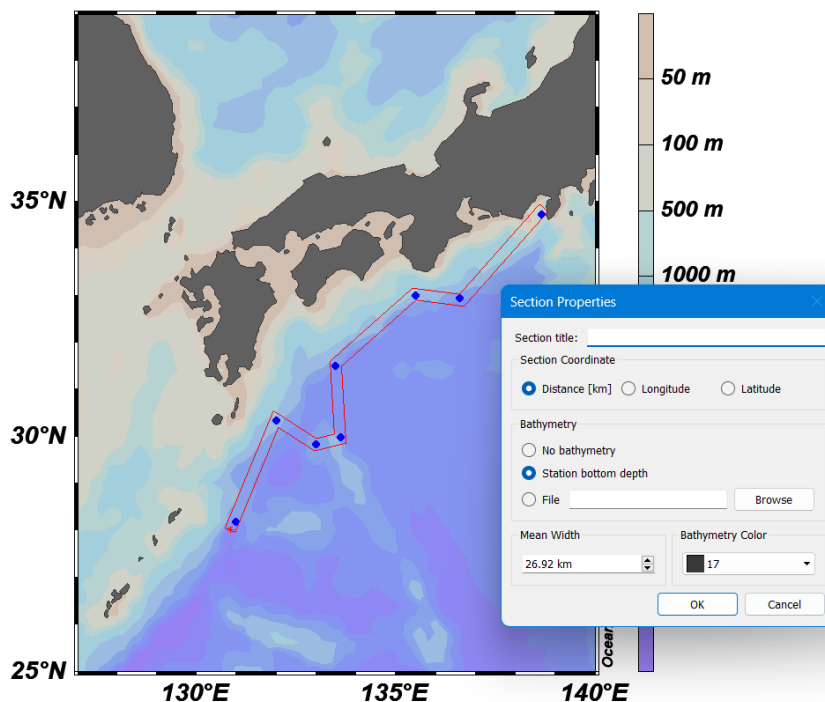
- Before drawing this cross-sectional diagram, please be sure to note that you'd better create a new text file and open it with ODV. This is because an ODV file can only retain the last edited interface. If you directly use the map's ODV file to draw the cross-sectional diagram, the map file data may be overwritten and lost, which is very detrimental to subsequent image modifications of the map.
- Right-click on the map and select "Layout Templates" → "1 SECTION Window"  
(\* The number of SECTION Windows you should choose depends on the number of cross-sectional diagrams you want to draw).



- Decide on the measurement points to draw the cross-sectional diagrams: Right-click on the map and select "Manage Section" → "Define Section".

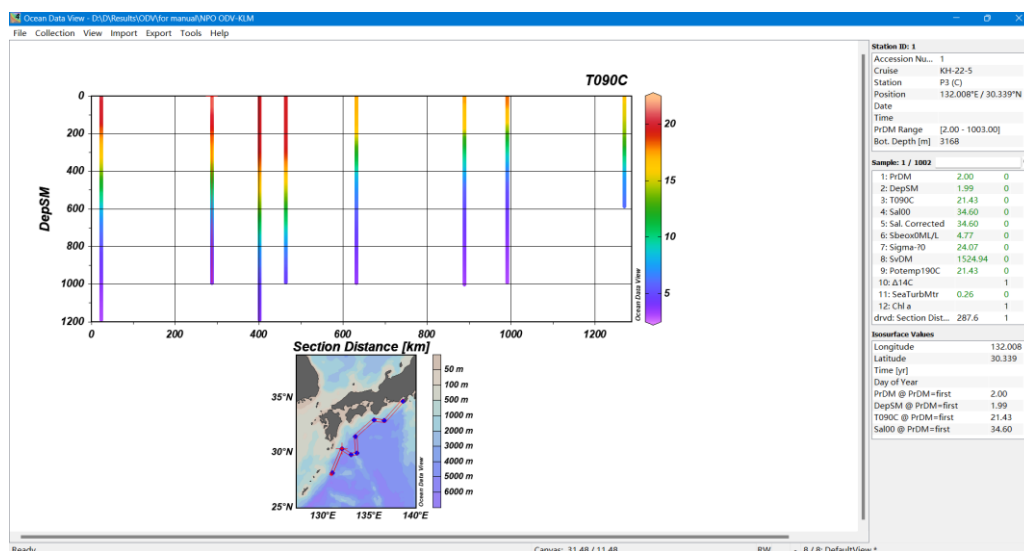
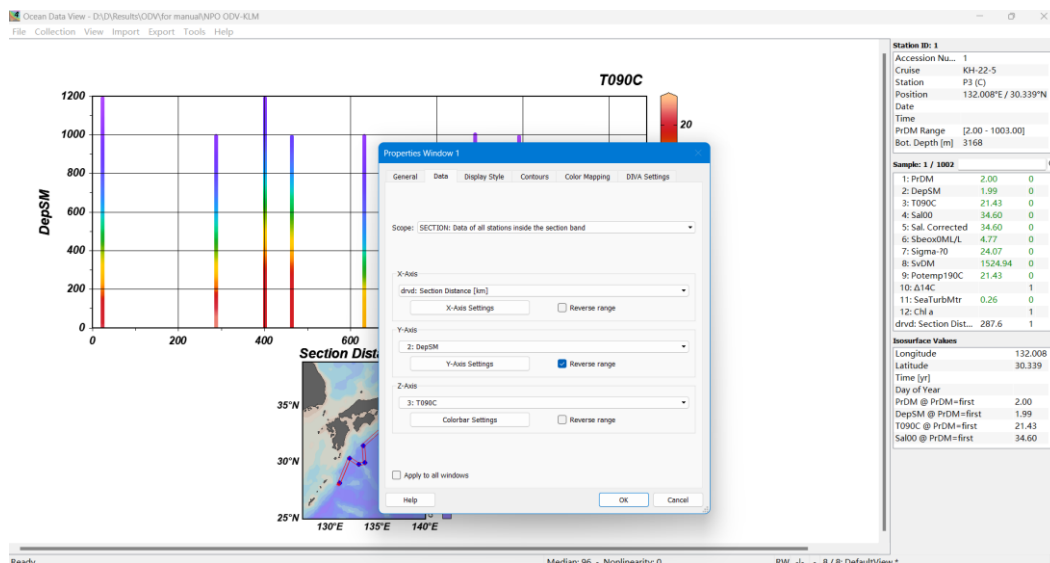


- Click on the starting point to draw a red line. Click once to bend the line and double-click at the end point. Once completed, you will see a small window called "Section Properties". Select "Section Coordinate" (Distance [km] is the distance from the starting point) and click OK.

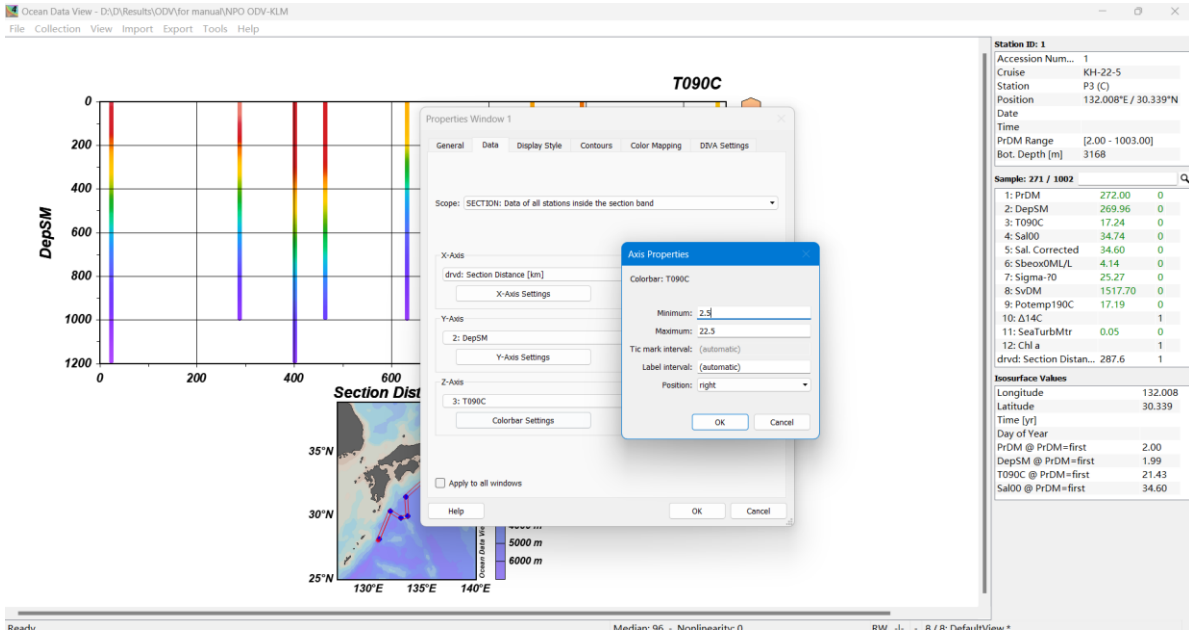
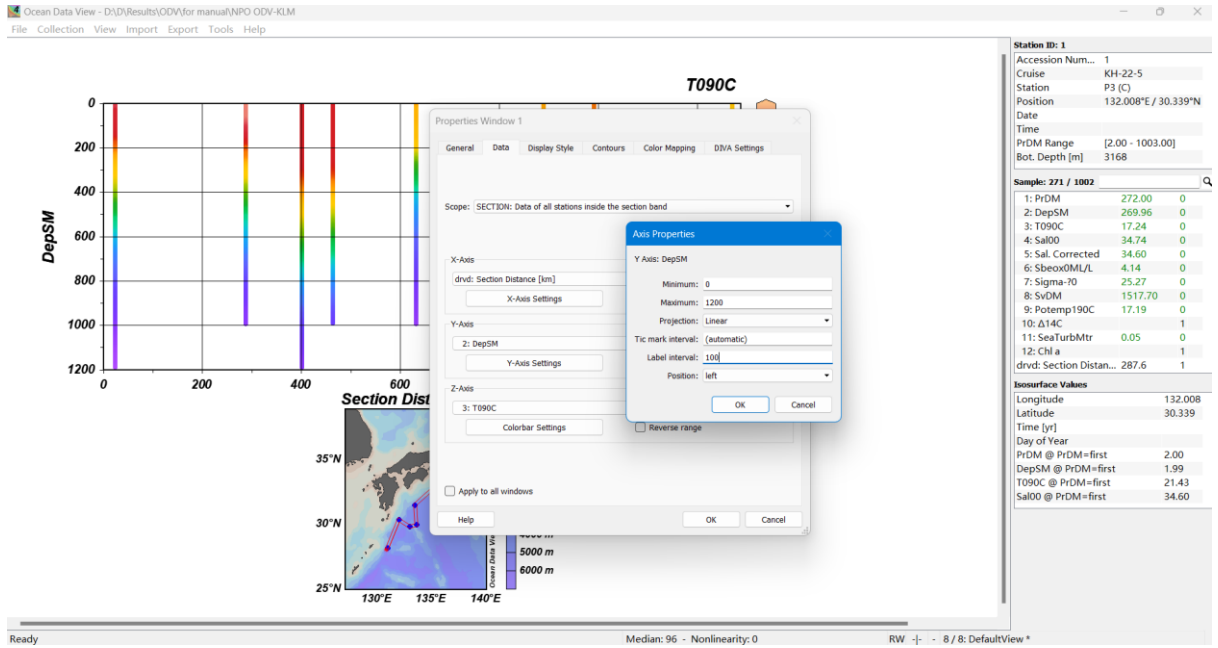


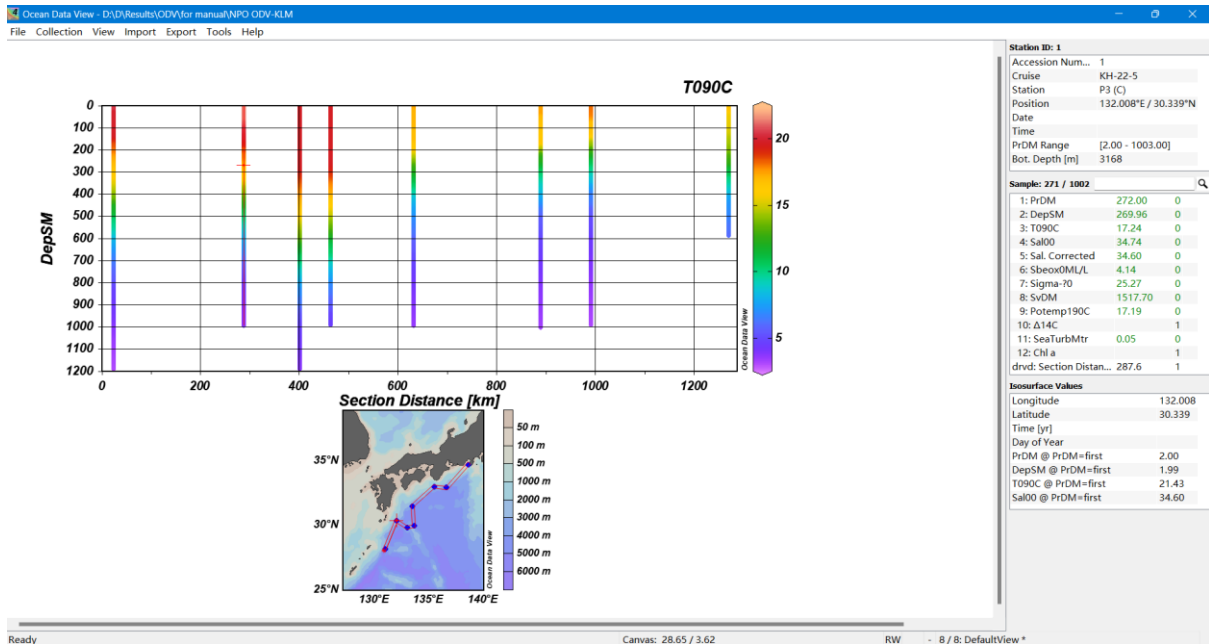
- To set the axis: Right-click on the map and select "Properties" → "Data" → Set the axis content → Check "Reverse range" for Y-Axis (\* In this example, I set section distance as the X-Axis, water depth as the Y-Axis, and water

temperature as the Z-Axis).



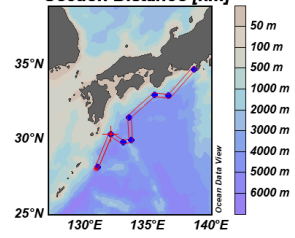
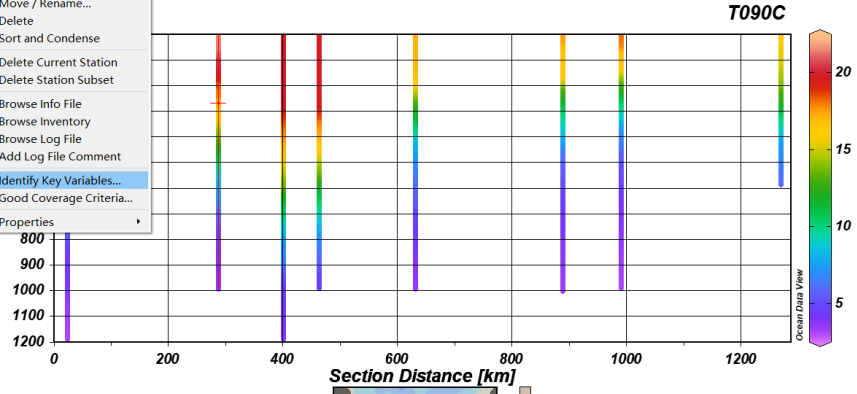
- To change the variation range of the axis: Right-click on the map and select "Properties" → "Data" → "Y-Axis Settings" → Change "Minimum", "Maximum", and "Label interval" to the values you want → "OK" → "Colorbar Settings" → Change "Minimum", "Maximum", and "Label interval" to the values you want → "OK" → "OK".





- To add the ocean bottom topography: "Collection" → "Identify Key Variables" → Associate "Pressure in Water Column [db]" on the left with "PrDM" (your data) on the right (Click the "Associate" button in the center. An asterisk (\*) will be added to the parameter if the association is successful) → Associate "Depth in Water Column [m]" on the left with "DepSM" (your data) on the right → "OK" → Right-click on the map and select "Properties" → "Data" → Remove "Reverse range" checkbox for Y-Axis → "OK" → "Properties" → "Data" → Check "Reverse range" for Y-Axis → "OK".

- Copy...
- Package...
- Move / Rename...
- Delete
- Sort and Condense
- Delete Current Station
- Delete Station Subset
- Browse Info File
- Browse Inventory
- Browse Log File
- Add Log File Comment
- Identify Key Variables...
- Good Coverage Criteria...
- Properties



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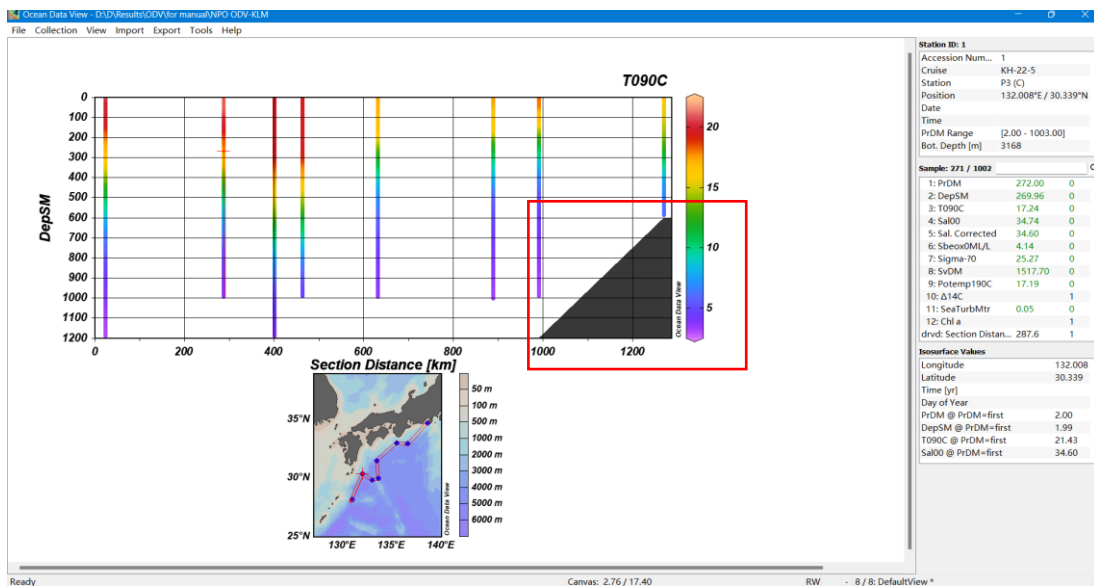
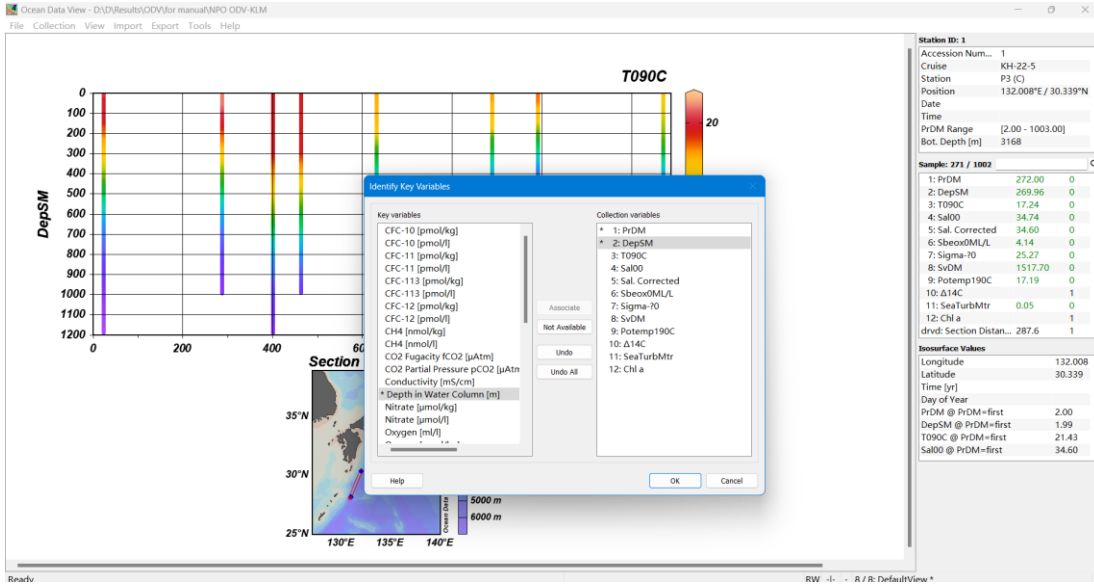
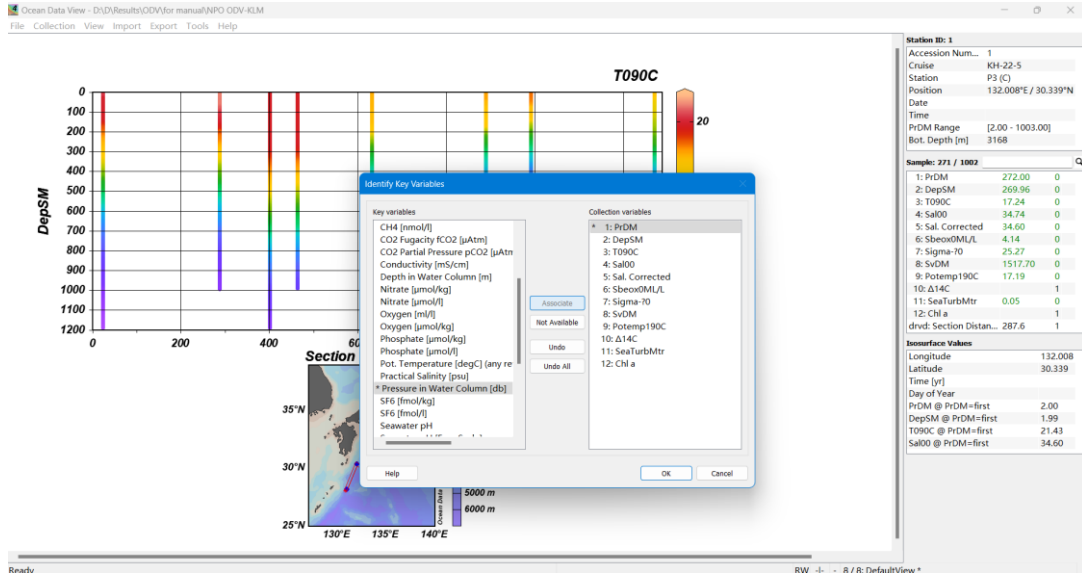
Identify Key Variables

<p><b>Key variables</b></p> <ul style="list-style-type: none"> <li>CH4 [nmol/l]</li> <li>CO2 Fugacity fCO2 [μAtm]</li> <li>CO2 Partial Pressure pCO2 [μAtm]</li> <li>Conductivity [mS/cm]</li> <li>Depth in Water Column [m]</li> <li>Nitrate [μmol/kg]</li> <li>Nitrate [μmol/l]</li> <li>Oxygen [ml/l]</li> <li>Oxygen [μmol/kg]</li> <li>Phosphate [μmol/kg]</li> <li>Phosphate [μmol/l]</li> <li>Pot. Temperature [degC] (any re</li> <li>Practical Salinity [psu]</li> <li>Pressure in Water Column [db]</li> <li>SF6 [fmol/kg]</li> <li>SF6 [fmol/l]</li> <li>Seawater pH</li> </ul>	<p>Associate</p> <p>Not Available</p> <p>Undo</p> <p>Undo All</p>	<p><b>Collection variables</b></p> <ul style="list-style-type: none"> <li>1: PrDM</li> <li>2: DepSM</li> <li>3: T090C</li> <li>4: Sal00</li> <li>5: Sal. Corrected</li> <li>6: Sbeox0ML/L</li> <li>7: Sigma-?0</li> <li>8: SvDM</li> <li>9: Potemp190C</li> <li>10: Δ14C</li> <li>11: SeaTurbMtr</li> <li>12: CH a</li> </ul>
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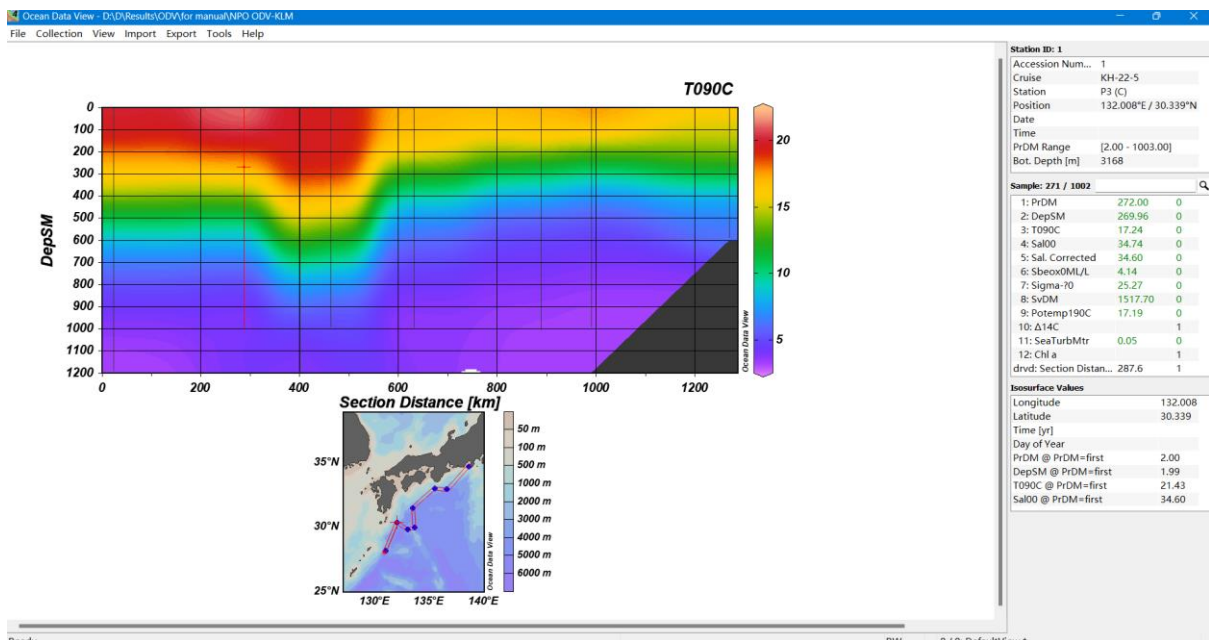
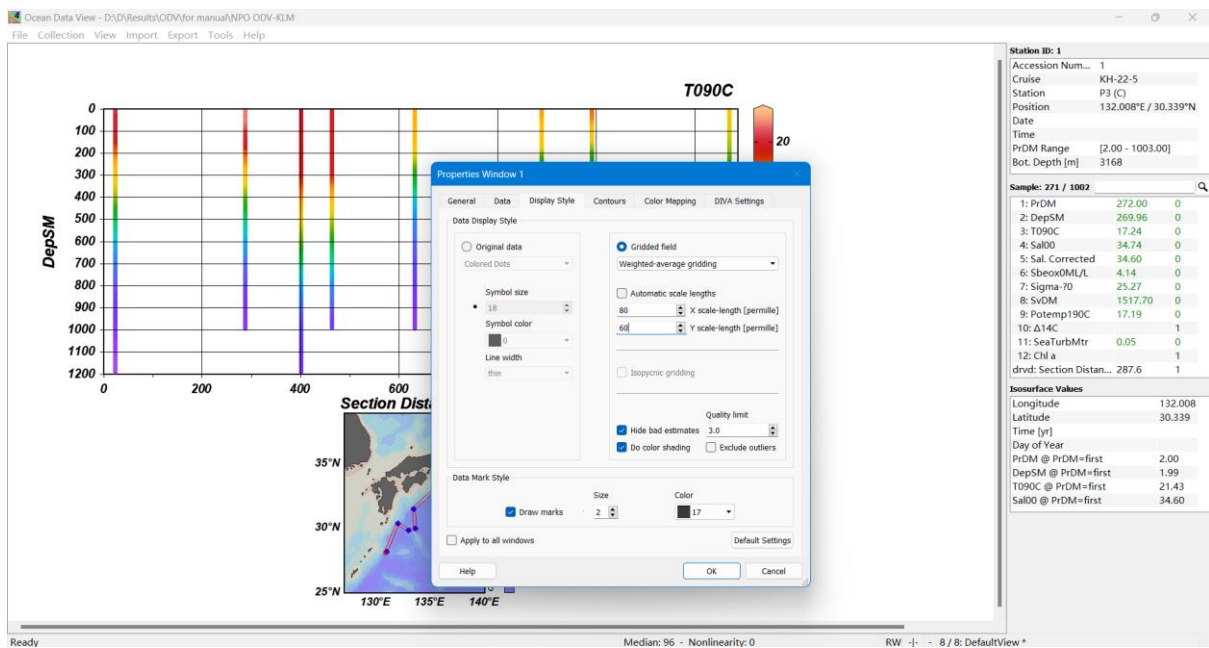
Help OK Cancel

DWI - L - R / R: DefaultView



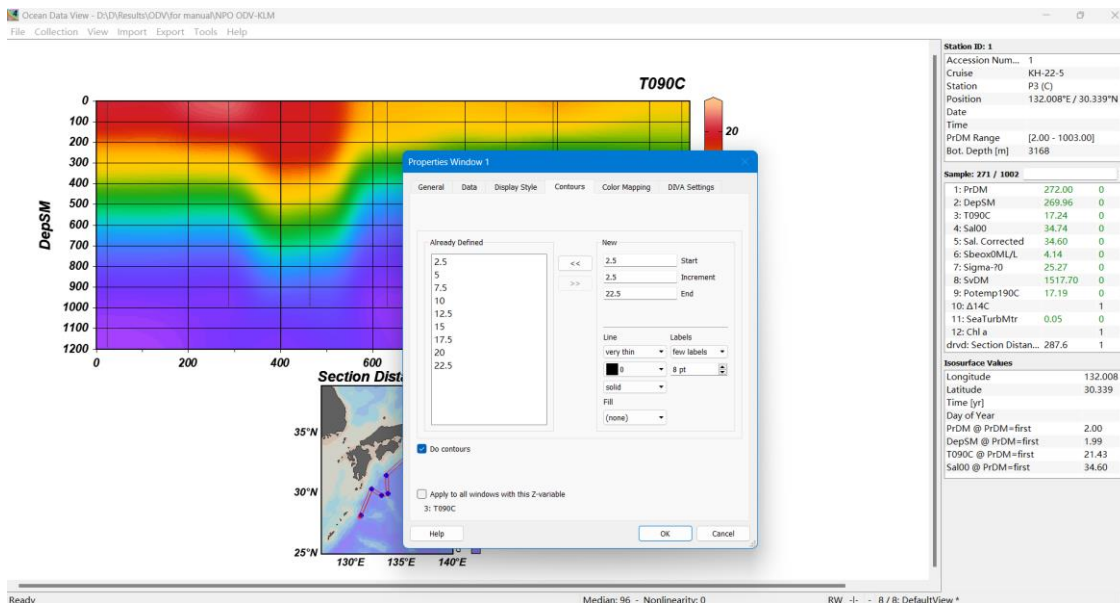
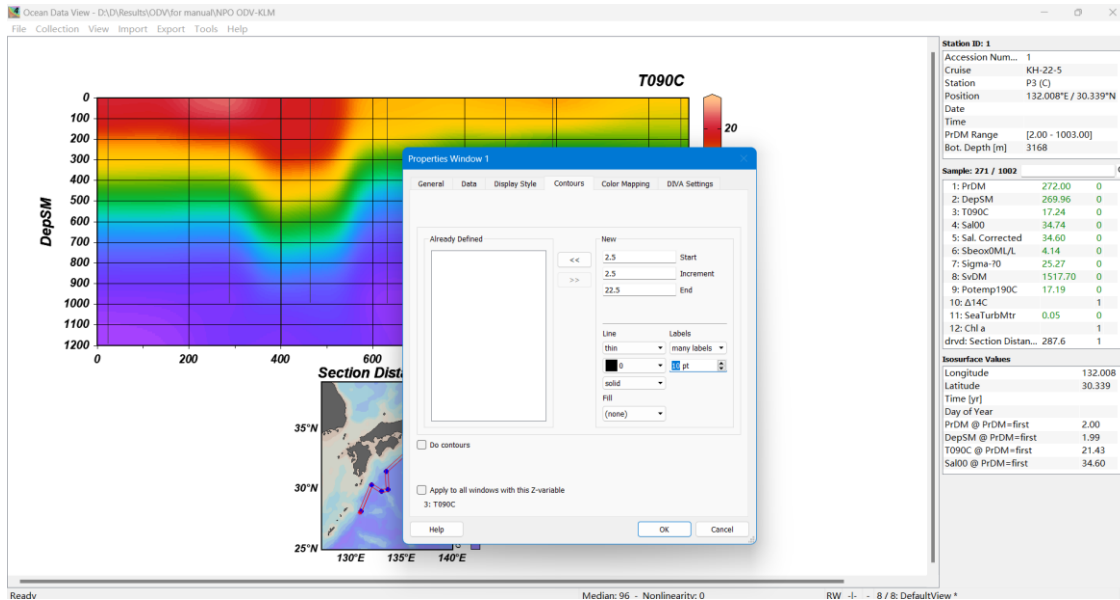


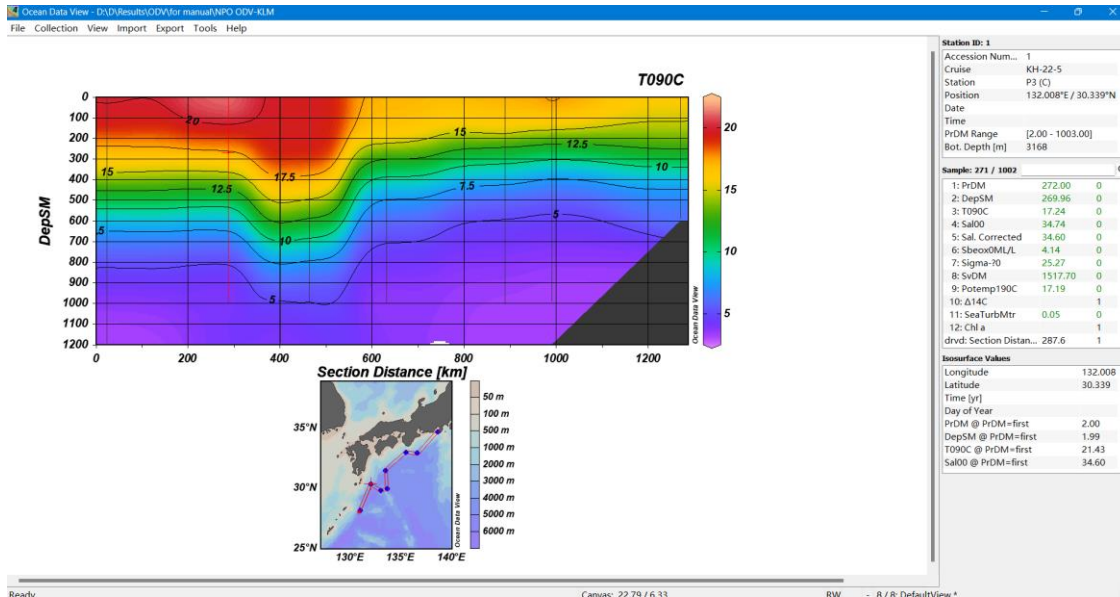
- To depict overall cross-sectional distributions: Right-click on the graph and select "Properties" → "Display Style" → Check "Gridded field" → "Weighted-average gridding" → Uncheck "Automatic scale lengths" and enter values to adjust the coverage area → "OK".



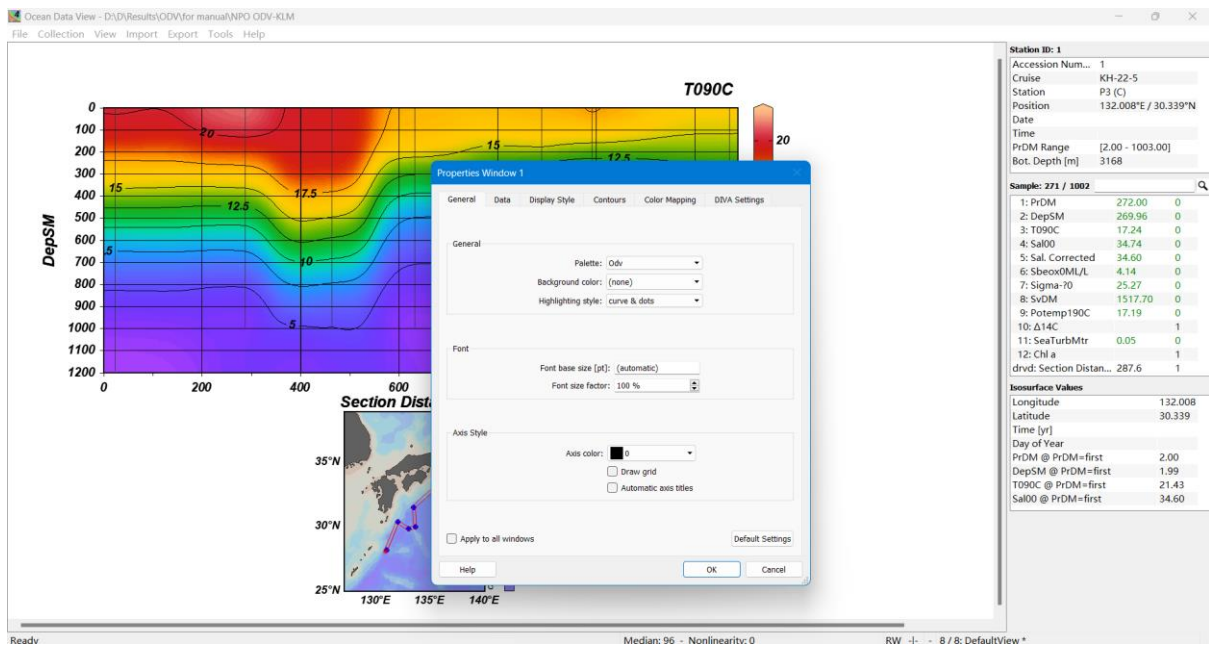
- To add the contours: Right-click on the graph and select "Properties" → "Contours" → Set "Start (first value of the isoline)", "Increment (interval of

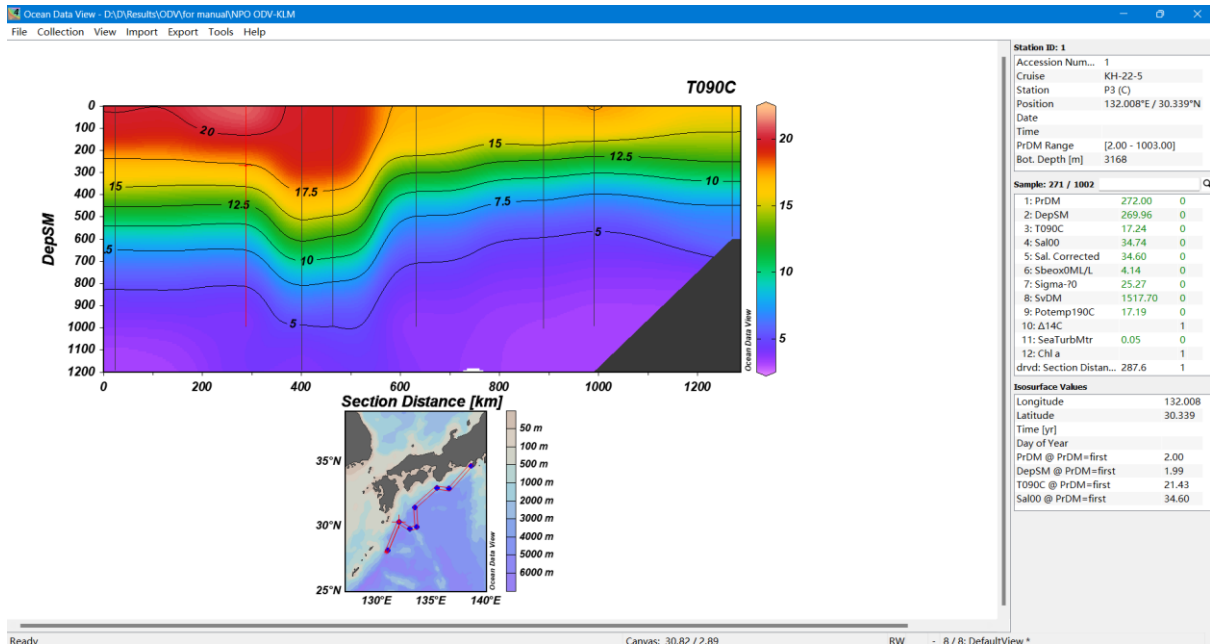
values", and "End (last value of isovalue line)" → Change the properties of Line and Labels if you want → Click "<<" → Click "OK".



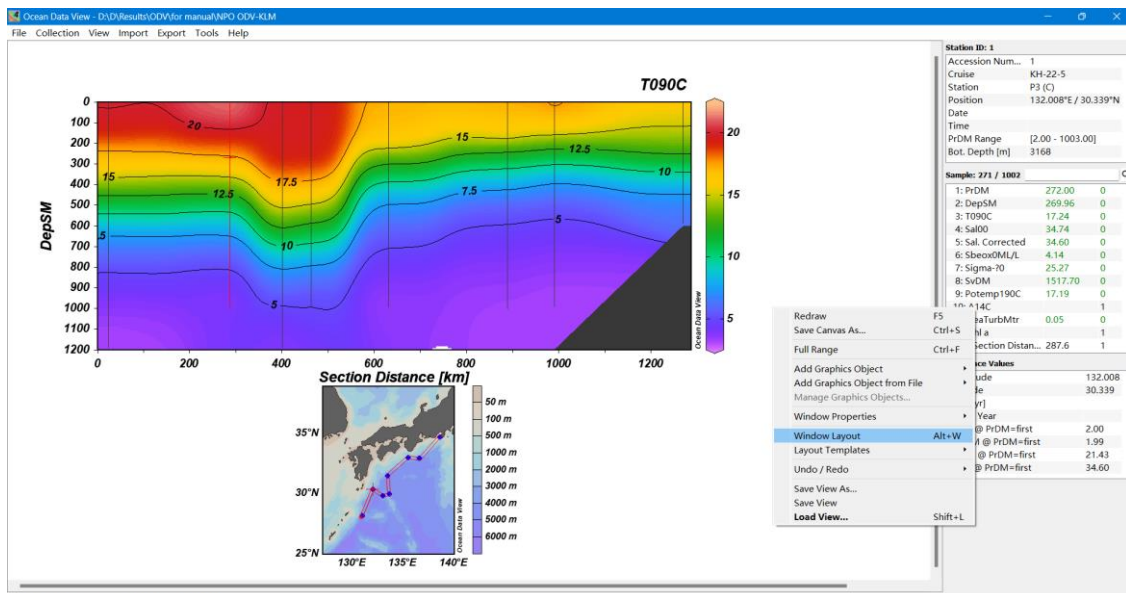


- To remove grid (optional): Right-click on the graph and select "Properties" → "General" → Uncheck "Draw grid" → Click "OK".

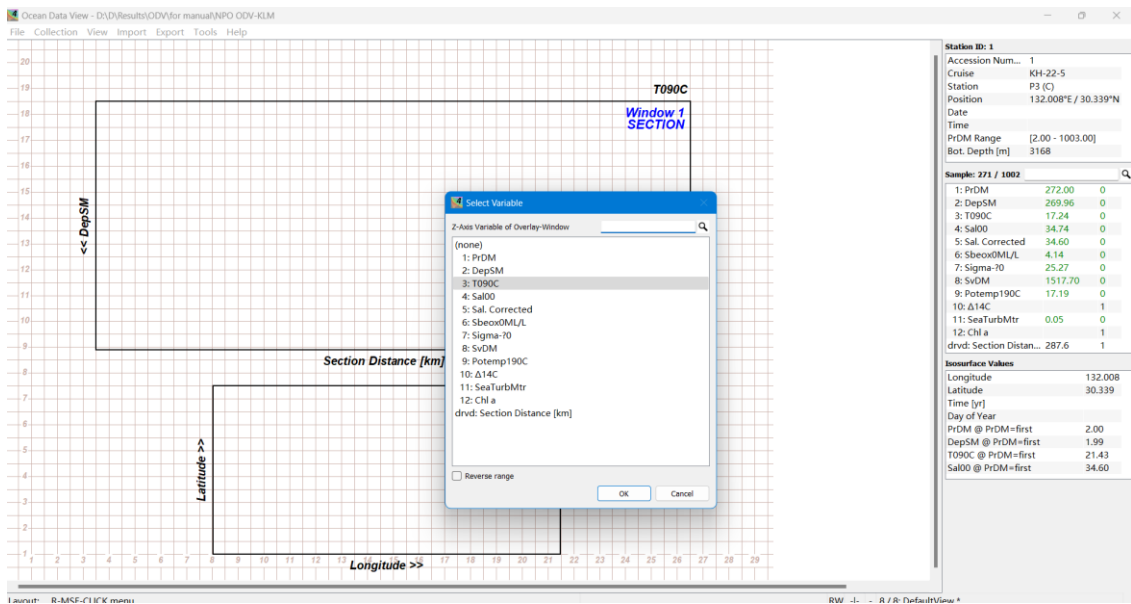
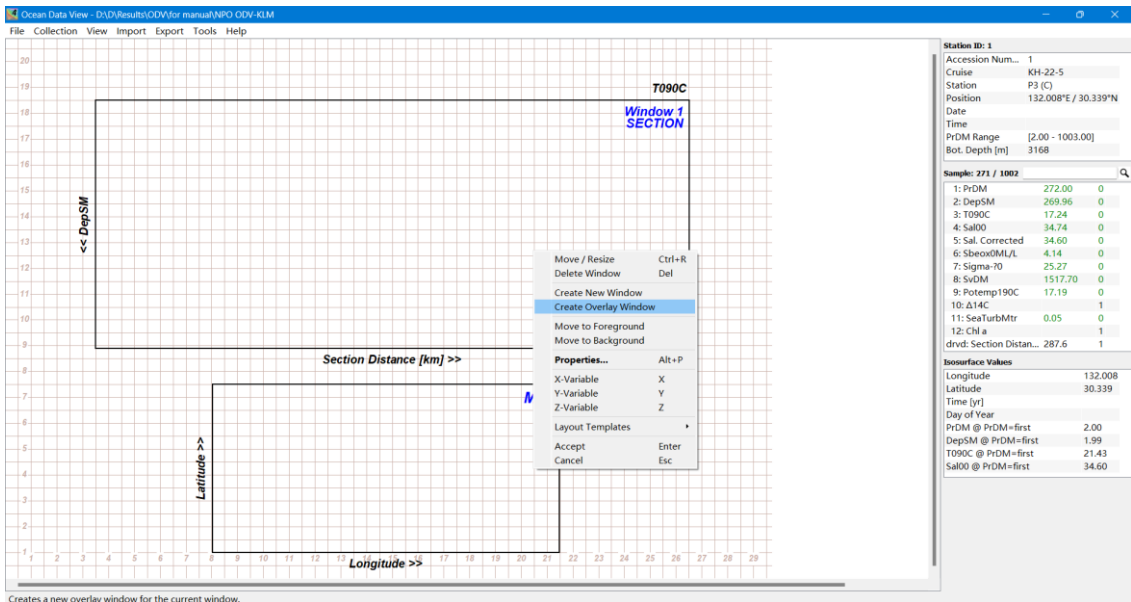
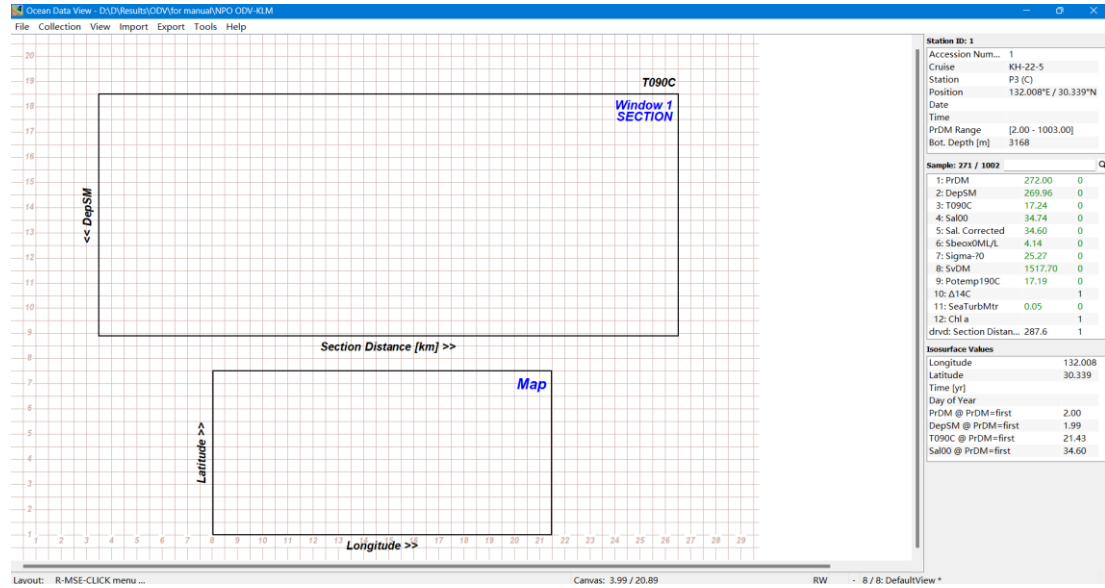


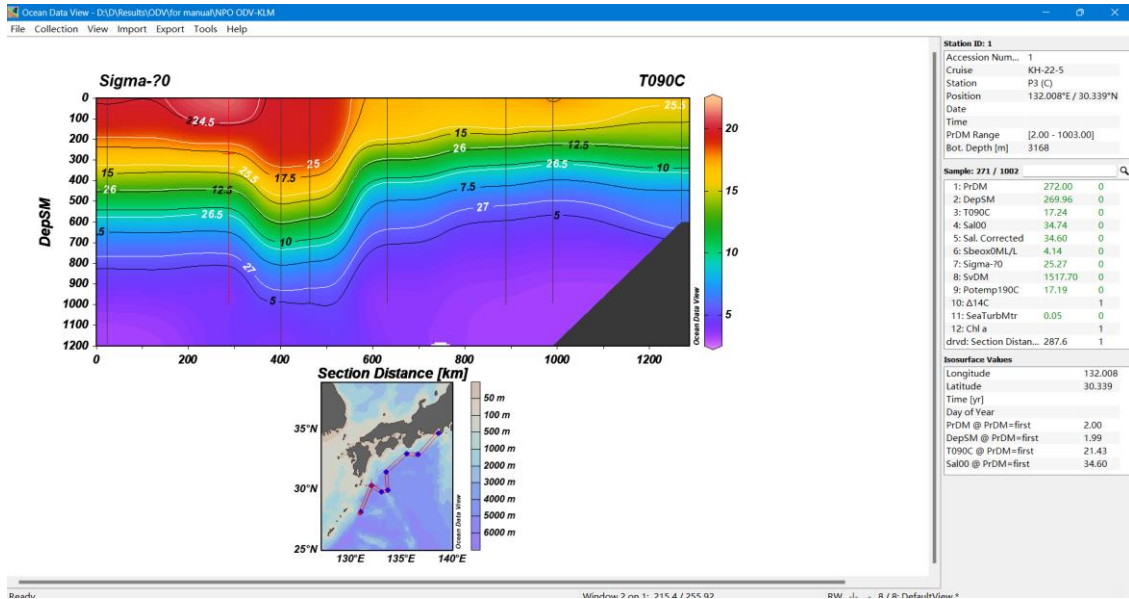


- To add another Z-Axis (optional; Not often used): Right-click an empty area and select "Window Layout" from the menu → Right-click on the graph and select "Create Overlay Window" → Select another Z-Axis you want (usually density for this function) → Click "Properties" to add contours for new Z-Axis → Enter

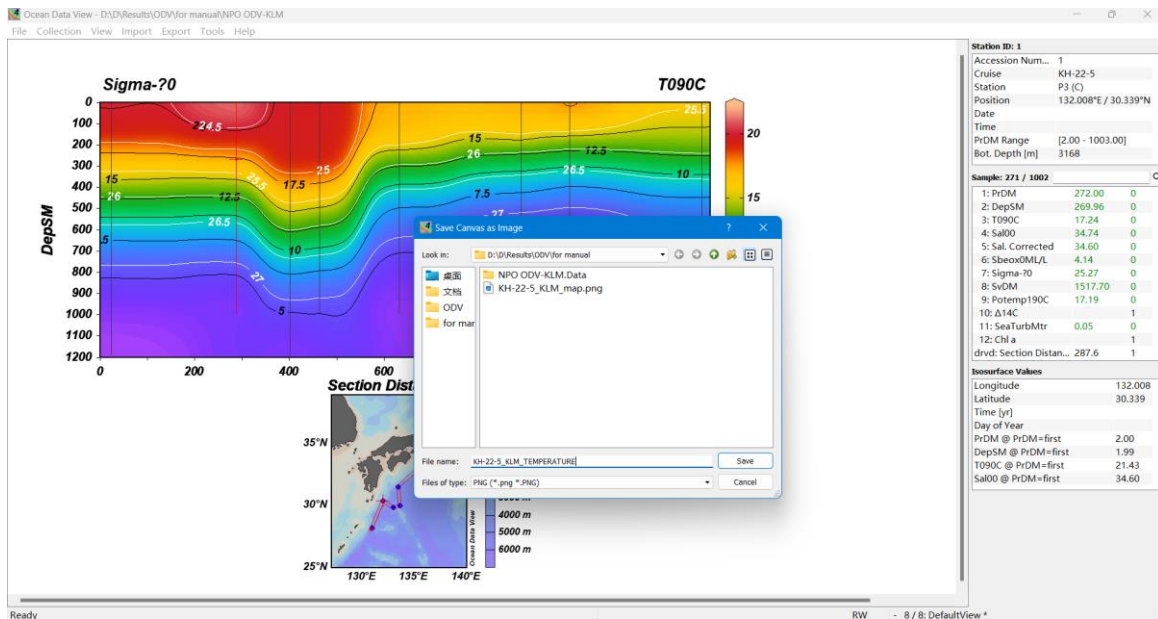








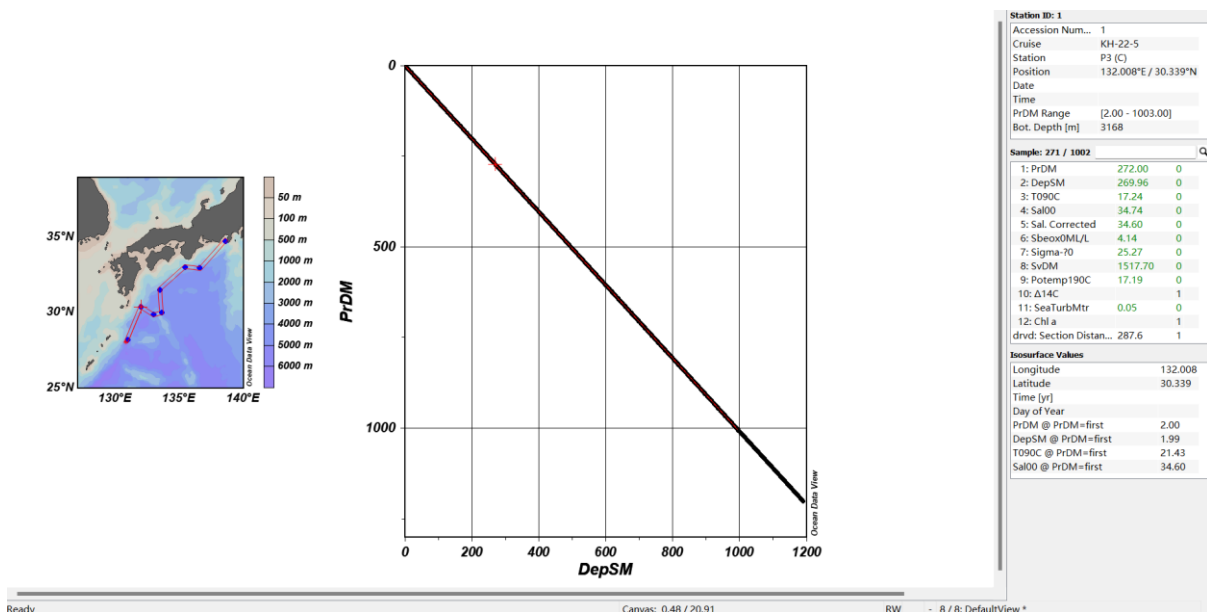
- When the map is complete, right-click on an empty area and select "Save Canvas As...". Name the map, select the image file format, and right-click "Save". After that, save the image by specifying the resolution in the small window.



## 5. How to draw a T-S diagram

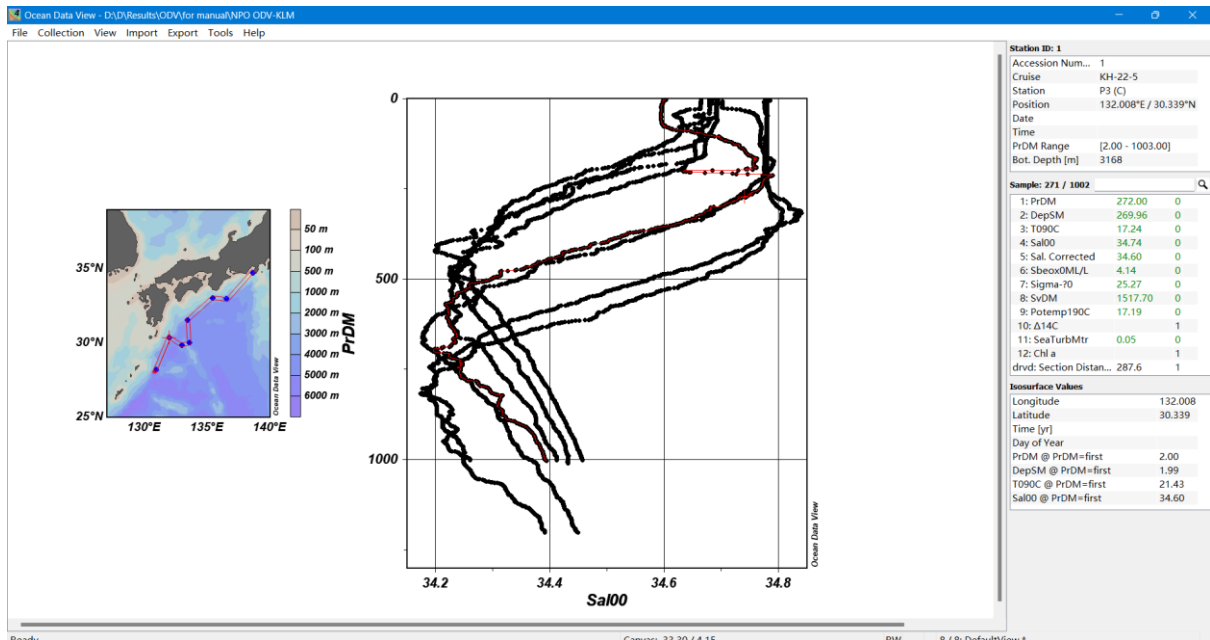
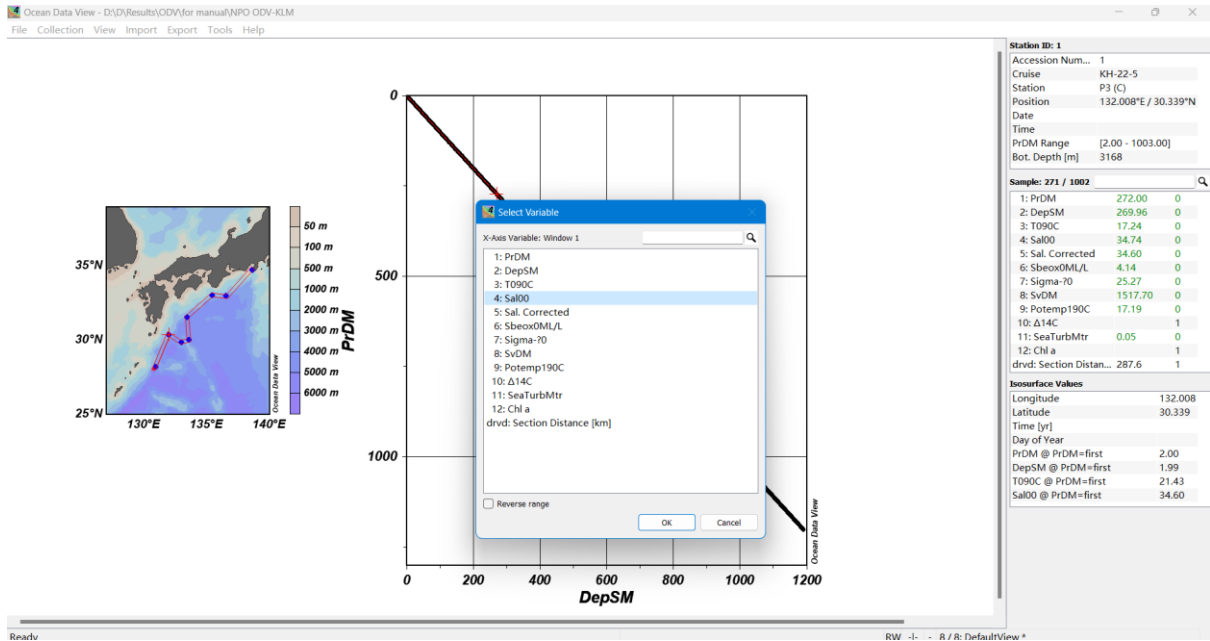
- Before drawing this cross-sectional diagram, please be sure to note that you'd better create a new text file and open it with ODV. This is because an ODV file can only retain the last edited interface. If you directly use an already used ODV file to draw the T-S diagram, the previous file data may be overwritten and lost, which is very detrimental to subsequent image modifications.

- Right-click on the map and select "Layout Templates" → "1 SCATTER Window".

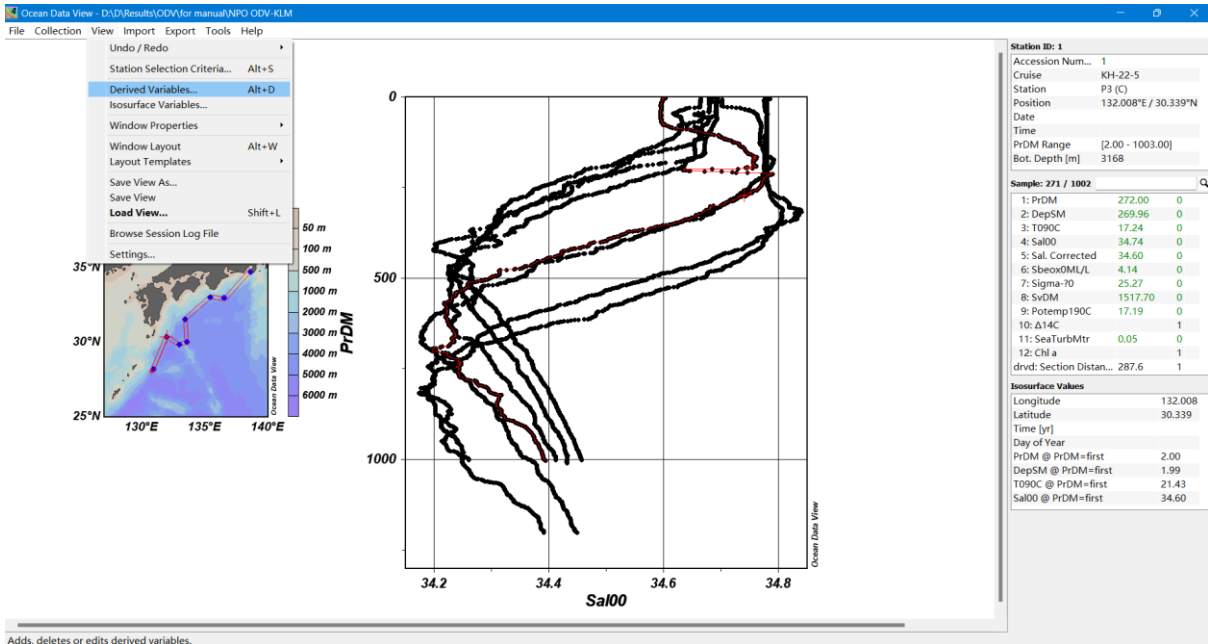


- To set the X-Axis as salinity: Right-click on the graph and select "X-Variable" → Choose your salinity data.

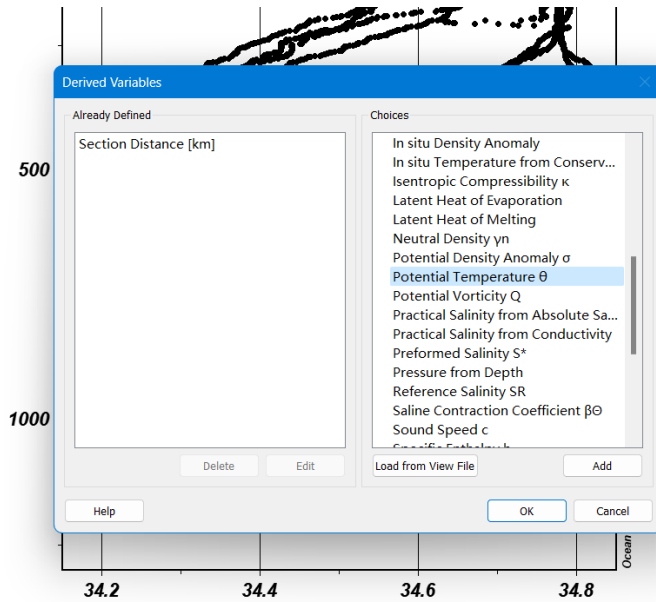


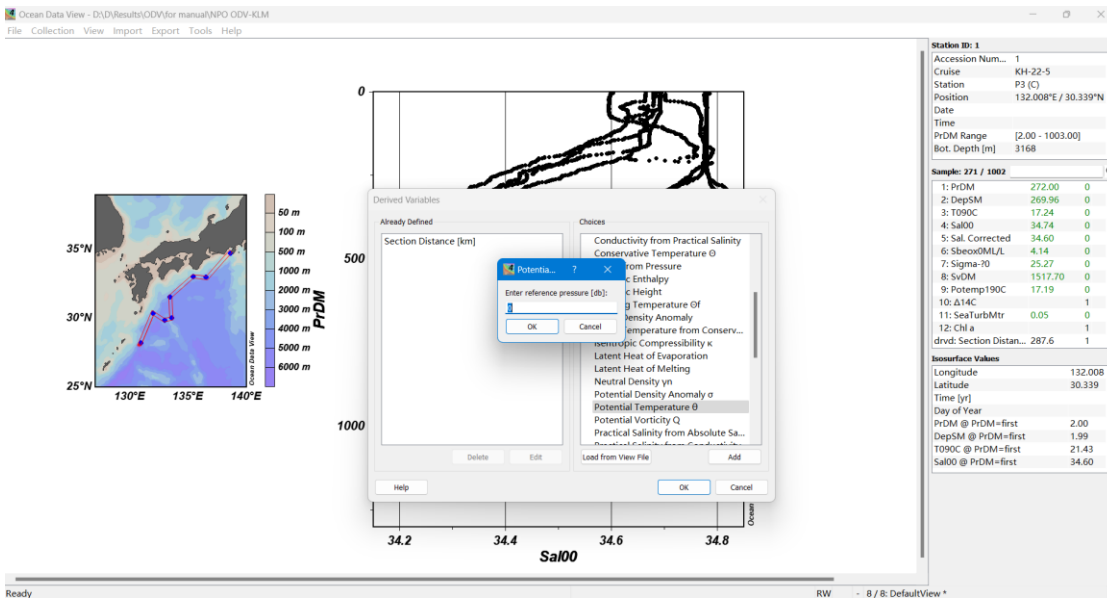
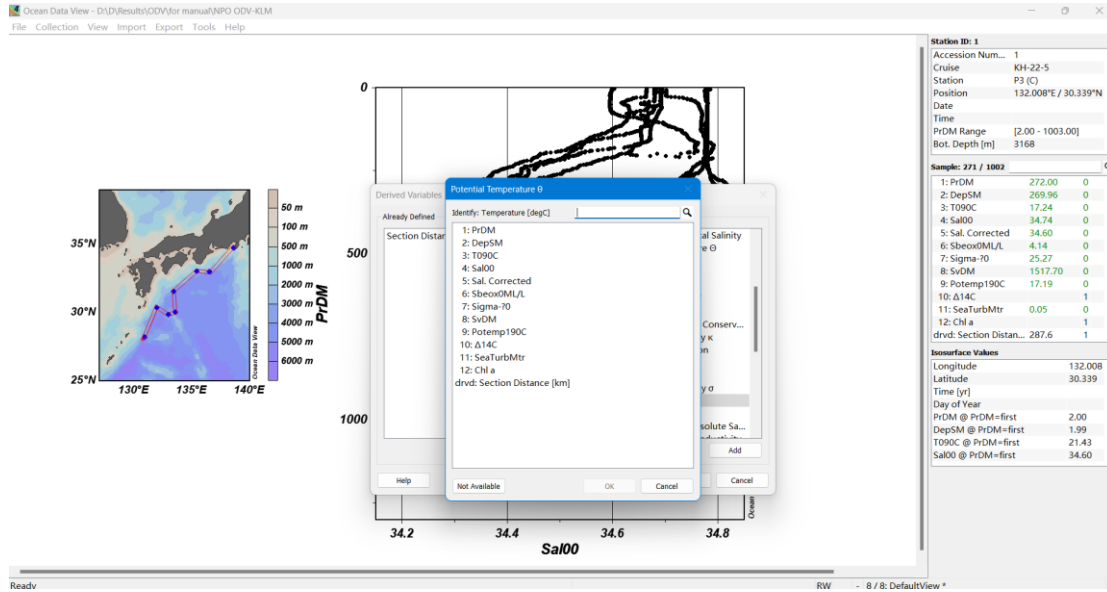


- Set the Y-Axis as potential temperature:
  - Firstly, we need to calculate the potential temperature: "View" → "Derived Variables" → "Physical Properties (TEOS-10)" → "Potential Temperature" → "Add" → Select your temperature and salinity data → "0" for reference pressure → "OK"

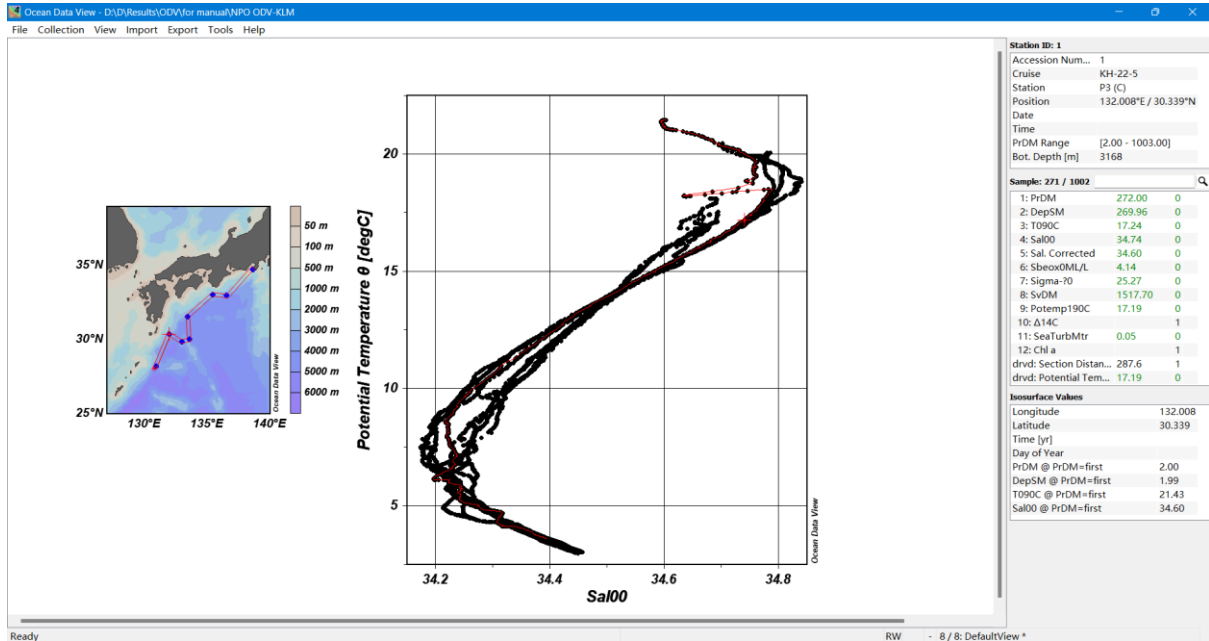


Adds, deletes or edits derived variables.

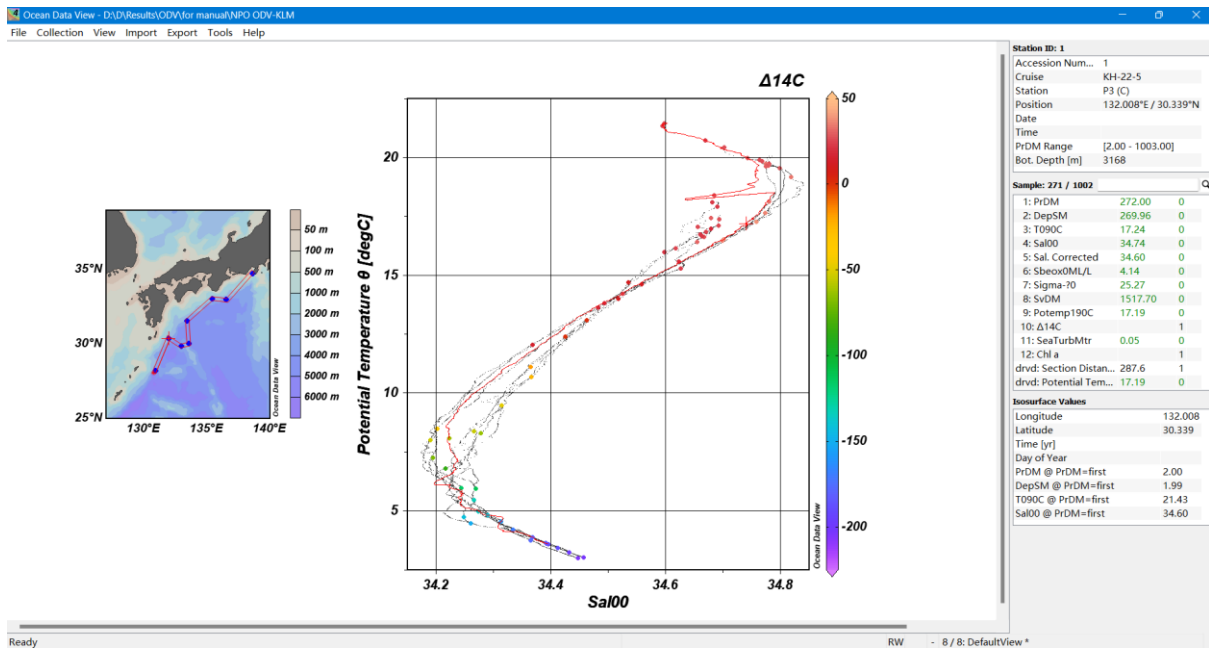




- Then, set the Y-Axis as potential temperature: Right-click on the graph and select "Y-Variable" → Select the calculated potential temperature data.

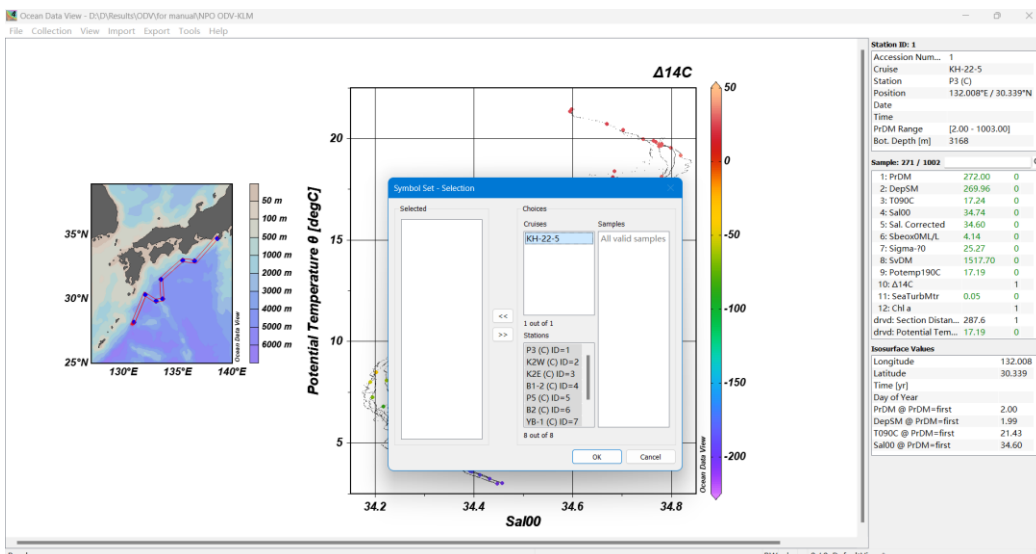
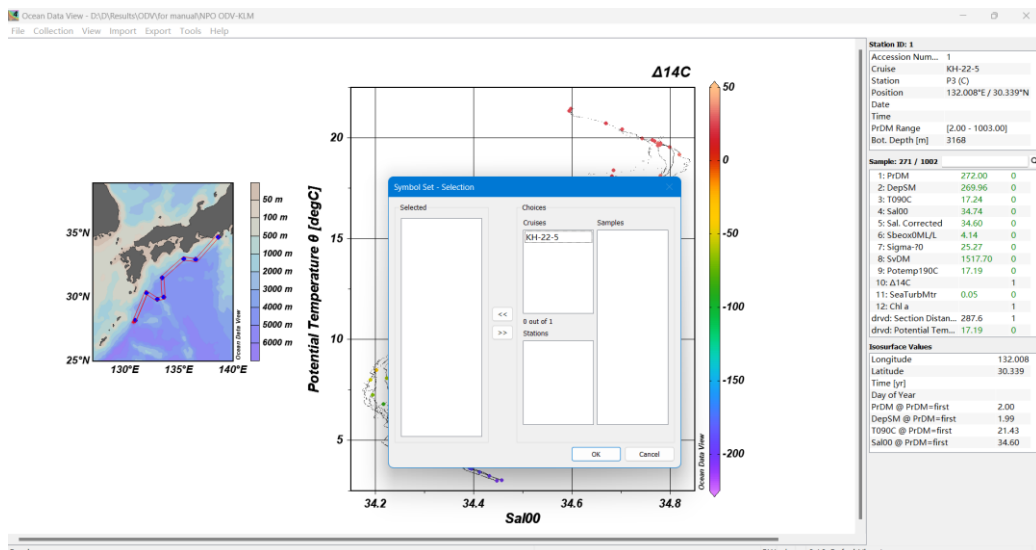
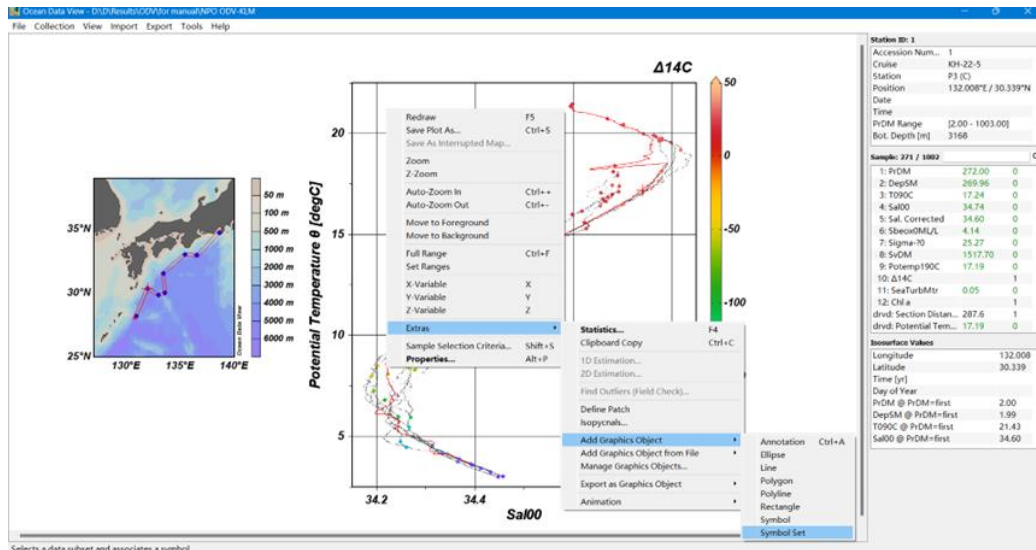


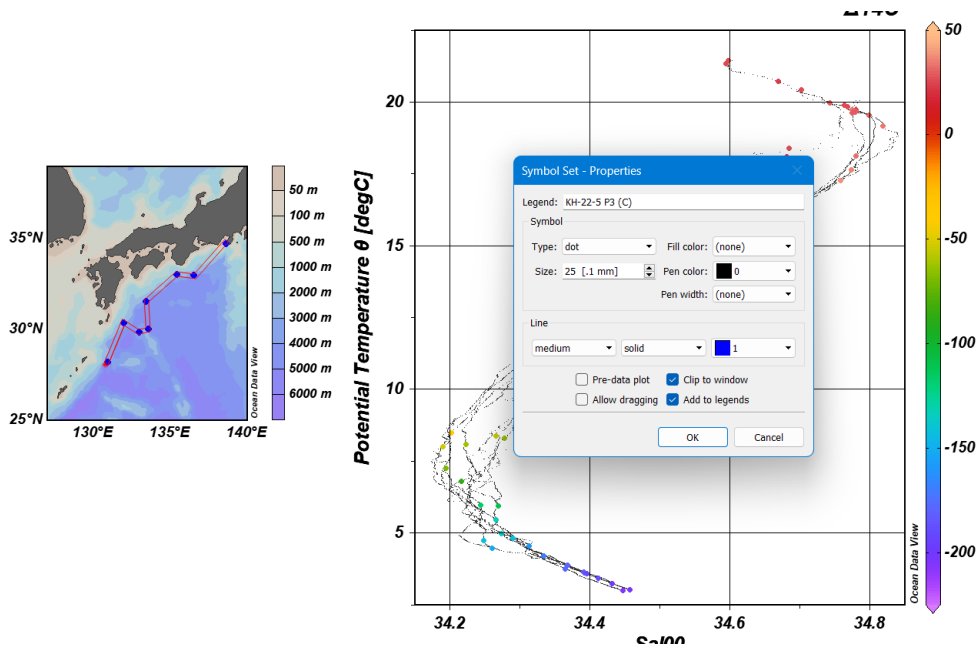
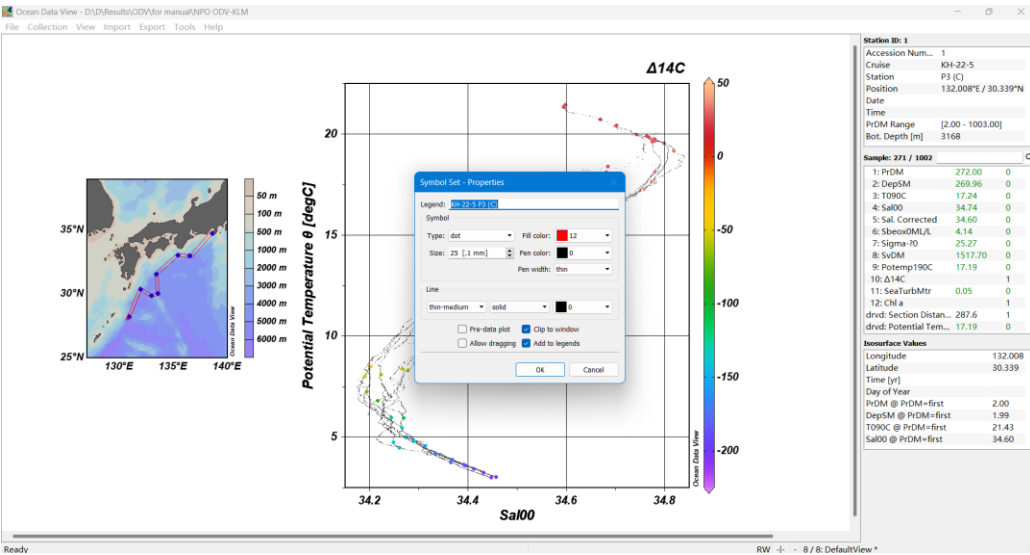
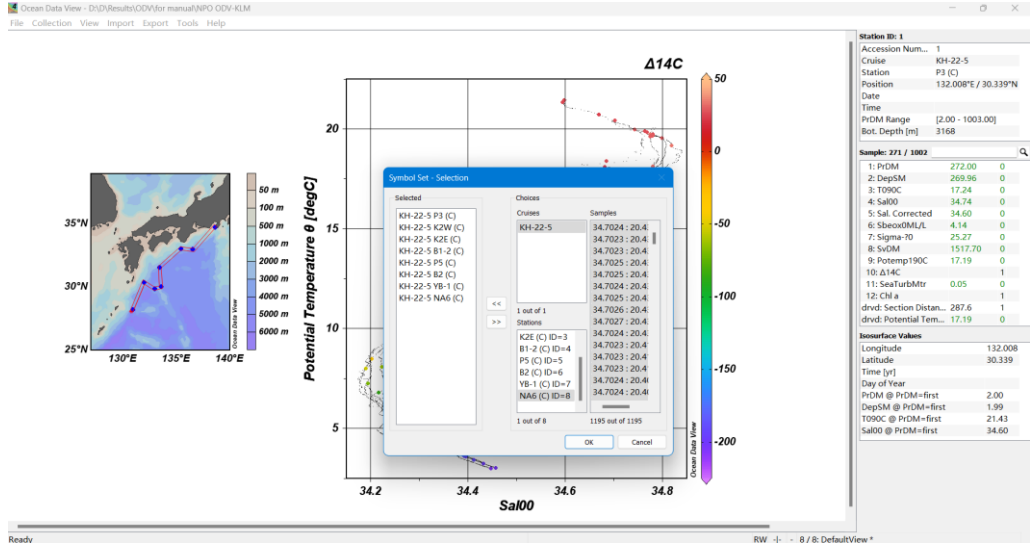
- Set the Z-Axis as the data you want to plot (optional): the same steps as setting the X-Axis and the Y-Axis.

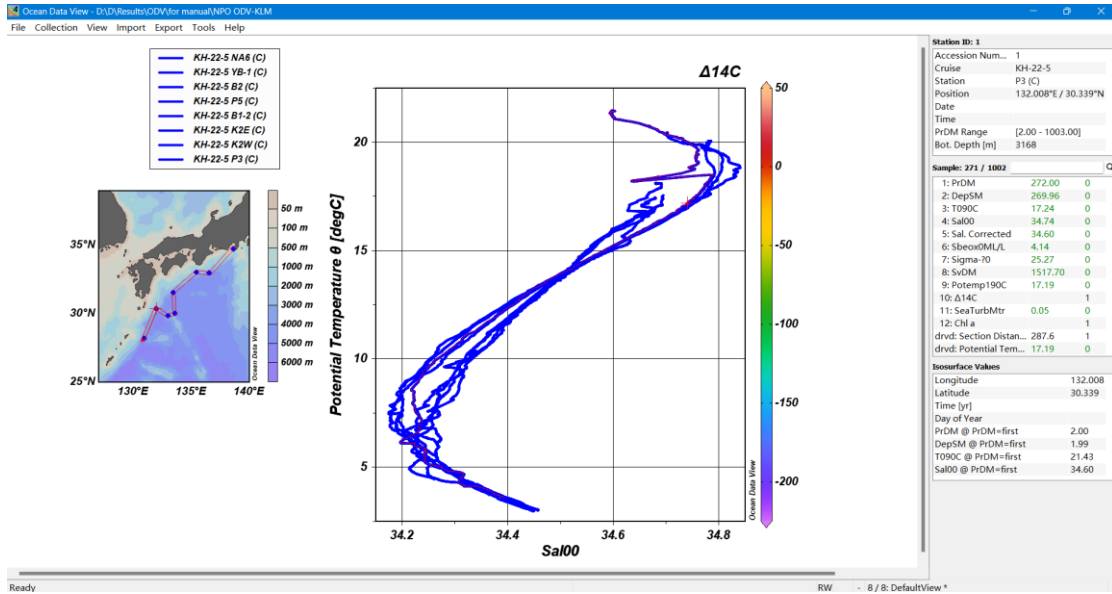


- To label all the stations: Right-click on the graph and select "Extras" → "Add Graphics Object" → "Symbol Set" → Click the project in "Cruises" and you will obtain information about all stations → Group your stations (\* I used to move all stations to the selected side) → "OK" → Set up properties of Symbol and Line

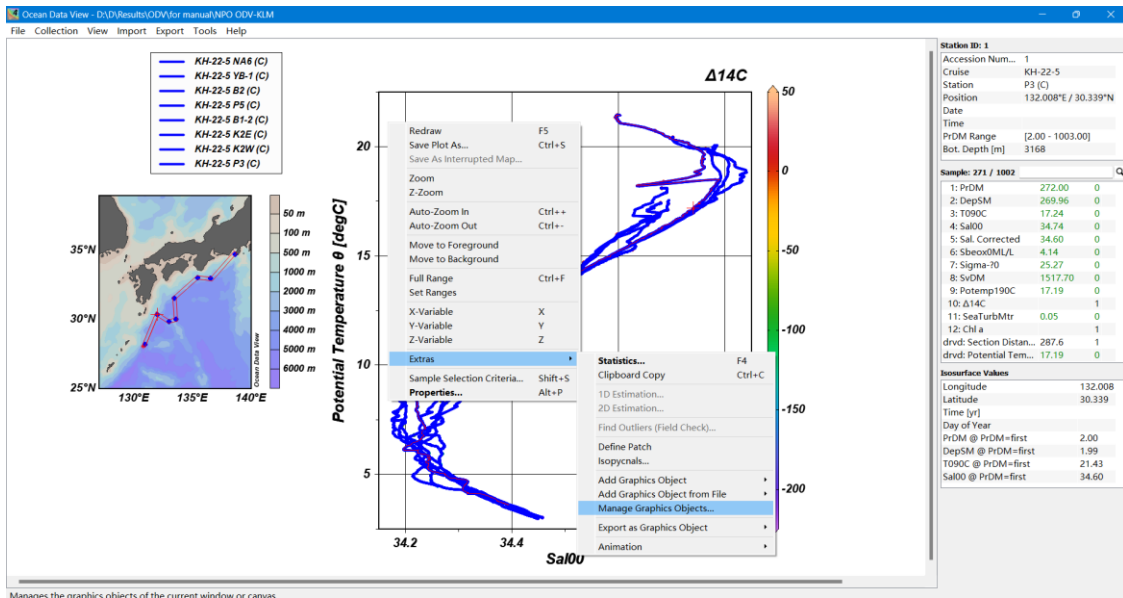
for stations (Check "Pre-data Plot" can make the values of Z-Axis at the top) → "OK".



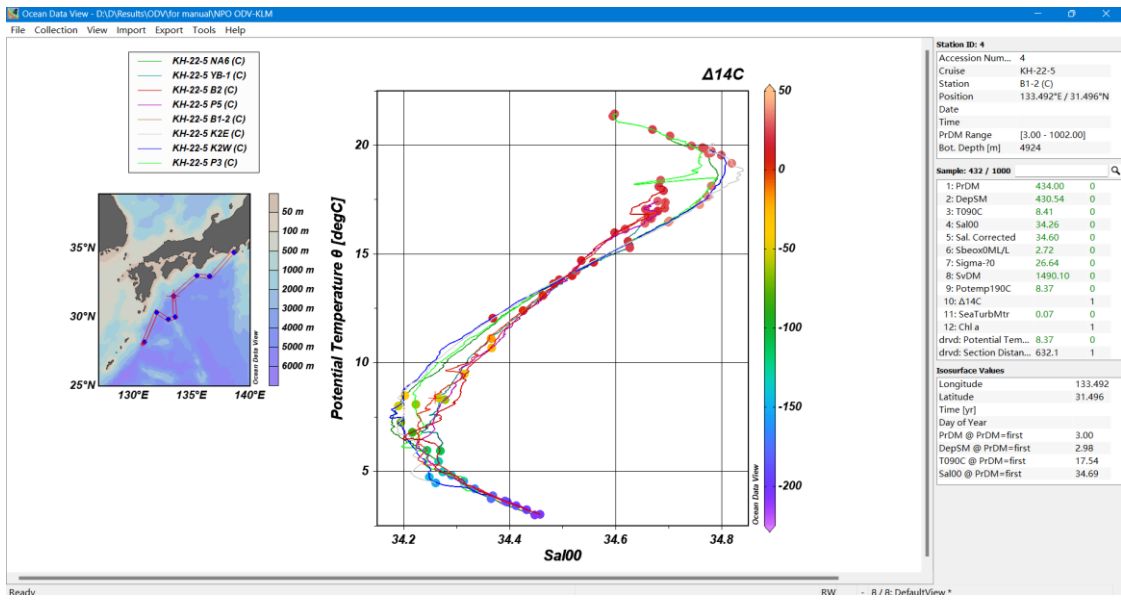
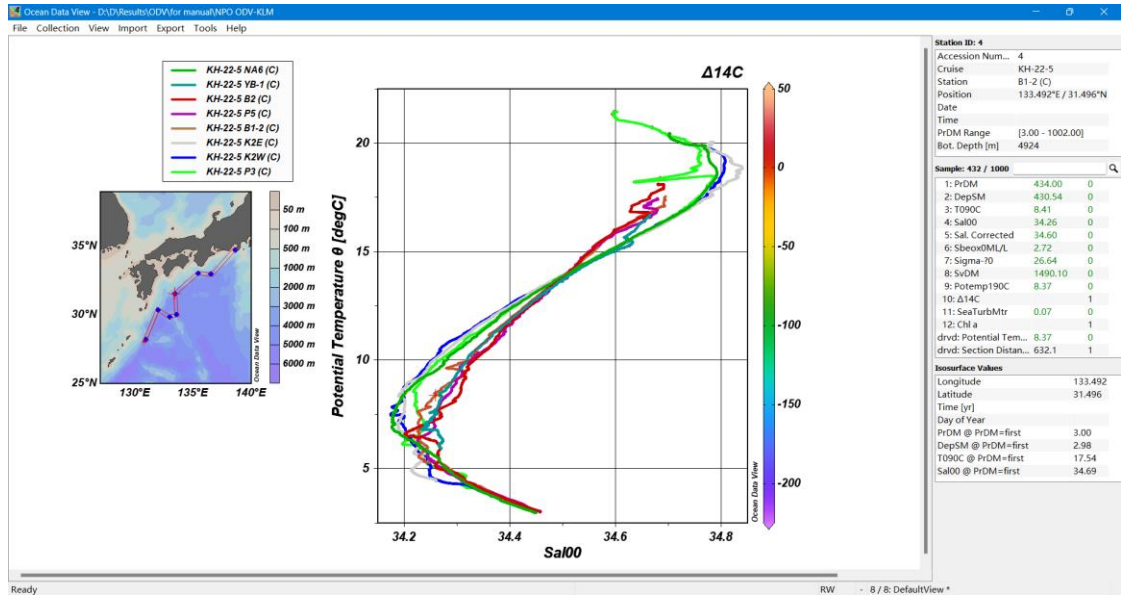
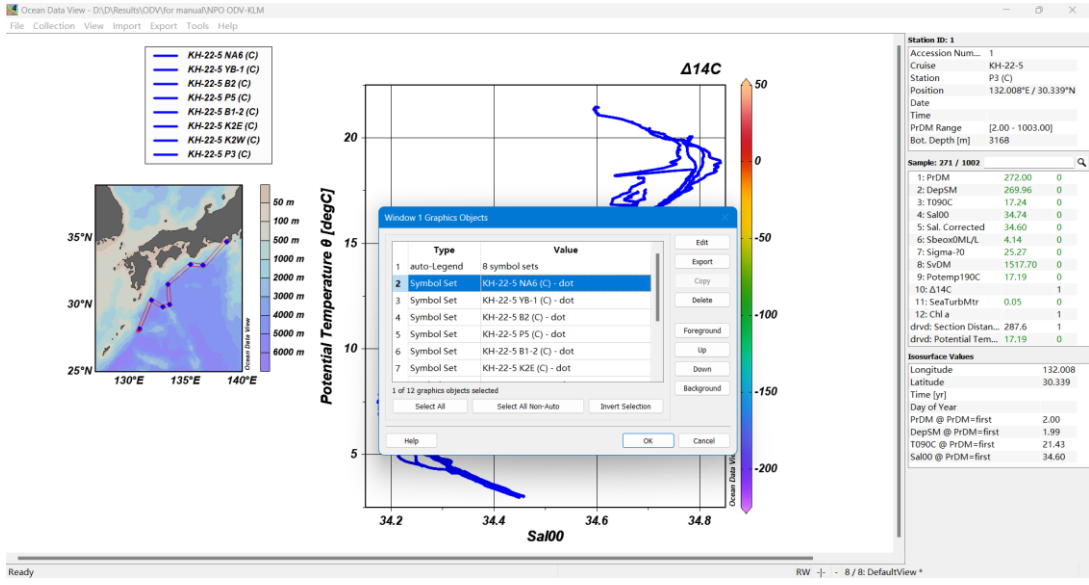




- To differentiate the stations: Right-click on the graph and select "Extras" → "Manage Graphics Objects" → Edit the properties for each station (such as changing the color of Line).



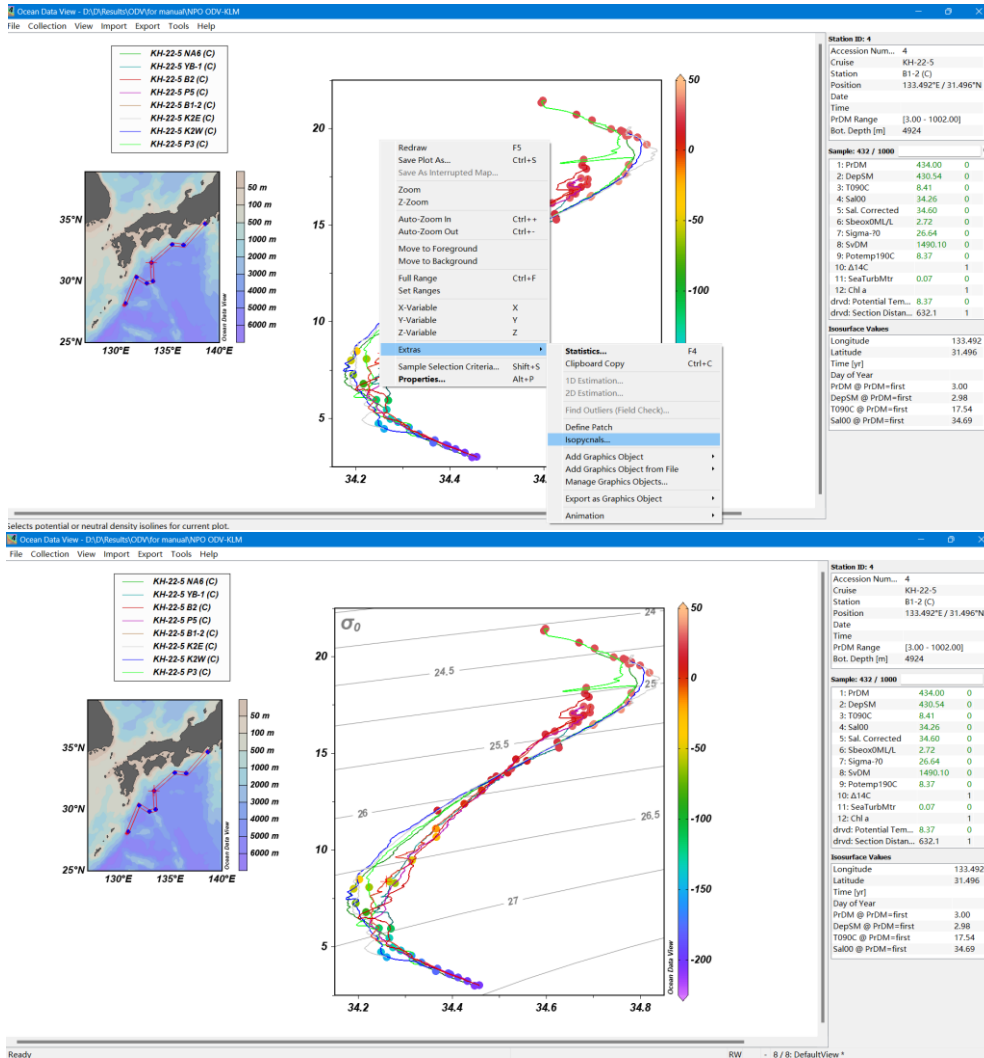






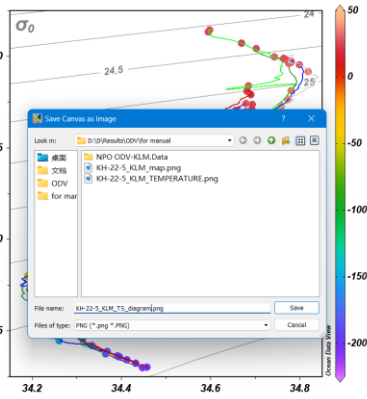
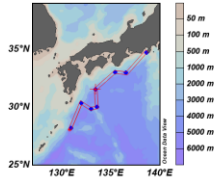
- To add the isopycnals: Right-click on the graph and select "Extras" →

"Isopycnals" → "Switch On".



- When the map is complete, right-click on an empty area and select "Save Canvas As...". Name the map, select the image file format, and right-click "Save". After that, save the image by specifying the resolution in the small window.

- KH-22-5 NA6 (C)
- KH-22-5 YB-1 (C)
- KH-22-5 B2 (C)
- KH-22-5 P5 (C)
- KH-22-5 B1-2 (C)
- KH-22-5 K2E (C)
- KH-22-5 K2W (C)
- KH-22-5 P3 (C)



Station ID: 4

Accession Num...	4
Cruise	KH-22-5
Station	B1-2 (C)
Position	133.492°E / 31.496°N
Date	
Time	
PtDM Range	[3.00 - 1002.00]
Bot. Depth [m]	4924

Sample: 432 / 1000

1: PtDM	434.00	0
2: DepM	430.54	0
3: T090C	8.41	0
4: Sal00	34.26	0
5: Sal_Corrected	34.60	0
6: Sbeo0(M)/L	2.72	0
7: Sigma_T0	26.64	0
8: SigDM	1490.10	0
9: Potemp190C	8.37	0
10: Δ14C		1
11: SeaLurbMtr	0.07	0
12: Chl_a		1
drvd: Potential Tem...	8.37	0
drvd: Section Distan...	632.1	1

Surface Values

Longitude	133.492
Latitude	31.496
Time [yr]	
Day of Year	
PtDM @ PtDM=first	3.00
DepM @ PtDM=first	2.98
T090C @ PtDM=first	17.54
Sal00 @ PtDM=first	34.69