



### How to use ODV

### **Ocean Data View**



https://odv.awi.de

© 2018 Reiner Schlitzer

ODV 5 Version (64 bit) (Mar 19 2018) http://odv.awi.de/

> Currently **>60,000** users, 10~20 new users every day!!

> > May 2, 2018

### Have you ever used ODV software before?



### Have you ever created own data spreadsheet for ODV and import into ODV?



Have you ever imported netCDF format data file into ODV?







#### Ocean Data View

# What is ODV?

- "Ocean Data View (ODV) is a software package for the interactive exploration, analysis and visualization of oceanographic and other geo-referenced profile, time-series, trajectory or sequence data. ODV runs on Windows, Mac OS X, Linux, and UNIX (Solaris, Irix, AIX) systems. ODV data and configuration files are platform-independent and can be exchanged between different systems."
- Data from Argo, GTSPP, CCHDO, World Ocean Database, World Ocean Atlas, World Ocean Circulation Experiment (WOCE), SeaDataNet, and Medar/Medatlas can be <u>directly imported into ODV</u>.
- ODV also supports the netCDF format and lets you explore and visualize CF, COARDS, GDT and CDC compliant netCDF datasets.

#### Free, Easy-to-use, visual, practical...etc..



#### Prof. Reiner Schlitzer Alfred Wegener Institute

His Research Interests: Modeling; Nutrient and Carbon Cycles; Information Systems; Productivity and Particle Fluxes; Radionuclides



Ocean Data View



# What can you do with ODV?

- property/property plots of selected stations
- scatter plots for sets of stations
- color sections along arbitrary cruise tracks
- color distributions on general isosurfaces
- geostrophic velocity sections
- temporal evolution plots of tracer fields
- <u>differences of tracer fields between repeats</u>
- Animations
- interrupted maps.

#### **Example.** property/property plots of selected stations



Example.

#### scatter plots for sets of stations



#### Example. color sections along arbitrary cruise tracks









Salinity [pss-78]

### **Example.** color distributions on general isosurfaces







#### interrupted maps



### temporal evolution plots of tracer fields - Time-series data at BATS station



#### Geostrophic velocity sections



#### animations





#### animation 2





Data: Maxime Grand, Christopher Measures, Mariko Hatta, William Landing, Peter Morton, Clifton Buck, William Hiscock, Joseph Resing Graphics: Reiner Schlitzer



#### animation 2



http://www.geotraces.org/dp/idp2014



Data sets are able to be downloaded in ODV format - CCHDO website (http://cchdo.ucsd.edu/)

Various programs:

- GO-SHIP
- SOCCOM
- USHYDRO
- WOCE
- DIMES
- ELLETT
- Project Carina
- Hawaii Ocean Time Series (HOTS)
- Bermuda Atlantic Time Series (BATS) ....etc



http://cchdo.ucsd.edu/search?dtstart=1800





### Let's get started

Installation <a href="http://odv.awi.de/en/software/download/">http://odv.awi.de/en/software/download/</a>

- 1. Download data and open it
- 2. Modify views
- 3. Create your own data file
- 4. Open new ODV & import your data file
- 5. Make T-S diagram and derived variable
- 6. How to save figures and views

Find where you have put ODV data files on your computer.





In scatter mode, all data within the map are shown. Clicking on a particular station, will highlight that station's data in red. If the station has multiple occupations, like HOT, then you can scroll between different occupations with the left and right arrows on your



You can move up and down the red highlighted profile with up and down keys. And the data corresponding to the point will be shown in the variables window.



# Quality Flag (QF)

Quality flag document: <a href="http://odv.awi.de/en/documentation/">http://odv.awi.de/en/documentation/</a>

### *ODV flag:* QF

Flag Description	ODV
good quality	0
unknown quality	1
questionable quality	4
1 1 1	

-Every parameter and each sample can have its own quality flag, good, unknown, questionable, or bad.

-You use the flag to identify data quality, you can then isolate bad data from your figure!

ODV always assign quality flag =1 i.e. unknown if you do not.

Metadata

"Metadata" show the information of the selected station on the map (e.g. Cruise name, Station #, Position (Long/Lat), sampling date etc.)



"Isosurface values" show the calculated/selected values at at the selected station. (see detail in the ODV manual)

### Let's change the layout of the canvas



Click the icon.

#### Metadata



Or Move your cursor in the white part (it **should not** be on the map or on any scatter window) **Right click ("control" + click if you are Mac user)**, and select "Window Layout".

### "6 Scatter Windows" layout mode



# "6 Scatter Windows" layout mode

This is "layout mode" of 6 scatter windows, and you can modify the layout of your windows (e.g. add new window, change the size, select different parameter etc.)



# "6 Scatter Windows" layout mode

Move your cursor on the scatter window that you want to modify, and then **Right click** ("control" + click if you are Mac user).



#### After you change the layout, select "Accept".

#### Metadata



# Let's change the temperature plot to pH.

To make changes in any window, put your cursor and right click ("control" + click if you are Mac user) click in the window, then select "Properties". *Metadata* 



## Let's change the temperature plot to pH.

Select "Data" tab, then select "X-axis" (now selected "2:CTD Temperature [ITS-90]".

#### Metadata



# Let's change the te

Select "8:pH", then select "OK".



#### 1: Pressure [dbar] 2: CTD Temperature [ITS-90] 3: CTD Salinity [PSS-78] 4: CTD Oxygen [umol/kg] 5: Bottle Salinity [PSS-78] 6: Bottle Dissolved Oxygen [umol/kg] 7: Dissolved Inorganic Carbon [umol/kg] 8: pH 9: Alkalinity [ueq/kg] 10: Phosphate [umol/kg] 11: Nitrate + Nitrite [umol/kg] 12: Silicate [umol/kg] 13: Dissolved Organic Phosphorus [umol/kg] 14: Dissolved Organic Nitrogen [umol/kg] 15: Dissolved Organic Carbon [umol/kg] 16: Total Dissolved Phosphorus [umol/kg] 17: Total Dissolved Nitrogen [umol/kg] 18: Particulate Carbon [umol/kg] 19: Particulate Nitrogen [umol/kg] 20: Particulate Phosphorus [nmol/kg] 21: Low-Level Nitrogen [nmol/kg] 22: Low-Level Phosphorus [nmol/kg] 23: Low-Level Silica [umol/kg] 24: Fluorometric Chlorophyll a [ug/l] 25: Pheopigments [ug/I] 26: HPLC Chlorophyll c3 [ng/l] 27: HPLC Chlorophyll c1+c2 [ng/l] 28: HPLC Chlorophyll c1+c2+c3 [ng/l] 29: HPLC Peridinin [ng/l] 30: HPLC 19' Butanoyloxyfucoxanthin [ng/l] 31: HPLC Fucoxanthin [ng/l] 32: HPLC 19' Hexanoyloxyfucoxanthin [ng/l] 33: HPLC Prasinoxanthin [ng/l] 34: HPLC Diadinoxanthin [ng/l] 35: HPLC Zeaxanthin [ng/l] 36: HPLC Chlorophyll a (chlb) [ng/l] 37: HPLC Chlorophyll b (hplc) [ng/l] 38: HPLC Chlorophyll c4 [ng/l] 39: HPLC α-Carotene [ng/l] 40: HPLC β-Carotene [ng/l] 41: HPLC Carotenes [ng/l] 42: HPLC Chlorophyllide a [ng/l] 43: HPLC Violaxanthin [ng/l] 44: HPLC Lutein [ng/l] 45: HPLC Monovinyl Chlorophyll a [ng/l] 46: HPLC Divinyl Chlorophyll a [ng/l] 47: Heterotrophic Bacteria [#\*1e5/ml] 48: Prochlorococcus [#\*1e5/ml] 49: Synechococcus [#\*1e5/ml] 50: Eukaryotes [#\*1e5/ml] 51: Adenosine 5' Triphosphate [ng/kg] 52: Guanosine 5' Triphosphate [ng/kg] 53: Hydrogen Peroxide [umol/kg] 54: Nitrous Oxide [nmol/kg] 55: Particulate Silica [nmol/kg] 56: Phycoerythrin 0.4 fraction [ng/l] 57: Phycoerythrin 5 fraction [ng/l] 58: Phycoerythrin 10@ fraction [ng/l] 59: δ15N of PN [permil] 60: TD-700 Chlorophyll a [ug/l] 61: TD-700 Chlorophyll b [ug/l]



#### Now you will see the modified scatter window showing pH as a vertical profile.



#### Now, we are going to modify the sample selection criteria used for the plot.

### Let's modify the sample selection criteria!

Move your cursor in the scatter window that you want to change the selection criteria, right click ("control" + click if you are Mac user), then select "Sample Selection Criteria".







#### Different window types (shown in color) have different pop-up menus!

Depending on what you want to modify, you have to select "Map" or "Scatter Window" or "background".



Мар

**Scatter Windows** 

Background

#### Different window types (shown in color) have different pop-up menus!

#### Мар

Background





#### Change the scale of Map

#### Change the properties of the window

### How to save figures and views

All of the parameters in a canvas, window types, parameters shown, scaling, etc. are known as a view which can be saved. Click "View" in the Menu Bar to select "Save View as" or "Save View".

View	Import	Export	Tools	ŀ
Und	o / Redo		)	•
Stat	ion Select	ion Criter	ia 🔨	3
Deriv Isos	ved Variat urface Va	oles riables	7.0	C
Wind	dow Prop	erties	•	•
Wind Layo	dow Layo out Templa	ut ates	17	N
Save Save Load	e View As e View d View	-	ծլ	_
Brov	vse Sessi	on Log Fi	le	

How to save figures:

Click "File" in the Menu Bar to select "Save Canvas as".

File	Collection	View	Import
Ne	w		ЖN
Ор	en		жо
Ор	en Remote		
Clo	se		жw
Exe	ecute Batch F	ile	
Sav	ve Canvas As	5	жs
Pri	nt Canvas	_	ЖP
Pri	nt Preview Of	Canvas	s ûP
Re	cent Files		►

Tip: The highest resolution of the canvas you can save is 499, which would be important for a publication. Also when you print the Canvas, it would take a long time to print. Save as the canvas, and then print it (faster!).

#### Let's change the view from the vertical profiles to "Phosphate Time Series" mode!



#### **Phosphate Time Series**



Tip: ODV 5.0.0 for the first time allows working with multiple open views at the same time. The new Views Bar located just below the main menu bar lets you easily open and save views, undo or redo recent view changes, switch to or from layout mode, or select one of the open views by clicking on its tab. (https://odv.awi.de/fileadmin/user\_upload/odv/misc/What\_is\_new\_in\_ODV\_5.0.0.pdf) 39

### Exercise 1.

### Now to create your own ODV readable text file

1. Open the "header.xlsx" file, and look at the fist row. The essential parameters are:



# 2. Open "example1.xlsx" and then let's arrange the windows to look at both Excel files together.

Select "Window"- then select "Arrange", then click "vertical".



3. Copy the parameter values from "example1.xlsx" to the correct parameter name in the "header.xlsx" Excel spreadsheet.

### header.xlsx



ت 🖿 🕐	N 10 6	3 🚜 🖽	E 🔮 🗵		Search in She	eet			» 1				ð 1	1 🖬 💇	<u>K</u> ) + (2	× 2.	· Z⇔ · Y=	• UX	1	00%
Calibri (Boo	dy) = 12	- B I	<u>U</u>		\$%	•.0 00.	.00 \$.0 ⊊≣	¢	»   [	Calibri (l	Body	) = 12	• B	<i>I</i> <u>U</u> ∎	Anna Anna An	∃  ¢A¢	\$ %	0. 0.⇔ 0.0	e = •	
A Hom	e Layo	ut Tables	Charts	SmartArt	Formulas	Data	3	» ^ ☆	÷ Ŧ	A H	ome	Layout	Tables	s Charts	s Sma	artArt	Formulas	Data	>>	∧ ☆ -
Edit		Font	Alignment	Number	Fo	rmat	Cells		The_	Edit			Font	Alignm	ent	Number	For	mat	Cells	Then
A.	Calibri (Bod	y) - 12	· =.	General	-			- Aa	3-1	A.	C	alibri (Body)	+ 12	• =	Gene	eral 🔹	· •			Aab-
	DI			<b>1</b> - 04		, <b>L</b> `										- 0/- •	Conditions			
Paste	DI		Align	<b>1</b> 70	Formattin	g Styles	Action	is Them	nes	Paste				Alig	n 💌	* 70 9	Formatting	Styles	Actions	Themes
H2	: ;	8 9 (* )	fx						-		15	\$	80(	fx 27.02	2613					-
A	B C	D		E		F		G	=	A		В	C	D	E	F	G	H	1	J
1 Cruise	Station Typ	e yyyy-mm-ddThh	:mm:ss.sss Lo	ongitude (degrees	[_east] Latitude	e [degrees_	north] Bo	t.depth [m	k_		ise S	tation L	ongitude (d l	Latitude [deg Pi	ressure [db	CTD Tempe	r conductivity	oxygen	CTD Oxyger	n Fluoron
2									k -	2	4	1	-157.782	21.433	1	26.3338	5.32/588	191.079	27.0452	8 1.
3										3	4	1	-157.782	21.433	2	20.334	5.32/333	191.199	27.0292	5 1.
-4 E	-									*	4	1	-157.782	21.433	3	20.341	5.336292	191.321	27.027	2 1
5										5	7	1	-157.782	21.433		26 35/3	5 354551	186 803	27.0201	0 1.
7										7	4	1	-157.782	21,433	6	26.3594	5.358925	185,381	27.0217	1 1
8										3	4	1	-157.782	21.433	7	26.343	5.365401	183.606	27.0217	1 1.
9									1	9	4	1	-157.782	21.433	8	26.3425	5.374085	175.067	27.0176	9 2.
10									1	0	4	1	-157.782	21.433	9	26.3408	5.377047	172.848	27.0106	5 2.
11									1	1	4	1	-157.782	21.433	10	26.2927	5.37371	171.511	27.0043	3 1.
12									1	2	4	2	-157.791	21.444	1	26.4097	5.309458	190.941	27.2811	.5 1.
13									1	3	4	2	-157.791	21.444	2	26.4057	5.309989	191.042	27.2729	9 1.
14									1	4	4	2	-157.791	21.444	3	26.4042	5.311039	190.6	27.2612	5 1.
15									1	5	4	2	-157.791	21.444	4	26.4032	5.325005	189.401	27.2454	2 1.
16									1	6	4	2	-157.791	21.444	5	26.4069	5.356066	185.126	27.2357	7 0.
17									1	7	4	2	-157.791	21.444	6	26.3797	5.366981	182.649	27.2317	7 0.
18									n 1	8	4	2	-157.791	21.444	7	26.3659	5.371784	181.36	27.2140	7 0.
19									1	9	4	2	-157.791	21.444	8	26.349	5.374488	181.699	27.2039	2 1.
20									2	0	4	2	-157.791	21.444	9	26.3419	5.374806	180.234	27.1837	3 1.
21									2	1	4	2	-157.791	21.444	10	26.3382	5.37501	179.957	27.1702	.3 1.
22									2	2	4	2	-157.791	21.444	11	26.3165	5.37637	179.006	27.158	5 1.
23									4	3	4	2	-157.791	21.444	12	26.306	5.377748	177.431	27.1413	3 1.
24									4	4	4	2	-157.791	21.444	13	26.2844	5.375543	1/6.49/	27.1254	3 1
25										5	4	2	-157.791	21.444	14	20.228/	5.308218	1/4.032	27.1022	.4 1.
20										7	4	3	-157.802	21.451	1	20.4004	5.296004	180.346	27.0903	0 0.
27										8	4	3	-157.802	21.451	2	20.3977	5 303058	178 70	27.1089	2 0.
20										0	4	3	-157.802	21.451	3	26.3003	5 308542	177 502	27.1017	2 0
30									2	0	4	3	-157.802	21.451		26 3801	5 342099	179 522	27.0014	2 0.
31										1	4	3	-157.802	21.451	5	26.4963	5.38176	185,987	27.0666	2 0
32									2	2	4	3	-157.802	21.451	7	26.4662	5.379854	186,093	27.101	2 0
33									3	3	4	3	-157.802	21.451	8	26.3383	5.373905	183,858	27.0600	1 1 2 0
34									3	4	4	3	-157.802	21.451	9	26.3156	5.381284	177.761	27.0110	9 43 1.

### When you have finished, it should look like this.

header.xlsx

Cali	ibri (Bod	y) = 12	2 • B I	<u>U</u>		\$ %	00, 0. <del>\$</del> 0.\$ 00.	∉≣ ⊋≣ [	🗄 • 🧆 • <u>A</u> •						
	Home	e Layo	ut Tables	Charts	SmartArt	Formulas	Data F	Review							
	Edi	t	1	Font			Alignment		Number			Forr	nat		Cells
	3 - 1	Fill 🔻	Calibri (Body)	<b>•</b> 12	• A• A•		abc 🔻 🚟 🕽 🕻	Nrap Text 🔻	General	•	<≠ ▼	N	ormal	Ģ	• • • • • • • • • • • • • • • • • • •
Pa	iste 🤇	🖉 Clear 🔻	BIU		🧆 🛛 🗛 🔹 📗	Anna Anna Anna Anna Anna Anna Anna Anna	¢= •	Merge 🔻	S • % •	00. 0. <b>≎</b> 0. <b>¢</b> 00.	Conditional	В	ad	In	sert Delete Format
	Do		0.0.6.6								Formatting				
	PO			x	_		_	-							
	A	B C	D		E	and I adde do	F	G	H I	CTD T-	J	K	CTD Califabri (DCC 70)	M	N CTD On the literal
-	Cruise	Station Typ	e yyyy-mm-aainn:	:mm:ss.sss	Longitude [degrees_e	astj Latitude	[degrees_north]	Bot.depth [m]	Pressure [dbar] QF	CID Iem	perature [115-90]	QF	CTD Salinity [PSS-78]	Q۲	CTD Oxygen [umoi/kg]
2	4	1			-15/	./82	21.433		1		20.3338		34.1383		27.04528
3	4	1			-15/	./62	21.433	·	2		20.334	-	34.1301		27.02925
4	4	1			-157	./02	21.455		3		20.341		34.2095		27.02/5
6	4	1			-157	792	21.433	·	4 E		20.343		34.2970		27.02013
7	4	1			-157	792	21.433	·	5		20.3343		34.3102		27.02149
0	4	1			-157	792	21.433		7		20.3354		34.3430		27.02171
0	4	1			-157	792	21.433		/		20.343		34.4023		27.021/1
10	4	1			-157	792	21.433		0		20.3423		34.403		27.01/05
11	4	1			-157	792	21.433		9		20.3408		34.4074		27.01000
12	4	2			-157	701	21.455		10		20.2927	_	34.455		27.00433
12	4	2			-157	791	21.444		2		20.4057		33,5510		27.20113
14		2			-157	791	21.444		2		20.4037		33.5565		27.27255
15	4	2			-157	791	21.444		3		20.4042		33.5000		27.20123
16		2			-157	701	21.444				20.4052		34.0075		27.24542
17		2			-157	701	21.444		5		26,4003		34 3866		27.23377
18	4	2			-157	791	21.444		7		26.3757		34.3800		27.23177
10		2			-157	701	21.444		, ,		20.3033		34,4531		27.21407
20		2			-157	701	21.444		0		26.3410		34,4001		27.20332
21	4	2			-157	791	21.444		10		26 3382		34.4743		27.10073
22	4	2			-157	791	21.444		11		26.3362		34.5		27.17025
23	4	2			-157	791	21.444		12		26.5105		34 5176		27.1303
24	4	2			-157	791	21.444		13		26.300		34,5176		27.14155
25	4	2			-157	791	21.444		14		26.2044		34,5087		27.12345
26	4	3			-157	802	21 451		1		26,4064		33,8723		27.09038
27	4	3			-157	802	21.451		2		26,3977		33 882		27,10892
28	4	3			-157	802	21 451		2		26,3609		33 9476		// 27.10171
29	4	3			-157	802	21.451		4		26,3467		33,9907		27.06142
30	4	3			-157	802	21.451		5		26,3891		34,2006		27.03752
-		-			101						20.0001		2.12000		2

# 4. Save "header.xlsx" in Tab delimited format (.txt) is now "header.txt".

ODV will only recognize files in the tab delimited format (.txt).

File	Edit	View	Insert	Form
Ne	w Work	kbook		ЖN
Ne	w from	Templa	ite	} <b>ጄ</b> P
Ор	en			ЖО
Ор	en URl		ť	0%{
Ор	en Rec	ent		
Clo	se			жw
Sav	/e			ЖS
Sav	/e As		ť	} <b>జs</b>
Sav	/e as V	Veb Pag	je	
Sav	/e Layo	out		
Imp	oort			
Sha	are			
Re	duce F	ile Size.		
We	b Page	Previe	w	
Re	strict P	ermissi	ons	►
Pag	ge Setu	ıp		
Pri	nt Area			
Pri	nt			ЖР
Pro	perties	s		

:	Save As: header.xlsx		<b>^</b>	
	Tags:			
	Material	•	Q Search	
Favorites iCloud Drive marikohatta Applications Dropbox	Healy_ODV_2015 OCN623_ODV_2015 OCN623_ODV_2016	Class Class Materi	ODV2CM_MH.pptx ODV2016_Prep.pptx al	Download Example1 header.xls Mawji_eta Sch2001h
Desktop Documents Devices Remote Disc Tags Red Orange	<ul> <li>✓ Excel Workbook (.xlsx)</li> <li>Common Formats         <ul> <li>Excel 97-2004 Workbook (.xls)</li> <li>Excel Template (.xltx)</li> <li>Excel 97-2004 Template (.xlt)</li> <li>Comma Separated Values (.csv)</li> <li>Web Page (.htm)</li> <li>PDF</li> </ul> </li> </ul>			
<ul><li>Yellow</li><li>Green</li></ul>	Specialty Formats Excel Binary Workbook (.xlsb) Excel Macro-Enabled Workbook	(.xlsm)		
Forma Description The XML-based format tha macro sheets. Learn more about file form	Excel Macro-Enabled Template (. Excel 2004 XML Spreadsheet (.xi Excel Add-In (.xlam) Excel 97-2004 Add-In (.xla) Single File Web Page (.mht) UTF-16 Unicode Text (.txt) Tab Delimited Text (.txt) Windows Formatted Text (.txt)	xltm) ml) : VB	A or Excel 4.0	
Options Comp	MS-DOS Formatted Text (.txt)	· mer	nded	4.

### Exercise 2.

### Let's create your own ODV file & figures

1. Close the HOT ODV data file. Open up the ODV program you downloaded. Then, let's create new collection. Select "File" tab, and select "New". Then, find the place you want to save the new ODV collection.



### Choose "Definition of collection variables". Select "Use .txt,.odv,.var or other file as template" and select your file that you made ("header.txt").

se .txt, .odv, .var or other file as template	Desktop	Name		Size Kind	Date Modified	
ser specifies variables manually		Download_	HOT	Fol	der 2/2/15 11:46 AM	
standard templates		Example1	YICY	20 KB tyt	File 1/27/16 4:54 PM	
RGO Profile		header.xisx	<u> </u>		CFIIe 1/2//16 4:56 PM	
RGO Profile (including intermediate parameters)		Mawji_etal	_MarChem_2015.pdf	1.4 MB pdf	File 1/27/16 1:43 PM	
RGO Trajectory		📄 Sch2001h.	pdf	2.4 MB pdf	File 1/27/16 1:41 PM	
ISPP (Global Temperature-Salinity Profile Program)						
edatlas Sediment Tran			3)	Matadata a	nd Data Variables	
edatlas Time Series				wetadata a	nu Data Variables	
ODC SD2			Spreadsheet Column Labels			
OCE ADCP				Metadata Va	riables	
OCE Current Meter			Station		Cruise	N
OCE Sea Level			Туре		Station	
OCE Subsurface Float			yyyy-mm-ddThh:mm:ss.sss	>>	Type Longitude [degrees_east]	E
OCE Surface Velocity			Latitude [degrees_north]	<<	Latitude [degrees_north]	
OCE WHP Bottle	File name:	neader.txt	Bot.depth [m]		Year	
OCE WHP CTD	Files of type:	Supported File	Pressure [dbar] CTD Temperature [ITS-90]		Dav	
orld Ocean Database			CTD Salinity [PSS-78]		Hour	
			CTD Oxygen [umol/kg]			
				Data Variable	es estatution est	
				ſ	Pressure [dbar]	Ne
					CTD Temperature [ITS-90] CTD Salipity [PSS-78]	Ed
				>>	CTD Oxygen [umol/kg]	Ed
Customized collection creation OK Cancel				<<		
						Тс
						U
						Do
		/•				



Now you made a new ODV file with your parameters in the header. Next, you have to import



# 3. Click "Import", and select "ODV spreadsheet" and select the txt file that you made. *This step actually imports your data*

🗯 odv4 File Coll	lection View	Port Export Tools Help	6	I 🖶 🕏 🤝 🕙 🚸 🖜 🔳 🖪	Sun 12:01 PM	into ODV.			
Ocean Da	ata View - /Use C	DDV Spreadsheet	Teaching/OCN623_ODV_2016/Mat	terial/ODV_COLLECTION_(2016-01-31T	1-52-41)				
(1)	s	DN Formats							
(1)	s	Sea-Bird CNV							
	A	ARGO Formats							
	L	J.S. NODC Formats				Oalaat Oawaadah aat Data	<b>F</b> 11-		
						Select Spreadsheet Data	File		
			State State State	(2)					
60°N					/Users/ma	arikohatta/DesN623_ODV_2016	/Material 文	00	🔉 🐔 🖽 🔳
30°N				Deskton	Name		Size	Kind	Date Modified
the second				Doomop	Downlo	bad_HOT		Folder	2/2/15 11:46 AM
EQ				Docum	Examp	le1.xlsx	76 KB	xlsx File	1/27/16 4:54 PM
24 2					header	:txt	20 KB	txt File	1/31/16 11:04 AN
20%5	The second second				header.	xlsx	27 KB	xlsx File	1/27/16 4:56 PM
30 3	Star Com			Material	Mawji	etal MarChem 2015.pdf	1.4 MB	pdf File	1/27/16 1:43 PM
		Come a long the				OLLECTION (1T11-52-41).Dat	a	Folder	1/31/16 11:53 AN
60°S			Import Options			OLLECTION 1T11-52-41).odv	1 KB	odv File	1/31/16 11:53 AN
	and the second s	Moont Mode	Import Options		Sch200	01h.pdf	2.4 MB	pdf File	1/27/16 1:41 PM
180°W	90°W	(3)							
		<ul> <li>Add 7 Replace Station Data</li> </ul>	Check for existing stati	ons Edit Matching Criteria					
		Variable Association							
		Source file variables		Target collection variables					
		* 1: Pressure [dbar]	Associate * 1:	Pressure [dbar]					
		* 2: CTD Temperature [ITS-90]	Convert * 2:	CTD Temperature [ITS-90]					
		* 4: CTD Oxygen [umol/kg]	Use Default * 4:	CTD Oxygen [umol/kg]					
					txt				Open
					preads	neet Files (*.txt *.TXT)			Cancel
						( )	Import		
						(4)			
						Collection: /Users//Mat	erial/ODV_CC		(2016-01-31T11-52-41)
							001_00		(2010 01 01111 02 11)
						13 stations imported from	1001000		
						/Users//ODV_leachin	g/00N623_0	DV_2016/Ma	aterial/neader.txt
		All 4 variables used		All 4 variables associated					
						Detaile			
		Help		OK Cancel		Details			
					- 1				

### Now you can see your data on the screen!

### Use a magnifying glass!



Accession N	1						
Cruise	4						
Station	tation 1 (B)						
Position	15	7.782°W/	21	.43	3°N		
Date							
īme							
Pressure Ra	[1.	00 - 10.00	)]				
Bot.depth [m]							
ample: 1 / 10							
1: Pressure [d.		1.00		1			
2: CTD Tempe		26.33		1			
3: CTD Salinit.		34.14		1			
4: CTD Oxyge		27.05		1			
osurface Value	s						
ongitude			-1	57.	782		
atitude			2	1.43	3		
īme [yr]							
Day of Year							
Pressure [dbar]	@ P	ressur	1.	00			
CTD Temperatur	CTD Temperature [ITS-90]						
CTD Salinity [PSS-78] @ P 34.14							
CTD Oxygen [un	nol/	′kg] @ …	27	7.05			

# Zoom the map: Right click on "Map" window, and select "Full Domain".



Accession N	1					
Cruise	4					
Station	1 (	(B)				
Position	15	7.782°W /	21	.43	3°N	
Date						
Time						
Pressure Ra	[1.	.00 - 10.00	)]			
Bot.depth [m]						
ample: 1 / 10						
1: Pressure [d.		1.00		1		
2: CTD Tempe		26.33		1		
3: CTD Salinit.		34.14		1		
4: CTD Oxyge		27.05		1		
sosurface Value	s					
Longitude			-1	57.	782	!
Latitude			21	1.43	33	
Time [yr]						
Day of Year						
Pressure [dbar]	@ P	ressur	1.	00		
CTD Temperatur	26	6.33	3			
CTD Salinity [PS	1					
CTD Oxygen [un	nol/	′kg] @ …	27	7.05	5	

# Kaneohe Bay data!



Accession N	1					
Cruise	4					
Station	1 (	B)				
Position	15	7.782°W /	21	.43	3°N	
Date						
Time						
Pressure Ra	[1.	00 - 10.00]				
Bot.depth [m]						
Sample: 1 / 10						
1: Pressure [d.		1.00		1		
2: CTD Tempe		26.33		1		
3: CTD Salinit.		34.14		1		
4: CTD Oxyge		27.05		1		
sosurface Value	s					
Longitude			2	02.	218	
Latitude			2	1.4	33	
Time [yr]						
Day of Year						
Pressure [dbar]	@ P	ressure	1	.00		
CTD Temperatur	TS-90]	2	6.3	3		
CTD Salinity [PSS-78] @ Pr 34.14						
CTD Oxygen [un	nol/	kg] @ P	2	7.0	5	

### Let's make "2 scatter windows" using Layout Templates

é odv4 File Collection	View Import Export Too	ls Hel	р		<b>W</b>	• 🕏 🛜 🕓 -	🚸 📢 )) 📕 💋	Sun 12:16 F	PM Q	
Ocean Data View	Undo / Redo	•	H_Lab/14_Class/ODV_Teachin	g/OCN623_ODV_	_2016/Material/	ODV_COLLECTION	N_(2016-01-31T11-	52-41)		
	Station Selection Criteria	NS.					Station ID: 1			
							Accession N	1		
	Derived Variables	τD					Cruise	4		
6°N	Isosurface variables						Station	1 (B)		
	Window Properties	►					Position	157.782°W /	21.433°N	
	Window Layout	ΣW					Date			
	Layout Templates	$\mathbf{F}$	Full Screen Map	F8			Time			
	Sava View As		1 STATION Window				Pressure Ra	[1.00 - 10.00]		
5°N	Save View		2 STATION Windows				Bot.depth [m]			
	Load View	企L	6 STATION Windows	F9			Sample: 1 / 10			
	Browse Session Log File		1 SCATTER Window				1: Pressure [d	1.00	1	
		•	2 SCATTER Windows	F10			2: CTD Tempe	26.33	1	
5°N			6 SCATTER Windows				3: CTD Salinit	34.14	1	
			1 SECTION Window				4: CTD Oxyge	27.05	1	
			2 SECTION Windows				Isosurface Value	s		
			3 SECTION Windows	F11			Longitude		202.218	
			6 SECTION Windows				Latitude		21.433	
5°N		•					Time [yr]			
		2	1 SURFACE Window	F12			Day of Year			
			3 SUBFACE Windows				Pressure [dbar]	@ Pressure	1.00	
			5 SURFACE Windows				CTD Temperatur	e [ITS-90]	26.33	
			8 SURFACE Windows				CTD Salinity [PS	S-78] @ Pr…	34.14	
4°N			11 SURFACE Windows				CTD Oxygen [ur	nol/kg] @ P	27.05	
			1 SURFACE + 1 SCATTER Windows 5 MIXED Windows							
			From View File		)cean D					
15	7.9°W	157.8°И	157.	7°W	ı°					

## "2 scatter windows" mode



Accession N							
Cruise	4						
Station	1 (B)						
Position	157.782°W / 21.433°N						
Date							
Time							
Pressure Ra	[1.	00 - 10.00]					
Bot.depth [m]							
Sample: 1 / 10							
1: Pressure [d 1.00				1			
2: CTD Tempe		26.33		1			
3: CTD Salinit.		34.14		1			
4: CTD Oxyge		27.05 1					
Isosurface Value	s						
Longitude				202.218			
Latitude					21.433		
Time [yr]							
Day of Year							
Pressure [dbar]	1.00						
CTD Temperatur	26.33						
CTD Salinity [PSS-78] @ Pr 34.14							
CTD Oxygen [un	2	7.0	5				
	nol/	ng] © i					



# Fe distributions along the track overlaid with the AOU value as contour

#### "Section Windows" mode





Hatta et al., 201<sup>24</sup>



### "SURFACE Windows" mode

ADCP data during the cruise

Grand et al., 2015

### "SURFACE Windows" mode

### Concentrations with color as well as flow direction (ADCP data) dAI [nM] @ Depth [m]=30



Measures et al., 2014

### "Section Windows" mode Temperature overlaid with Salinity



Grand et al., 2015  $^{61}$ 

# Goldschmidt meeting 2016



### Exploring GEOTRACES Data with Ocean Data View

Sunday, 26 June 2016 (9-16h) - Yokohama, Japan

 http://www.geotraces.org/meetings/ meetings-by-year/eventdetail/263/-/ exploring-geotraces-data-with-ocean-dataview

# Reference

ODV User's Guide:

http://odv.awi.de/en/documentation/

HOT ADCP data:

http://currents.soest.hawaii.edu/hot/

Kaneohe data:

http://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.nodc:0099831

## Questions?

## Mariko Hatta Office 509, University of Hawaii <u>mhatta@hawaii.edu</u>