## Add different formats of data into ODV

Part 1: ARGO netCDF Data

#### **1. Create a new collection**

• Open the PFL collection previously created.

#### OR

- Select File > New to create a new profile and name it argo\_india
- Select Argo profiles under
   Definition of collection variables window.

Create New (	Collection					?	×
Look in:	C:\Users\user\Documents\ODV\data			• G (	0 G	🔏 🗄	: 🔳
Desktop	Name	Size	Type	Date Modified			^
Docume	1979_pac.Data		Filder	26-06 12:40			
	1981_pac.Data		Filder	26-06 12:50			
000	199108050000-199108120000.Data	3	Filder	26-06 13:05			
ocean	199112300000-199201060000.Data	3	Filder	26-06 13:13			
collectic	BAIS_Dottle_data_1988-2016.Data	3	Filder	20-00 12:28			
-	export_temp		Filder	04-07 14:10			
	ManView		Fil. der	15-02- 12-20			
	ocean		Fil. der	18-03- 12:55			
	ODV website data		Filder	04-07 14:26			
	ODV COLLECTIO4-37-17).Data		Filder	06-08 14:43			
	pfl india argois delayed good	1	Filder	30-06 14:07			
	pfl_liberia_argolis_delayed_goo	d	Filder	30-06 14:41			
	rcm02875.Data		Filder	26-06 12:17			
< >	rcm02903.Data		Filder	26-06 12:34			$\mathbf{v}$
File eamor	na indial					Sau	_
riename: arg	lo_inulal					34	e
Files of type: Co	Files of type: Collection Files (*.odv)  Cancel						

Definition of collection variables		(
Use .txt, .odv, .var or other file as template User specifies variables manually		
Argo Profile		
Argo Profile (including intermediate variables) Argo Trajectory GOCD (Global Ocean Currents Data) GOSUD (Global Ocean Surface Underway Data) GTSPP (Global Temperature-Salinity Profile Progr Medatlas Time Series NODC SD2 WOCE ADCP WOCE Current Meter WOCE Sea Level WOCE Surface Velocity WOCE Surface Velocity WOCE WHP Bottle WOCE WHP CTD World Ocean Database	am)	
Customized collection mention	OK	Cancel

Creating collection...

#### **3. Import Data**

- To import the new Argo data, select Import > Argo Formats
   > Float Profiles
- Select All Files from File type.
- Navigate to the folder

   Documents\ODV\Data
   pfl\_india\_argo\_coriolis\_delayed
   \_good.



## **Import options**

- The Import Options dialog is used to associate variables in the import files with ODV target variables. In most cases the they will differ, so it will be necessary to associate the two sets of variables.
- ODV automatically associates variables with matching labels (name and units) and marks the associated variables with an asterisk \*.



nport Options	
Import Mode Add / Replace Station Data 🔻	Check for existing stations Edit Matching Criteria
Data Variable Association	
Source Variables	Target Data Variables
<ul> <li>1: Pressure (original) [decibar]</li> <li>2: Pressure (adjusted) [decibar]</li> <li>3: Temperature (original) [degrees_Celsius]</li> <li>4: Temperature (adjusted) [degrees_Celsius]</li> <li>5: Practical Salinity (original) [psu]</li> <li>6: Practical Salinity (adjusted) [psu]</li> </ul>	Associate       * Pressure (original) [decibar]         * Convert       * Pressure (adjusted) [decibar]         * Temperature (original) [degrees_Celsius]         * Temperature (adjusted) [degrees_Celsius]         * Practical Salinity (dajusted) [psu]         Practical Salinity (dajusted) [psu]         * Practical Salinity (dajusted) [psu]         Dissolved Oxygen (adjusted) [rsm~#mol kg~~~^1]         Particle backscattering (original) [m~~~^         Particle backscattering @ 522 nm (original) [m~~~^         Particle backscattering @ 520 nm (original) [m~~~^         Particle backscattering @ 520 nm (original) [m~~~^         Particle backscattering @ 520 nm (original) [m~~~^         Particle backscattering @ 700 nm (adjusted) [m~~~^         Disolyted (adjusted) [ng m~~~~^3]
All 6 variables used	6 of 40 variables associated
Help	OK Cancel



#### 4. Data Inventory

- To view the cruise inventory of the collection, select Collection > Browse Inventory.
- By default this file will be saved
   Products > Products > ODV >
   pfl\_all\_liberia\_wod13.Data
   >CruiseInventory.txt.
- You can open the file in Excel/Notepad



# Part 2: Import ascii data into ODV

## 1. Import data

- ODV requires mandatory
   metadata, such as the geographic
   location of a station, the date of
   observation, and the names of the
   station and cruise
- Select File > Open then navigate to the training\_dataset\_oxygen.txt file in the Documents\ODV\Data
  folder and open it. The Spreadsheet
  File Properties dialogue shows the
  data that will be imported. Select
  OK.
- Remove ID from data variable list and select oxygen as primary variable

mport Variables	Metadata Variables	
Longtude Latitude Date ID Depth Oxygen	Cruise Station Type [degrees_east] Longitude [degrees_east] Lattude [degrees_north] Year Month Day Hour Minute Second Accession Number PrimaryVarMax	New Edit
	Data Variables Date Depth Oxygen	New Edit
	>>> <<	Top Up Down Botto
	Primary Variable: Oxygen	•

Collection Prope	rties
Data Field:	Ocean 👻
Data Type:	Profiles 🔻
Primary Variable:	Oxygen 🔻
Help	OK Cancel

#### **2. Associate variables**

- The next step is to match-up
  between the incoming data (in the spreadsheet) and the fields in the
  ODV collection structure. Already
  associated variables are marked
  by asterisks (\*).
- Associate ID with cruise
- Select OK.

	i arget meta Variable
Associate Cruise Station Type *Longitude [degrees_east] *Latitude [degrees_north] Year	
Undo Month Day Hour Minute Second	
	Associate Convert Set Default Undo Convert

Import Options			
Import Mode			
Add / Replace Station Data 🔻		Check for existing stations	Edit Matching Criteria
Data Variable Association			
Source Variables			Target Data Variables
* 1: Date	Associate	* Date	
2: ID	7100000000	* Depth	
* 3: Depth	Convert	* Oxygen	
4: Oxygen	Set Default		
	Undo		
	Undo All		
3 of 4 variables used			All 3 variables associated
Help			OK Cancel

#### 3. Task:



#### 4. Generic ODV spreadsheet format

- If you plan to use ODV to regularly import spreadsheet data, it is recommended to use a standard ODV template.
- The Column Header Row contains a label for each column of the file.
- The csv file should contain columns of Longitude, Latitude and atleast any one variable, along with their headers.
- The leftmost columns are the metadata columns, followed by the data column pairs (which can include a qualifying flag column).

#### **Generic ODV** spreadsheet format

- The column Type is used to designate the instrument used to collect the data, e.g. bottle, CTD, etc.
- The following metadata column header labels are mandatory and should be included EXACTLY as written:

Cruise, Station, Type, yyyy-mm-ddThh:mm:ss.sss, Longitude [degrees\_east, Latitude [degrees\_north], Bot. Depth [m]

- The metadata is followed by the data variables.
- Each column for a data variable can have an optional quality flag QF. Depth [m], QF, Temperature [°C], QF, Salinity [PSU], QF, etc

#### 5. To import a generic spreadsheet data

- Open ODV. To load in the data, you may either access the File menu and click Open and select your file or simply drag your text file into the window itself.
- ODV will then indicate how many stations have been imported and from what directory. Click OK to proceed.
- Depending on the size of the data file, you may have to perform Sort and Condense if the data was poorly sorted. Click Yes if you are prompted to do so.

Part 3: Import NETCDF data

#### **Open netcdf data**

- Goto File > Open and select the NC file sst\_mon\_mean
- Netcdf setup wizard shows up showing the input variables, click NEXT after the the select dimension.
- Under Associate meta-variables, Add SST to the right hand side list by clicking on >>
- Select time as days since 1981 as primary variable as primary variable and in the last step select the option to subset the time dimension.

Solution 🔤 🎦				? ×
Look in:	C:\Users\user\Documents\ODV\data		• 0 0	0 🔗 🗉 🔳
Desktop	Name	Size Type	Date Modified	^
Docume ODV cocan collectic	sst_mon_mean.Data sst_mon_mean1.Data sst_mon_mean2.Data Test dataset training dataset 2018(1).Data v2018-09_ODV WOA09 WOA03 1979_pac.nc 1981_pac.nc 199112300000-199201060000.nc	Filder Filder Filder Filder Filder Filder Filder Filder Filder S.4 MB nc File 1.9 MB nc File 1.7 MB nc File	15-07 14:38 15-07 17:11 15-07 17:23 05-07 09:59 15-07 14:28 29-03 16:31 04-07 15:30 10-01 11:49 29-06 19:00 30-07 10:50 30-07 11:15 30-07 18:05	
	rcm02903.nc	25 KB nc File	20-04 21:14	
< >	sst_mon_mean2.nc	15MB nc File	15-07 14:25	~
File name: ss	t_mon_mean2.nc			Open
Files of type: ne	tCDF Files (*.nc *.cdf *.grd)			▼ Cancel

NetCDF Setup Wizard	
NetCDF dimensions	Corresponding netCDF variables
Ion;360] Iat[180] [time[1542] All 3 dimensions selected	lat [degrees_north] lon [degrees_east] time [days since 1891-1-1 00:00:00] sst [degC]
View NetCDF Header	
Help	< Back Next > Finish Cancel

NetCDF Setup Wizard		NetCDF Setup Wizard	
Associate Meta Variables (Step 2 of 4)		Select Primary Variable (Step 3 of 4)	
NetCDF variables         * 1: lat [degres_north]; var=lat         * 2: lon [degres_east]; var=lon         * 3: time [days since 1891-1-1 00:00:00]; var=time         * 4: sst [degC]; var=sst         Set Default         Undo	Meta variables Cruise Station Type * Longitude [degrees_east] * Latitude [degrees_north] * Year * Month * Day * Hour * Minute * Second * sst [degC]		
All 4 variables used	9 of 12 variables associated		
		Help < Back Next > Fin	nish Cancel
Help < Back Next	> Finish Cancel		
NetCDF Setup Wizard         Subset Dimensions (Step 4 of 4)         64800 stations. You can reduce the number of stations by subsetting one or more dimensions or by zooming into the map.         NetCDF dimensions         Ion[360] use[0:1:359]         Iat[180] use[0:1:179]         time[1542] use[0:1:1541]         Subset Dimension         Zoom into Map         Help       < Back	Ful Domain	Animation - Isosurface time [days since 1891-1-1 00:00:00]= Isosurface Values Start: 0 Step: 31 Number of frames: 151 Use Available Coordinate Values Style Adjust Z value range Adjust Z color mapping OK Cancel	

Subset the lat and lon dimensions to use all the values in the gridded data and the time dimension to include values upto 150 monthly timesteps

#### To plot in surface mode, go to View > Layout Templates and select 1 Surface window



## **Change plot label**

- Go to properties and untick the Automatic Label option
- To change the figure title click outside the canvas near the current title and Add Graphic Objects > Annotation
- Then add the text Monthly Mean SST during January 1901

General Data Display Style Contours Cold	r Manning DTVA Settings
	in opping of the octained
General	
Palet	e: Odv
Background col	pr: (none)
Highlighting sty	le: curve & dots 🔻
Font	
Font base size [r	t]: (automatic)
Font size fact	
Axis Style	
Axis col	or: 0 -
	Draw grid
	Automatic axis titles
Apply to all windows	Default Settings
Help	OK Cance

Properties Window

Annot	ation - Prope	ties		
Text:	SST monthly n	nean		
Posit	ion			
	X:	13.2528	] Y:	15.9874
Align	ment			
	X:	center 🔻	] Y:	center 🔻
Prop	erties			
	Text color:	0 -	Background:	(none) 🔻
	Font size:	14 pt 🗘	Frame color:	(none) 🔹
	Orientation:	0 ° 🗘	Frame width:	(none) 🔻
Own	ership			
	Owner:	Canvas 🔻	Coordinates:	Canvas 🔻
	Pre-da	ta plot 🗌 Clip to	window 🖂 Allow	dragging
			OK	Cancel

#### Animations

Right click on the figure,
Go to Extras >
Animation > Isosurface

## **Create monthly plots**



- To plot sst during the months May 1891, January 1892 and January 1901, go to View > Isosurface
  variables and add SST @ time = 120, 365 and 3652 respectively
- Go to Layout Templates > 3 Surface Windows





- Go to File > Save canvas as to get the above layout in jpeg format
- By clicking on any data point in any window, the corresponding time will be shown in the left top window labelled STATION ID

#### **Other options**

- Go to Collections > Browse info file to see the properties of the netcdf file
- Similarly Collections > Browse inventory to see the data inventory created by ODV

# Part 4: Timeseries data

- Select File > Open then navigate to the timeseries\_trial.csv file in the Documents\ODV\Data folder and open it.
- Match the meta variables and data variables, and click OK.
- Select timeseries as datatype and time as primary variable



	Add / Replace Station Data 🔻		Check for existing stations	Edit Matching Criteria
	Data Variable Association Source Variables			Target Data Variable
ariables	<ul> <li>1: Time</li> <li>2: Depth</li> <li>3: Sea Level</li> </ul>	Associate Convert Set Default Undo Undo All	* Time * Depth * Sea Level	
	All 3 variables used			All 3 variables associated
	Help			OK Cancel

	Meta Variable Association				300	Le valiables
					 *	1: Time
	Source Variables			Target Meta Variables	*	2: Depth 3: Sea Level
	* 1: Station	Associate	Cruise			
	* 2: Longitude	*	* Station			
Collection Properties	* 3: Latitude	Convert	Туре			
	4: Time	*	*Longitude [degrees_east]			
Data Field: Ocean	5: Depth	Set Default *	*Latitude [degrees_north]			
Data Held. Ocean	6: Sea Level		Year			
Data Type: TimeSeries		Undo	Month			
			Day			
Primary Variable: Time			Hour			
			Minute			
Help OK Cancel			Second			
					All 3	variables used
					н	elp
	3 of 6 variables used			3 of 11 variables associated		
	Help Browse File			OK Cancel		



Part 5: Vector dataset

#### **Open data**

- Select File > Open then navigate to the training\_dataset\_vector.csv file in the Documents\ODV\Data folder and open it.
- Match the meta variables and data variables, and click OK.
- Select general as datatype and WS as primary variable



Collection Prope	rties
Data Field:	Ocean 🔻
Data Type:	GeneralType 🔹
Primary Variable:	WS [Km/hr]
Help	OK Cancel



#### **Plot vector**

- Create isosurface variables of u
   and v at depth = first (surface)
- Right click on the figure, go to
   Properties > Display Style >
   Original Data
- Select Arrows and assign U an V
  velocities as X and Y respectively.
  Change scale to 20, or according
  to the desired arrow length.

Data Dis	Data Display Style Con	tours Color Map	pping DIVA Settings			
			Arrow Properties Window 1			
Original data			X/V Components			
Arro	WS	•	X/1 components			
	Symbol size		X: U wind [km/hr] @ Depth=first			
•	18	<b></b>	Y: V wind [km/hr] @ Depth=first			
	Symbol color		Scolar 20			
	0	•	Line width: thin			
	Line width					
	thin	-				
			Quality limit			
			<ul> <li>✓ Filee bad estimates</li> <li>✓ Do color shading</li> <li>✓ Exclude outliers</li> </ul>			
Data Ma	rk Style					
	🗹 Draw marks	Size	Color 17 👻			



Part 6: Model data

#### **Import data**

- Select File > Open then navigate to the model\_data\_timeseries.csv file in the Documents\ODV\Data folder and open it.
- Match the meta variables and data variables, and click OK.
- Select general as datatype and depth as primary variable





#### Create isosurface variable as sea level at time equals 2.

