### OCEAN INFORMATION RESOURCES



# ACCESSING IMOS AUSTRALIAN OCEAN DATA NETWORK OCEAN COLOUR DATA USING QGIS

In this guide, we demonstrate how to use QGIS to access IMOS satellite data products from the AODN using a THREDDS plugin. The tutorial shows the use of multiple datasets from Satellite Remote Sensing: Ocean Colour.

## **A) PREREQUISITE**

- **1.** Open Qgis. We are using version Prizren 3.34. Other versions may present issues with THREDDS Explorer compatibility.
- 2. Check if THREDDS Explorer is installed. (If known to be installed, skip steps 2-5). Navigate to 'Plugins > 'Manage and Install Plugins' and check if the package is installed but not active. If it is installed but unchecked, activate it.



**3.** If not installed, navigate to the download site: <u>https://github.com/IHCantabria/</u><u>THREDDSExplorer</u>, click on the 'code' button arrow, and select 'download zip'.

💡 master 👻 💡 1 Branch 🛇 4 Tags		(	ζ Go to file	<> Code •
felipem775 update changelog		▶ Clone		0
settings	Update to QGIS 3.x	HTTPS	GitHub CLI	
🖿 doc	Uploaded slides 2nd	https://g	github.com/IHCantabria/THREDDSExp	lorer.
🖿 help	Version 1.0	Clone usin <u>c</u>	g the web URL.	
🖿 i18n	Version 1.0	🔛 Open w	vith GitHub Desktop	
libvisor	rename deprecate	Downlo	pad ZIP 2	
scripts	ui2py.py: script to au	<b>ito</b> mate .ui to	.py conversion	8 years ago

- 4. Extract the folder keeping the directory in tact to the plugins directory, located at: 'C:\ Users\\*\*\*USERNAME\*\*\*\AppData\Roaming\QGIS\QGIS3\profiles\default\python\ plugins' where username portion to be replaced by the current user login.
- 5. Restart QGIS, and navigate once again to the Plugin Manager and activate 'THREDDS Explorer'.

Q Plugins   Installed (12)		×
溢 All	Q Search	
All Installed Install from ZIP Settings	Image:       Image:         Image:       Image: <t< th=""><th>THREDDS Explorer         Static and animated data viewer for THREDDS servers         THREDDS Explorer is a QGIS-based plug-in designed to make georeferenced data accessible through any THREDDS based and maps are exposed to the user through a simple user int choose any map or explore through all the server contents v exploring the default web based THREDDS interface. This plu THREDDS servers, and will be able to retrieve any layer prov and/or WCS services published by the server.</th></t<>	THREDDS Explorer         Static and animated data viewer for THREDDS servers         THREDDS Explorer is a QGIS-based plug-in designed to make georeferenced data accessible through any THREDDS based and maps are exposed to the user through a simple user int choose any map or explore through all the server contents v exploring the default web based THREDDS interface. This plu THREDDS servers, and will be able to retrieve any layer prov and/or WCS services published by the server.
		Category Plugins More info homepage bug tracker code reposito Author IH Cantabria Installed version 2.0.1 Upgrade All Uninstall Plugin Reinstall Plugin Close Help

This icon should	•••	Q Untit Project	led Pro	ject — <u>V</u> iew	QGIS <u>L</u> ayer	Setting	s <u>P</u> lugin	s Vect <u>o</u> r	Raster	<u>D</u> atabase	<u>W</u> eb	Mesh	Process	ing !	<u>H</u> elp
ribbon bar:	TF					a	(m)	ج چ			PF		A		
				V.	6		<b>V</b> ]	1.1	₿.	/ • °°	1 / × ·	- 14		8	
		đ		₽,	\$\$ V		<i>i</i> :	× (ii	Ë						

## **B) DATA ACCESS**

**6.** Load your base map if desired. In this tutorial, we will use the Esri Satellite XYZ. Open THREDDS Explorer, and click on 'Add Server'.

0	Available server s	ettings	×
	Server Name	Server full URL	Load data
1	NOAA	http://oceanwatch.pfeg.noaa.gov/thredds	Add server
2	NOAA	http://nomads.ncdc.noaa.gov/thredds	Remove server
3	Santander	http://www.meteo.unican.es/thredds/	

 Add the AODN THREDDS server as the name and <u>https://thredds.aodn.org.au/</u> <u>thredds/</u> as the Server URL.

🔇 Add new	server	×			
Server name	AODN THREDDS				
Server URL	https://thredds.aodn.org.au/thredds/				
(e.g. http://myserver.com/thredds)					
	Add server				

8. You will be presented with a navigation window as per below, which may be embedded.

			Mai	luge servers			
hoose ar	n available	DataSet					
AIMS							-
SubData	sets and	Maps					
► AIM	S						
WMS	WCS						
WMS	WCS						
WMS	WCS						•
WMS	WCS			•]			
WMS	WCS			•			•
WMS	WCS			•			•
WMS	WCS			•			•
WMS	WCS	vnload:		•			•
WMS	WCS	vnload:		•			•
WMS	WCS	vnload:		•			•
WMS	WCS	vnload:		•			•
WMS	WCS	vnload:		•			•
WMS	WCS	vnload:		•			* * *
WMS	WCS	wnload:		•			* *
WMS	WCS	vnload:		•			* *
WMS	WCS	vnload:		•			* *
WMS	WCS	vnload:	nation availa	▼			• •
WMS	WCS	wnload:	nation availa	• .			•
WMS	WCS	vnload:	nation availa	• • • • • • • • • • • • • • • • • • •			* *
WMS	WCS	vnload:	nation availa	▼ ►			•
WMS	WCS	vnload:	mation availa	• Dele.			* *
WMS	WCS	wnload:	nation availa	ble.			* *
WMS	WCS	vnload:	nation availa		lorth: No ii	nfo	•
WMS Time rat South:	WCS	vnload:	mation availa East: No		lorth: No ii		• •
WMS Time rat South:	WCS	vnload:	mation availa		lorth: No ii		* *
WMS Time ran No Bourn South:	WCS	vnload:	mation availa	ble.	lorth: No is		• •

9. Select the IMOS dataset from the drop down menu.

REDDS Explorer - Connected: AODN THREDDS	0
Manage servers	
Choose an available DataSet	
AIMS	
Deakin_University	
Bureau_of_Meteorology	
Department_of_Planning_and_Environment-New_South_Wales	
Defence_Technology_Agency-New_Zealand	
Department_of_Environment_and_Science-Queensland	
CSIRO	
Department_of_Defence	
Department_of_Transport-Western_Australia	
Flinders_University	
Future_Reef_MAP	
Derwent_Estuary_Program	
Gippsland-Ports-Victoria	
Pilbara_Ports_Authority	
NSW-OEH	
UNSW	
UWA	
IMOS	

Please note that not all datasets have GIS compatibility and will not display on a GIS software. Our main focus will be on importing one set of chlorophyll data into the software. **10.** In this example we will add a Ocean Colour remote sensing data to the map. We will use 3 different datasets. For the most recent datasets, in the "SubDatasets and Maps" section, navigate to >IMOS/SRS/OC/gridded/.

There are multiple satellite products available in this section. For this tutorial, we will use the three datasets 'AQUA', 'NOAA20' and 'snpp'.

REDDS	Explorer - Connected: AODN				
	Manage servers				
Choose an available DataSet					
IMOS		,			
SubDa	tasets and Maps				
▼ IM	OS .	_			
•	IMOS/AATAMS				
•	IMOS/ACORN				
•	IMOS/ACORN_JCU_historical				
•	IMOS/ANFOG				
•	IMOS/ANMN				
•	IMOS/AUV				
•	IMOS/Argo				
•	IMOS/BGC_DB				
	IMOS/DWM				
	IMOS/FAIMMS				
	IMOS/NTP IMOS/Occession				
	IMOS/OceanCurrent				
	IMIOS/SAIMIOS				
÷	IMOS/SECF				
	IMOS/SRS/ALTIMETRY				
	IMOS/SRS/OC				
	IMOS/SRS/OC/BODBAW				
	MOS/SRS/OC/LICO				
	MOS/SRS/OC/gridded				
	IMOS/SRS/OC/gridded/aqua				
	IMOS/SRS/OC/gridded/contributed				
	IMOS/SRS/OC/gridded/noaa20				
	IMOS/SRS/OC/gridded/seawifs				
	IMOS/SRS/OC/gridded/snpp				
	IMOS/SRS/Surface-Waves				
•	IMOS/eMII				

For further information regarding IMOS remote sensing products, visit the catalogue here.

As all three satellites have differing orbits, the best coverage is achieved if they are combined in one overlay. To achieve this, select the same day products from each of the three. In this example, we have selected the 29<sup>th</sup> of February 2024 and used the 'chl\_O3' product for each.

Manage servers	
hoose an available DataSet	
IMOS	•
SubDatasets and Maps	4
A.P1D.20240228T053000Z.aust.K_490.nc	
A.P1D.20240228T053000Z.aust.chl_gsm.n	
A.P1D.20240228T053000Z.aust.chl_oc3.nc	
A.P1D.20240228T053000Z.aust.chl_oci.nc	
A.P1D.20240228T053000Z.aust.dt.nc	
A.P1D.20240228T053000Z.aust.ipar.nc	
A.P1D.20240228T053000Z.aust.I2_flags.nc	
A.P1D.20240228T053000Z.aust.nanop_bre	win2012in.nc
A.P1D.20240228T053000Z.aust.npp_vgpm	_eppley_gsm.nc
A.P1D.20240228T053000Z.aust.npp_vgpm	_eppley_oc3.nc
A.P1D.20240228T053000Z.aust.par.nc	
A.P1D.20240228T053000Z.aust.picop_brev	vin2012in.nc
A.P1D.20240228T053000Z.aust.sst.nc	
A.P1D.20240228T053000Z.aust.sst_quality	nc
A.P1D.20240229T053000Z.aust.K_490.nc	
A.P1D.20240229T053000Z.aust.chl_gsm.n	
A.P1D.20240229T053000Z.aust.chl_oc3.nc	
A.P1D.202402291053000Z.aust.chl_oci.nc	
A.P1D.202402291053000Z.aust.dt.nc	
A.P1D.202402291053000Z.aust.ipar.nc	
A.PTD.202402291053000Z.aust.12_flags.nc	: 2012:
A.PTD.202402291053000Z.aust.nanop_bre	win2012in.nc
A.PTD.202402291033000Z.aust.npp_Vgpm	_eppiey_gsm.nc
A.PTD.202402291033000Z.aust.npp_vgpm	_eppley_ocs.nc
A.PTD.202402291055000Z.aust.pdf.nc A.D1D.20240220T052000Z.aust.picon.bro	in2012in nc
A PID 2024022910350002.aust.picop_brev	vinzo izinine
	PC .
No subsets found	inc.
IMOS/SRS/OC/gridded/agua/P1D/2024/03	
IMOS/SRS/OC/gridded/contributed	

**11.** For each of the srs products imported, we need to ensure they all have the same colour pallet. In this example, we are using OCCAM selected in the WMS tab of THREDDS Explorer.

WMS WCS			
chl_oc3			•
boxfill		am	•
Time range to download:			
2024-02-29T05:30:00.000Z			-
2024-02-29T05:30:00.000Z			•
CRS = CRS:84 Bounding Box information (deci	mal degrees):		
	10.0		
80.0		180.0	
	-60.0		
	Show map in v	iew	
(	Show animation me	enu >>	

**11.** If imported correctly, the output will be similar to this:



Please note that the resolution is scalable for smaller maps.

#### FOR MORE RESOURCES

For more Ocean Information Resources, visit **<u>bit.ly/3U0yblZ</u>** 

#### **CONTACT US**

For more information, please email **info@aodn.org.au** 





**PRINCIPAL PARTICIPANTS** 



SARDI

RESEARCI DEVELOP



STERN



as Lead Agent. www.imos.org.au





Australia's Integrated Marine Observing System (IMOS) is enabled by the National

Collaborative Research Infrastructure Strategy (NCRIS). It is operated by a consortium

of institutions as an unincorporated joint venture, with the University of Tasmania





**⊘UTS** MACQUARIE SYDNEY

SIMS is a partnership involving four universities.

#### **ASSOCIATE PARTICIPANTS**

Government of South Australia



Ims

stitute

IMOS thanks the many other organisations who partner with us, providing co-investment, funding and operational support, including investment from the Tasmanian, Western Australian and Queensland State Governments.

IMOS acknowledges the Traditional Custodians and Elders of the land and sea on which we work and observe and recognise their unique connection to land and sea. We pay our respects to Aboriginal and Torres Strait Islander peoples past and present.