OCEAN INFORMATION RESOURCES



ACCESSING IMOS AUSTRALIAN OCEAN DATA NETWORK SEA SURFACE TEMPERATURE AND VELOCITY DATA USING QGIS

In this guide, we demonstrate how to use QGIS to access two IMOS gridded data products from the AODN using a THREDDS plugin. The two datasets are 'Satellite Remote Sensing: Sea Surface Temperature 6 Day' and 'OceanCurrent Sea Surface Geostrophic Velocity'.

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'.

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- 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'.

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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'.

Q Available server settings >							
	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.

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hoose ar	n available	DataSet					
AIMS							-
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9. Select the IMOS dataset from the drop down menu.

REDDS Explorer - Connected: AODN THREDDS	Ø
Manage servers	
hoose 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 sea surface temperature data and geostrophic velocity vectors (current).

10. In the example below, we will add a Sea Surface Temperature (SST) layer onto the map. For the most recent dataset in the 'SubDatasets and Maps' section, navigate to >IMOS/SRS/ghrsst/.

There are several types of satellite data available:

L2P -> Single swath, geolocated L3U -> Single swath, gridded L3C -> Single sensor, multiple swath, gridded L3S -> Multiple sensors, multiple swath, L3SM -> Multiple sensor types, multiple swath L3SGM -> Multiple sensors, GeoPolar

In this example we will use the 'L3SM 6 day average' dataset in order to get the most coverage, as the cloud cover gaps have been removed through modelling from previous days.

For more information regarding IMOS SRS products, visit the catalogue here.

11. In the ghrsst folder, navigate to L3SM-6d, open the newest year and the latest dataset available to have the most up-to-date data. Once this is selected, the WMS tab of the THREDDS explorer will populate (shown over page).

EDDS Explorer - Connected: AODN THREDDS	C
Manage servers	
Choose an available DataSet	
IMOS	•
SubDatasets and Maps	-
20240122212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240123212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240124212000-ABOM-L3S GHRSST-SSTfnd-MultiSensor-6d dn.nc	
20240125212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240126212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240127212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240128212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240129212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240130212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240131212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240201212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240202212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240203212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240204212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240205212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240206212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240207212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240208212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240209212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240210212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240211212000-ABOM-L3S_GHRSST-SSTfnd-MultiSensor-6d_dn.nc	
20240212212000-ABOM-L3S_GHRSST-SS1fnd-MultiSensor-6d_dn.nc	
20240213212000-ABOM-L3S_GHRSS1-SS1fnd-MultiSensor-bd_dn.nc	-
20240214212000-ABOM-L35_GHR551-551fnd-MultiSensor-6d_dn.nc	
MOSUBSET Journa	
 IMOS/SRS/SST/ghrsst/L311 	
 IMOS/SRS/SST/ghrsst/L3U-S 	
IMOS/SRS/SST/ghrsst/L4	
IMOS/SRS/Surface-Waves	
MOS/eMII	*

12. Select 'sea_surface_temperature' as the dataset, and use the 'redblue' colour style to portray the surface temperature. Click 'Show map in view'.

WMS WCS		
sea_surface_temperature		•
boxfill	▼ redblue	•
Time range to download:		
2024-02-14T21:20:00.000Z		•
2024-02-14T21:20:00.000Z		*
CRS = CRS:84 Bounding Box information (decimal	degrees): 19.989999771118164	
-180.0		180.0
	-69.98999786376953	
	Show map in view	
	Show animation menu >>	

In this case we are focusing on Tasmanian waters and the layer should look similar to this:



13. We now want to overlay the current information using IMOS OceanCurrent calculations.

In the SubDatasets menu of the explorer, navigate to IMOS/OceanCurrent/GSLA/NRT and select the most recent year (in this case 2024), and select the newest dataset. This is crucial otherwise the layers wont match. Once selected, your WMS tab will populate with the options available.

- i. Select the 'surface_geostrophic_sea_water_velocity' as the data
- ii. Select 'Fancyvec' as the layer type
- iii. Select 'rainbow' as the style, which will show velocities in terms of colour

WMS WCS	
surface_geostrophic_sea_water_velocity	•
fancyvec 2 rainbow 3	•
Time range to download:	
2024-02-18T06:00:00.000Z	•
2024-02-18T06:00:00.000Z	•
CRS = CRS:84 Bounding Box information (decimal degrees):	
10.0	
-180.0 180.0	
-60.0	
Show map in view	
Show animation menu >>	
Layer 'surface_geostrophic_sea_water_velocity' [WMS]retrieved	

For more information regarding the IMOS OceanCurrent product visit the catalogue here.

You will receive and overlay something like this, showing surface currents overlaid on sea surface temperature:



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**





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

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SIMS is a partnership involving four universities.

ASSOCIATE PARTICIPANTS

Government of South Australia



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