



IMOS Integrated **Marine Observing** System



Extracting and sub-setting SRS datasets from the IMOS Ocean Portal

Satellite Oceanography Users Workshop – Melbourne (9–11/11/2015)

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1. IMOS



SARDI



SOUTH AUSTRALIAN RESEARCH AND DEVELOPMENT INSTITUTE

NCRIS

National Research Infrastructure for Australia

An Australian Government Initiative

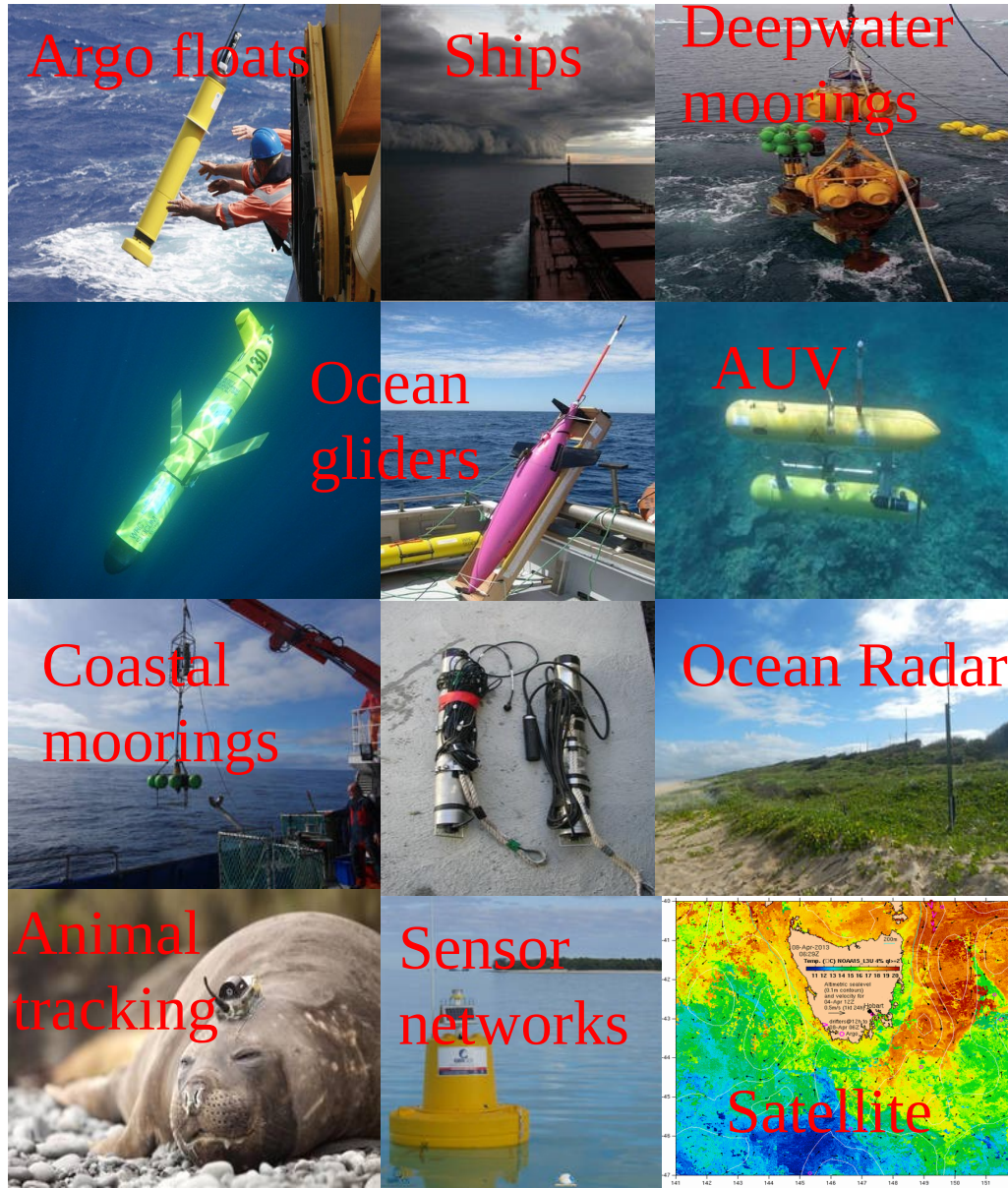
What is IMOS?

- IMOS is a
 - national
 - collaborative
 - research infrastructure
 - funded by Australian Government
- It provides the means for multiple institutions in Australia to undertake systematic and sustained observing of the marine environment
- Making all of the data openly available for research and other purposes



What is IMOS?

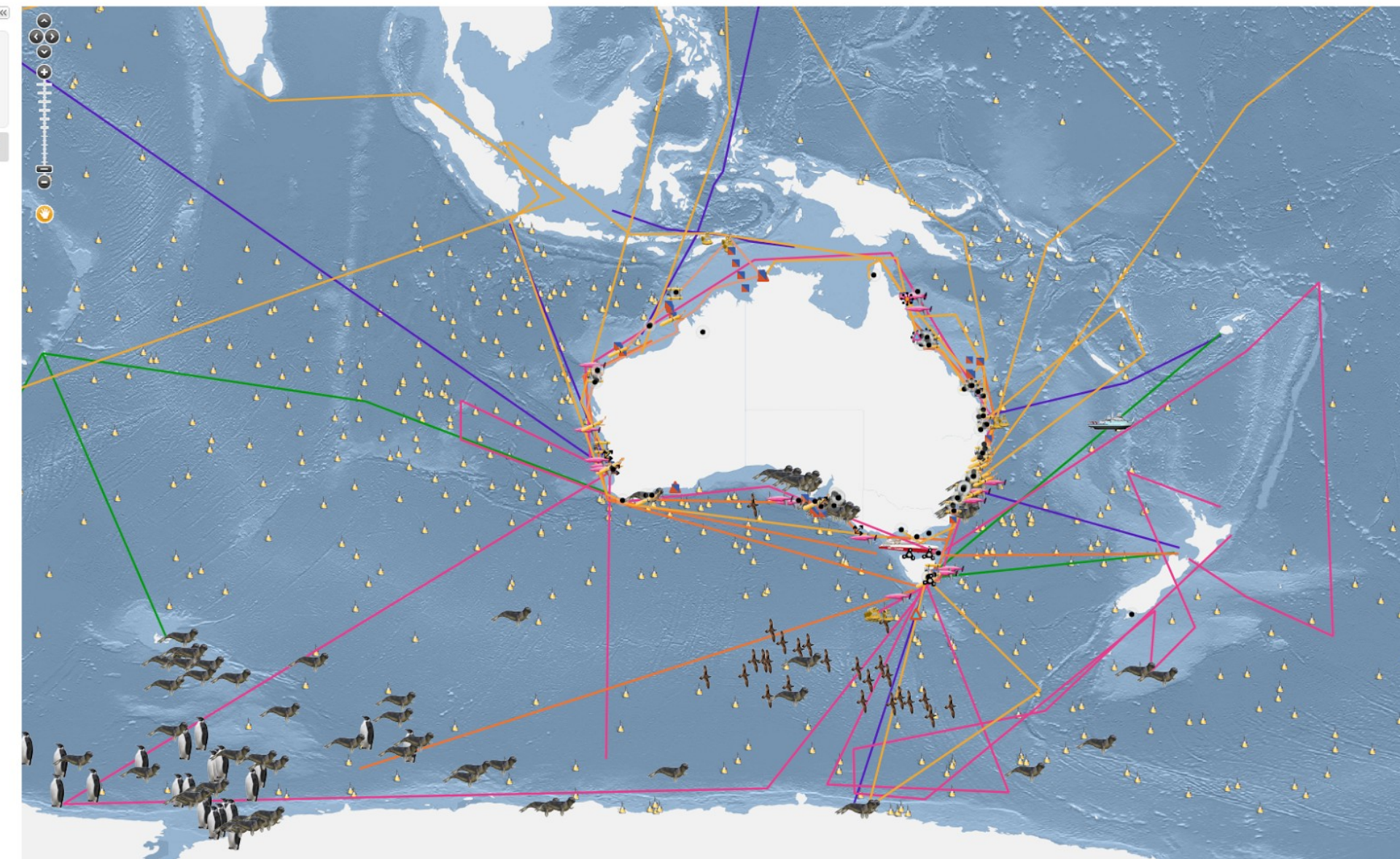
- observations undertaken by 10 platform-based Facilities



Open Access to Ocean Data

2 Create a Subset

3 Download





2. Data Access

How does IMOS work? – Data

- all data **free, discoverable, accessible, usable** and **reusable**

- THREDDS catalogue
<http://thredds.aodn.org.au/thredds/catalog.html>
- IMOS portal
<https://imos.aodn.org.au/imos123/>
- We've built an information infrastructure based around
 - Data Quality
 - Standards
 - Controlled Vocabularies
 - Services

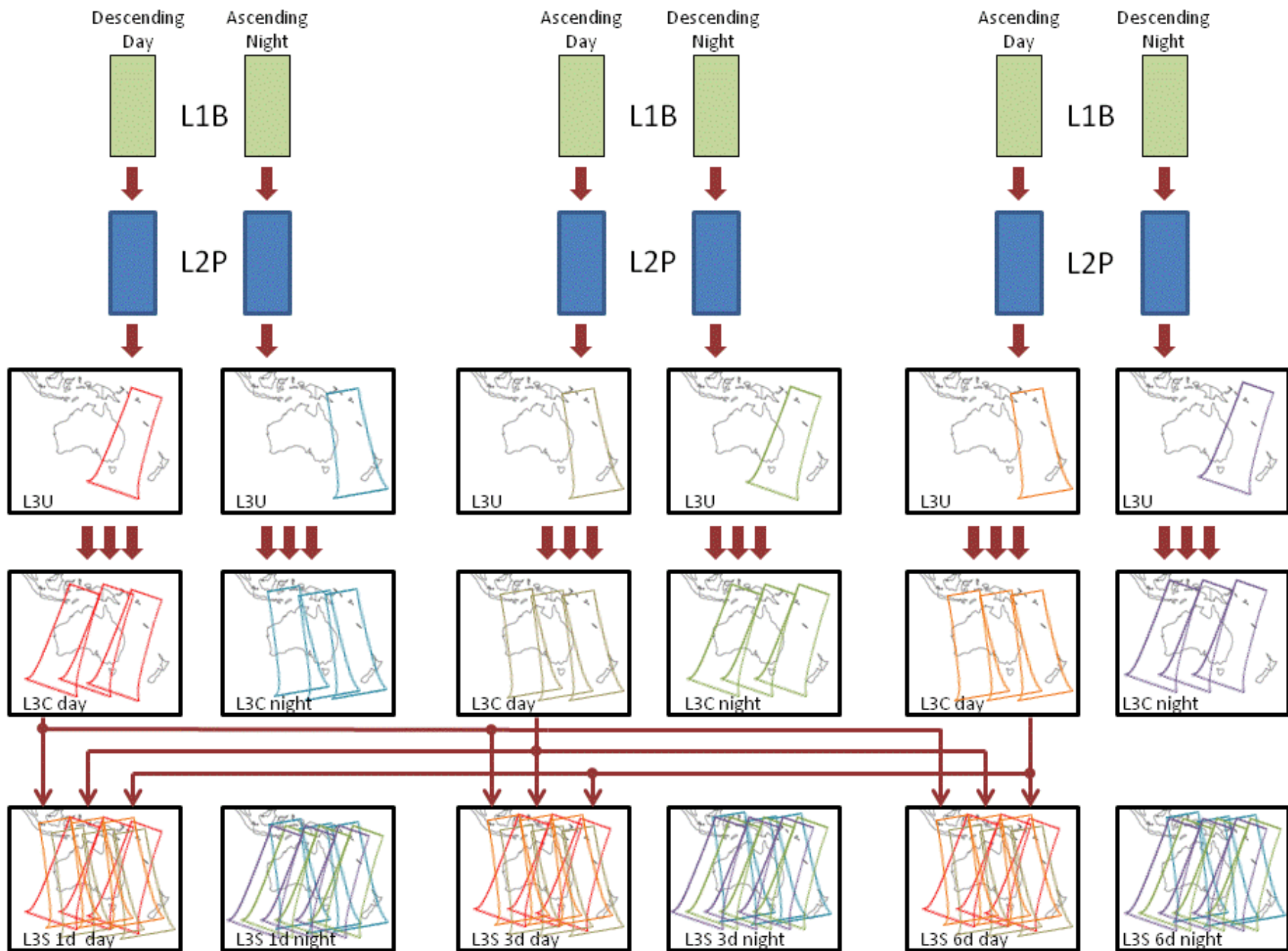
IMOS - SRS Gridded Data products

- Altimetry (CSIRO)
Gridded sea level anomaly (DM and NRT)
- Ocean Colour (Aqua - Seawifs)
CHL-A OC3&GSM, K490 ...
- SST (NOAA satellites – products created by BOM for the Australian and Southern Ocean region, tuned using in situ data)

NOAA-17

NOAA-18

NOAA-19



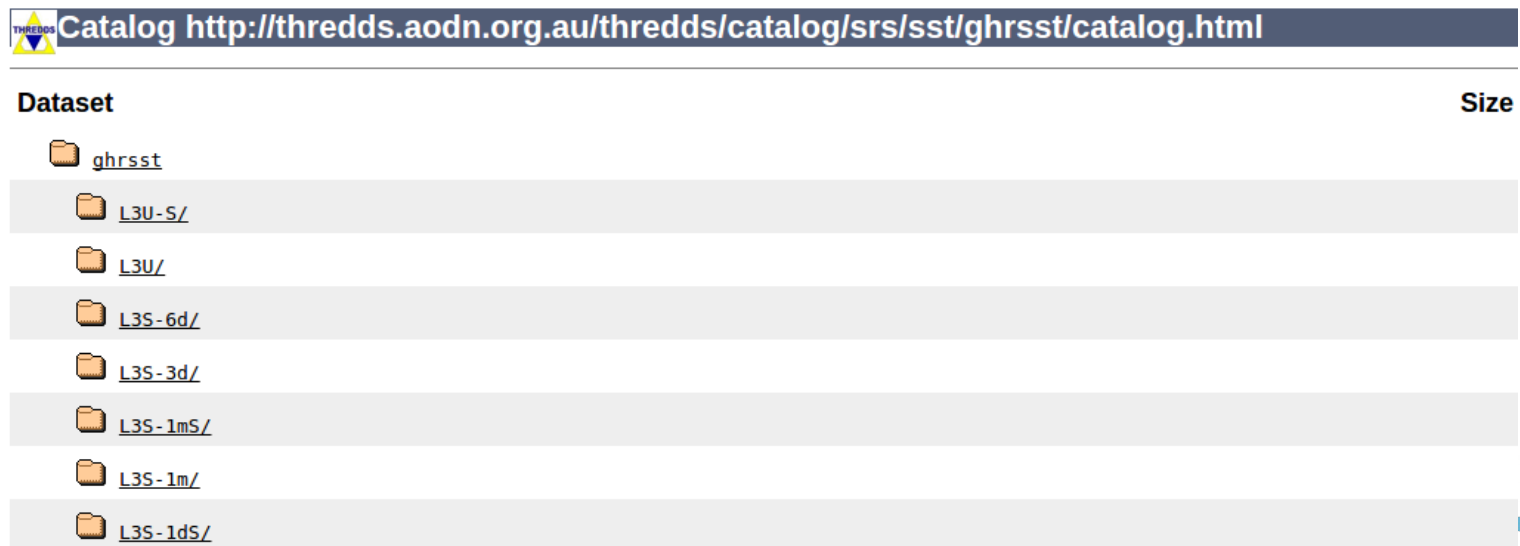
IMOS - SRS Gridded Data products – Access 1/2

- THREDDS - data catalogue

<http://thredds.aodn.org.au/thredds/catalog/srs/catalog.html>

simple as a filesystem, but also gives power users the capability to use **Matlab**, **R**, **Python** to retrieve data and automate their process

- <https://github.com/aodn/imos-user-code-library/wiki> for some R, Python, Matlab code examples
or “google” in your web browser **IMOS USER CODE LIBRARY**



The screenshot shows a web browser window with the address bar containing the URL: <http://thredds.aodn.org.au/thredds/catalog/srs/sst/ghrsst/catalog.html>. The page displays a table of datasets with two columns: 'Dataset' and 'Size'. The 'Dataset' column lists several folders, each preceded by a folder icon. The 'Size' column is currently empty.

Dataset	Size
ghrsst	
L3U-S/	
L3U/	
L3S-6d/	
L3S-3d/	
L3S-1mS/	
L3S-1m/	
L3S-1dS/	

IMOS - SRS Gridded Data products – Access 2/2

- IMOS portal <https://imos.aodn.org.au/imos123/>
 - ➔ Discover data products via Metadata
 - ➔ Visualise & Geographical and Temporal Subset
 - ➔ Download it !

1 Select a Data Collection

2 Create a Subset

3 Download

Step 1: Select a Data Collection

[New Search](#)

Parameter

- Biological (12)
- Physical-Water (12)

Organisation

Platform

- Satellite
 - orbiting satellite
 - Aqua (11)
 - NOAA-19 (9)
 - NOAA-18 (6)
 - NOAA-17 (6)
 - OrbView-2 (2)

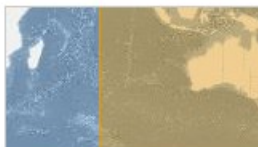
Date (UTC)



Geographic Boundary

Keyword

IMOS - SRS SATELLITE - OC MODIS - 01 day - Chlorophyll a concentration algorithm (GSM)

Select >>








 Chlorophyll [more](#) 
 Integrated Marine Observing System (IMOS), CSIRO Oceans & Atmosphere - Hobart
 Satellite
 2002 - 2015

SRS Satellite Contributed Ocean Colour - SeaWiFS Chlorophyll Concentration in the Southern Ocean: Weekly, Johnson et al 2013

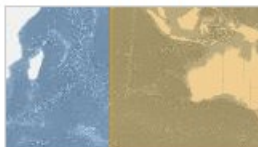
Select >>








 Chlorophyll [more](#) 
 Institute for Marine and Antarctic Studies (IMAS), University of Tasmania (UTAS), Bureau of Meteorology (BOM), CSIRO Oceans & Atmosphere - Hobart
 Satellite
 1997 - 2015

IMOS - SRS SATELLITE - OC MODIS - 01 day - Ocean Colour - SST

Select >>




 Temperature [more](#) 
 Integrated Marine Observing System (IMOS), CSIRO Oceans & Atmosphere - Hobart
 Satellite
 2002 - 2015

IMOS - SRS SATELLITE - OC MODIS - 01 DAY - CHLOROPHYLL A CONCENTRATION (OC3 - NPP) Nanoplankton: BREWIN ET AL 2012

Select >>



 Chlorophyll [more](#) 

1 Select a Data Collection

2 Create a Subset

3 Download

Step 2: Create a Subset

Spatial Subset

Bounding Box



W

enter

E

enter

Reset

S

enter

N

enter

IMOS - SRS SATELLITE - SST L3S - 03 day composite - ~~x~~
day time

Subset

Info

Layer

Temporal Extent

From 1992/03/20 03:20 UTC

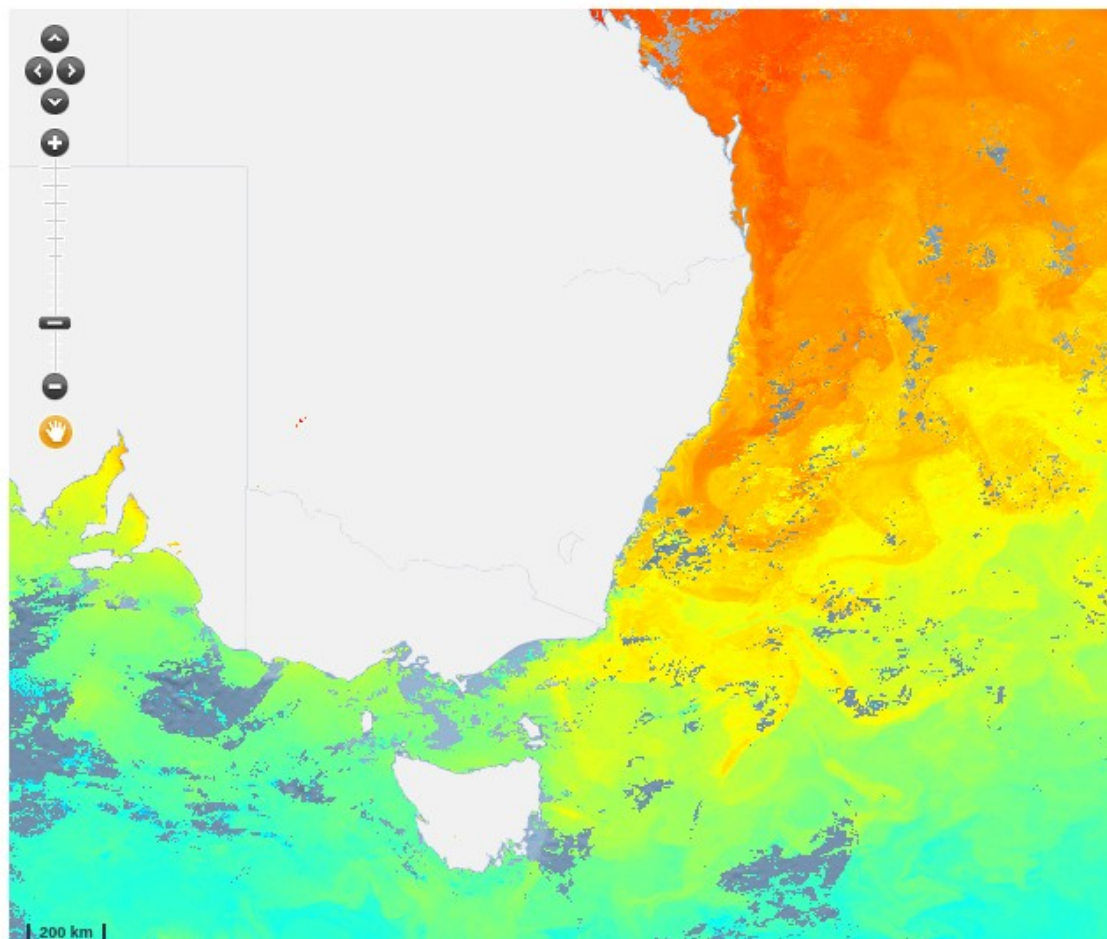
To 2015/10/31 03:20 UTC

Move Time on Map



Displaying: 2015-10-31 03:20:00:000 UTC

Clear Subset





Aggregation Status

Job Id:

24e25eac

Submitted:

Nov 5, 2015 12:08:48 PM

Status:

In Progress

If you've found this information useful, see something wrong, or have a suggestion, please let us know. All feedback is very welcome. For help and information about this site please contact info@emii.org.au

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Aggregation Status

Job Id:

24e25eac

Submitted:

Nov 5, 2015 12:08:48 PM

Status:

Succeeded

Download URL:

<https://gogoduck.aodn.org.au/gogoduck/aggr/24e25eac>

Report:

```
Aggregation will use only the following variables for srs: 'time,lat,lon,dt_analysis,l2p_flags,quality_level,satellite_zenith_angle,sea_surface
_temperature,sses_bias,sses_count,sses_standard_deviation,sst_dtime,wind_speed,wind_speed_dtime_from_sst', any other variable will be omitted!!
Applying subset 'TIME,2015-10-16T03:20:00.000Z,2015-10-31T03:20:00.000999Z;LATITUDE,-90.0,90.0;LONGITUDE,-180.0,180.0'
Processing file '20151025032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Processing file '20151027032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Processing file '20151024032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Processing file '20151029032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Processing file '20151019032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Processing file '20151031032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Processing file '20151028032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Processing file '20151018032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Processing file '20151026032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Processing file '20151030032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Processing file '20151023032000-ABOM-L3S_GHRSSST-SSTskin-AVHRR_D-3d_day-v02.0-fv01.0.nc'
Your aggregation was successful!
```



Go-Go-Duck - subsetting and aggregating gridded netCDF files - Behind the scene

Go-Go-Duck is a Hack !

The aggregation is done in 3 phases

- 1) Get all the relevant NetCDF files (by timestamp, data product) from **Geoserver WFS**
- 2) Geographical subset with **NCKS**
- 3) Concatenate sub-setted files with **NCRCAT**

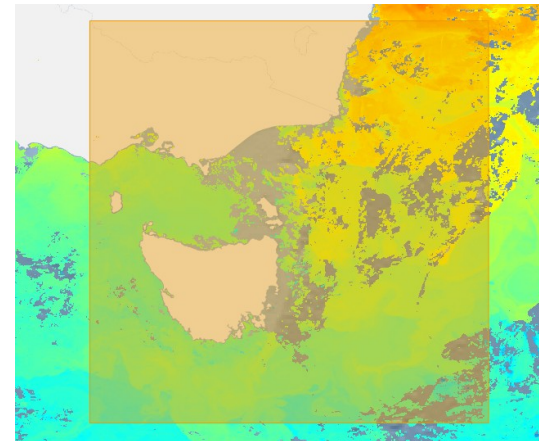
Implemented in Java as a Geoserver WPS module, which means it will be able to interact with it as a regular Geoserver service

Go-Go-Duck - subsetting and aggregating gridded netCDF files

How much time does it take to get an aggregated NetCDF file ?

Example:

- **Product** : L3S - 03 day composite - day time
- **Spatial Subset**: Tasmania and SE NSW
144.283W -45.792S 153.995E -35.992N
- **Temporal Extent**: Fortnight



=> Email sent in less than a minute, filesize ~ 65MB

If no spatial subset was set, that's a different story

Conclusion

- IMOS provides **FREE** data from a wide range of instruments, inc. SRS gridded products such as SST, OC, Altimetry
- Focus only on data tweaked with algorithm for the Australian region. Not a copy of PO-DAAC

What about non power users?

- What are the best products we can provide for OC and SST?
L?S L?C , skin, subskin, foundation, GMS, OC3
- Small number of products on the data portal, and many more on THREDDS ?
- Offer more online tools : CSV timeseries at one point ?
- Better help support ?

<https://imos.aodn.org.au/>

<http://thredds.aodn.org.au>

<https://github.com/aodn/imos-user-code-library/wiki>





An Australian Government Initiative
National Collaborative Research
Infrastructure Strategy

IMOS is a national collaborative research infrastructure, supported by Australian Government. It is led by University of Tasmania in partnership with the Australian marine & climate science community.

www.imos.org.au



The Operators of the IMOS infrastructure are:



Text: Tim Moltmann, Shavawn Donoghue, and Jess Tyler, IMOS, University of Tasmania, Hobart, Tasmania.

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