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Metadata in Satellite Ocean Products

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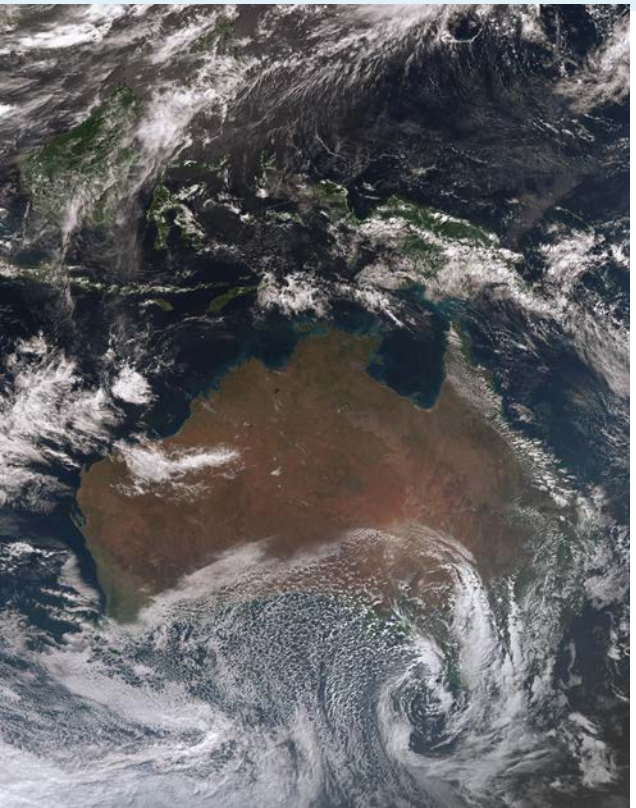

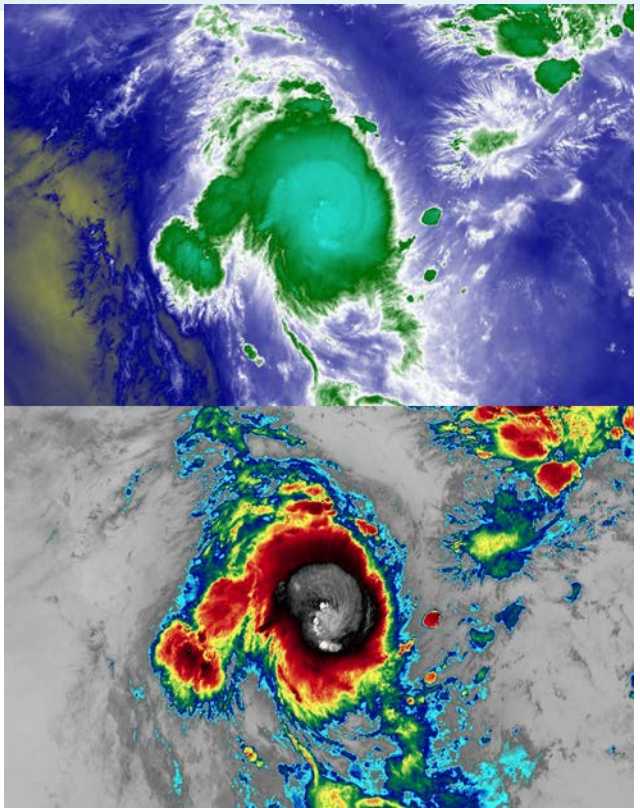

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Metadata

- Discovery, Access and Retrieval
  - Where and when it was observed
- Traceability & Reproducibility
  - Inputs, software used in product generation
  - Sampling features
- Machine to machine transactions
  - Enable automated access and assimilation
- Managing access/usage rights

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Metadata Standards

- To extract most value providers need to adhere to standards
  - Climate and Forecast (CF)
  - Unidata Attribute Convention for Data Discovery (ACDD)
  - ISO 19115 Geographic Metadata
  - ISO 19156 Geographic Information: Observations & Measurements
- Which one should I provide?
  - Does it cover all my needs?
  - Does it cover all my communities' needs?

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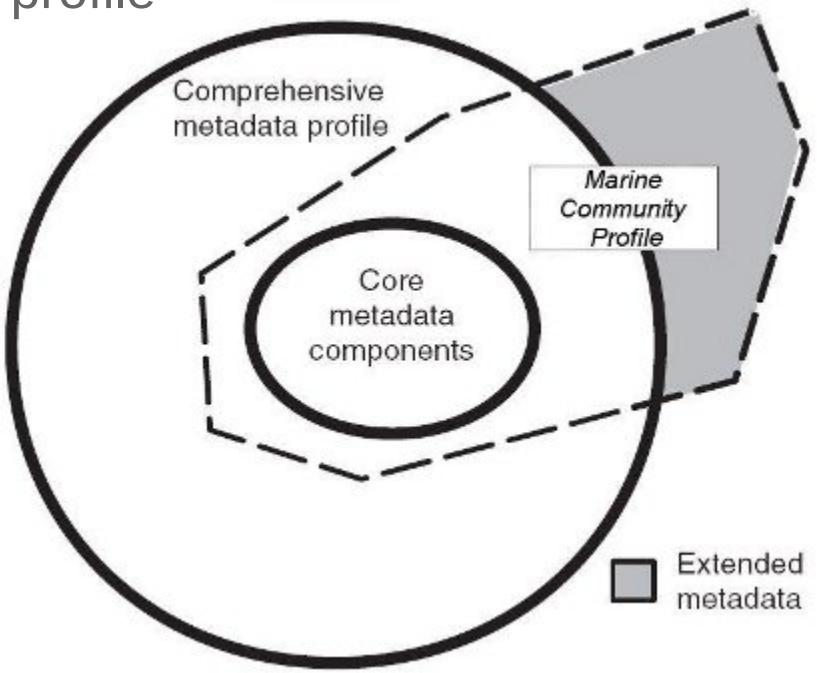
Metadata Profiles

- It's not just standards, but profiles (implementations)
  - Anyone can create a profile…
  - …but, it's better to use an existing profile
- Profiles
  - Marine Community Profile (MCP)
  - GHRSST
  - INSPIRE
  - WMO WIGOS
- Crosswalks between standards (and profiles?)



http://emii3-vm4.its.utas.edu.au/redmine/projects/mcp/wiki/Marine_Community_Profile

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Crosswalk: CF to ISO 19115

http://www.unidata.ucar.edu/software/thredds/current/tds/

Catalog http://dapds00.nci.org.au/thredds/catalog/rr5/satellite/obs/himawari8/FLDK/2015/11/06/0000/catalog.xml

Dataset: 0000/20151106000000-P1S-ABOM_BRF_B01-PRJ_GEOS141_1000-HIMAWARI8-AHI.nc

- *Data size:* 62.62 Mbyte
- *Data type:* GRID
- *ID:* rr5/satellite/obs/him

Documentation:

- **access rights:** Register
- **summary:** Bureau of M

Access:

1. OPENDAP: http://dapds
2. HTTPServer: http://da
3. WMS: http://dapds00.n
4. WCS: http://dapds00.n
5. NetcdfSubset: http://da
6. NCML: http://dapds00.
7. UDDC: http://dapds00.
8. ISO: http://dapds00.nci

Dates:

- 2015-11-07T11:17:39Z (

```
− <gmi:MI_Metadata xsi:schemaLocation="http://www.isotc211.org/2005/gmi http://www.ngdc.noaa.gov/metadata/published/xsd/schema.xsd">
  − <gmd:fileIdentifier>
    − <gco:CharacterString>
        rr5/satellite/obs/himawari8/FLDK/2015/11/06/1000/20151106100000-P1S-ABOM_BRF_B06-PRJ_GEOS141_2000-HIMAWARI8-AHI.nc
      </gco:CharacterString>
    </gmd:fileIdentifier>
  − <gmd:language>
      <gmd:LanguageCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#LanguageCode" codeListValue="
    </gmd:language>
  − <gmd:characterSet>
      <gmd:MD_CharacterSetCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD_CharacterSetCode"
      codeListValue="UTF8">UTF8</gmd:MD_CharacterSetCode>
    </gmd:characterSet>
  − <gmd:hierarchyLevel>
      <gmd:MD_ScopeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
      codeListValue="dataset">dataset</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  − <gmd:hierarchyLevel>
      <gmd:MD_ScopeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
      codeListValue="service">service</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  + <gmd:contact></gmd:contact>
  − <gmd:dateStamp>
      <gco:Date>2015-11-08</gco:Date>
    </gmd:dateStamp>
  − <gmd:metadataStandardName>
    − <gco:CharacterString>
        ISO 19115-2 Geographic Information - Metadata Part 2 Extensions for imagery and gridded data
      </gco:CharacterString>
    </gmd:metadataStandardName>
  − <gmd:metadataStandardVersion>
```

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Verification Tools: THREDDS

http://www.unidata.ucar.edu/software/thredds/current/tds/

Catalog http://dapds00.nci.org.au/thredds/catalog/rr5/satellite/obs/himawari8/FLDK/2015/11/06/0000/catalog.xml

Dataset: 0000/20151106000000-P1S-ABOM_BRF_B01-PRJ_GEOS141_1000-HIMAWARI8-AHI.nc

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- *Data type:* GRID
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4. **WCS:** http://dapds
5. **NetcdfSubset:** htt
6. **NCML:** http://dapd
7. **UDDC:** http://dapd
8. **ISO:** http://dapds0

Dates:

- 2015-11-07T11:17:

Title: AGLS observations product suite

Total Score: 43/46

General File Characteristics

Number of Global Attribu
Number of Variables
Number of Variable Attrib
Number of Standard Nam
Number of Services
Time Variable

Spiral
Total
Identification
Text Search
Extent Search
Other Extent Information
Creator Search
Contributor Search
Publisher Search
Other Attributes

Identification | Text Search

Text Search Score: 6/7

Text searches are a very important mechanism for data discovery. This group includes attributes that contain descriptive text that could be the target of these searches. Some of these attributes, for example title and summary, might also be displayed in the results of text searches.

Score	Attribute	Description	THREDDS	ISO 19115-2
1	title	A short description of the dataset.	dataset@name	/gmi:MI_Metadata/gmd:identificationInfo /gmd:MD_DataIdentification/gmd:citation/gmd:CI_Citation/gmd:title /gco:CharacterString
1	summary	A paragraph describing the dataset.	metadata/documentation[@type="summary"]	/gmi:MI_Metadata/gmd:identificationInfo /gmd:MD_DataIdentification/gmd:abstract/gco:CharacterString
1	keywords	A comma separated list of key words and phrases.	metadata/keyword	/gmi:MI_Metadata/gmd:identificationInfo /gmd:MD_DataIdentification/gmd:descriptiveKeywords /gmd:MD_Keywords/gmd:keyword/gco:CharacterString
1	keywords_vocabulary	If you are following a guideline for the words/phrases in your "keywords" attribute, put the name of that guideline here.	metadata/keyword@vocabulary	/gmi:MI_Metadata/gmd:identificationInfo /gmd:MD_DataIdentification/gmd:descriptiveKeywords /gmd:MD_Keywords/gmd:thesaurusName/gmd:CI_Citation/gmd:title /gco:CharacterString
1	standard_name_vocabulary	The name of the controlled vocabulary from which variable standard names are taken.	metadata/variables@vocabulary	/gmi:MI_Metadata/gmd:identificationInfo /gmd:MD_DataIdentification/gmd:descriptiveKeywords /gmd:MD_Keywords/gmd:thesaurusName/gmd:CI_Citation/gmd:title /gco:CharacterString
0	history	Provides an audit trail for modifications to the original data.		/gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality /gmd:lineage/gmd:LI_Lineage/gmd:statement/gco:CharacterString
1	comment	Miscellaneous information about the data.	metadata/documentation	/gmi:MI_Metadata/gmd:identificationInfo /gmd:MD_DataIdentification/gmd:supplementalInformation

Identification | Text Search | Extent Search | Other Extent Information | Creator Search | Contributor Search | Publisher Search | Other Attributes

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Verification Tools: PODAAC

http://podaac-uat.jpl.nasa.gov/mcc/

Results for 20151106100000-P1S-ABOM_BRF_B06-PRJ_GEOS141_2000-HIMAWARI8-AHI.nc

md5 d990de25446b32cc94ba9cd1e60e0885 6.17 MB NETCDF4_CLASSIC

CF Check 64 out of 69 passed

Compliance Checker 64 out of 69 pa

Variable names all 6 passed

all_features_are_same_type all 0 passed

axis all 7 passed

time all 3 passed

consistent_with_coord_type all 1 passed

is_coordinate_var all 1 passed

valid_value all 1 passed

ACDD Check 64 out of 92 passed

Global Attributes 43 out of 50 passed

Highly Recommended 3 out of 4 passed

keywords 1 out of 2 passed

✗ check for a comma separated value failed becau

- **Value:** EARTH SCIENCE

✓ check for existence passed because "keywords"

- **Description:** A comma separated list of key words and ph
- **Value:** EARTH SCIENCE

✓ check for existence passed because "title" exists

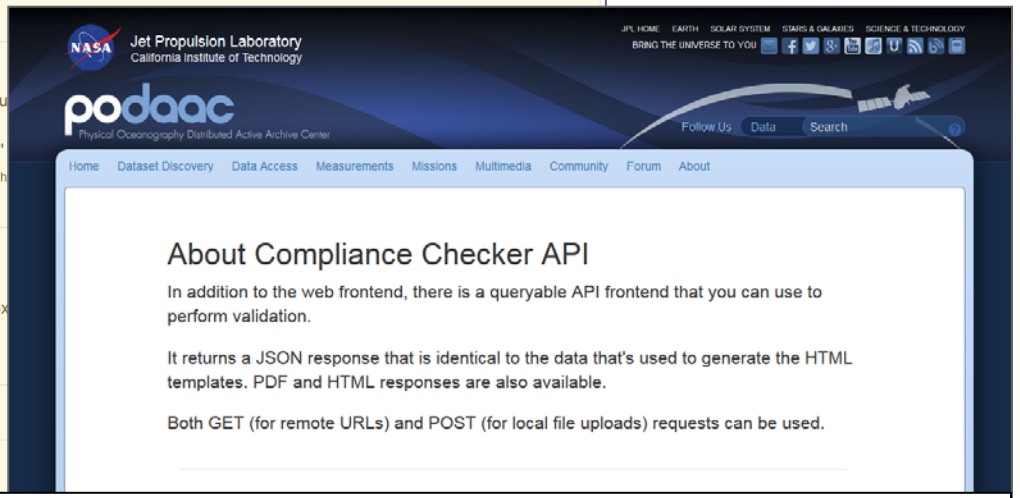
- **Description:** A short description of the dataset.
- **Value:** AGLS observations product suite

✓ check for existence passed because "summary" ex

- **Description:** A paragraph describing the dataset
- **Value:** AGLS observations product suite

Recommended 28 out of 32 passed

Suggested 12 out of 14 passed




```
curl -F CF=on \
-F file-upload=@20151106100000-P1S-ABOM_BRF_B02-PRJ_GEOS141_2000-HIMAWARI8-AHI.nc \
-F response=json http://podaac-uat.jpl.nasa.gov/mcc/check
```

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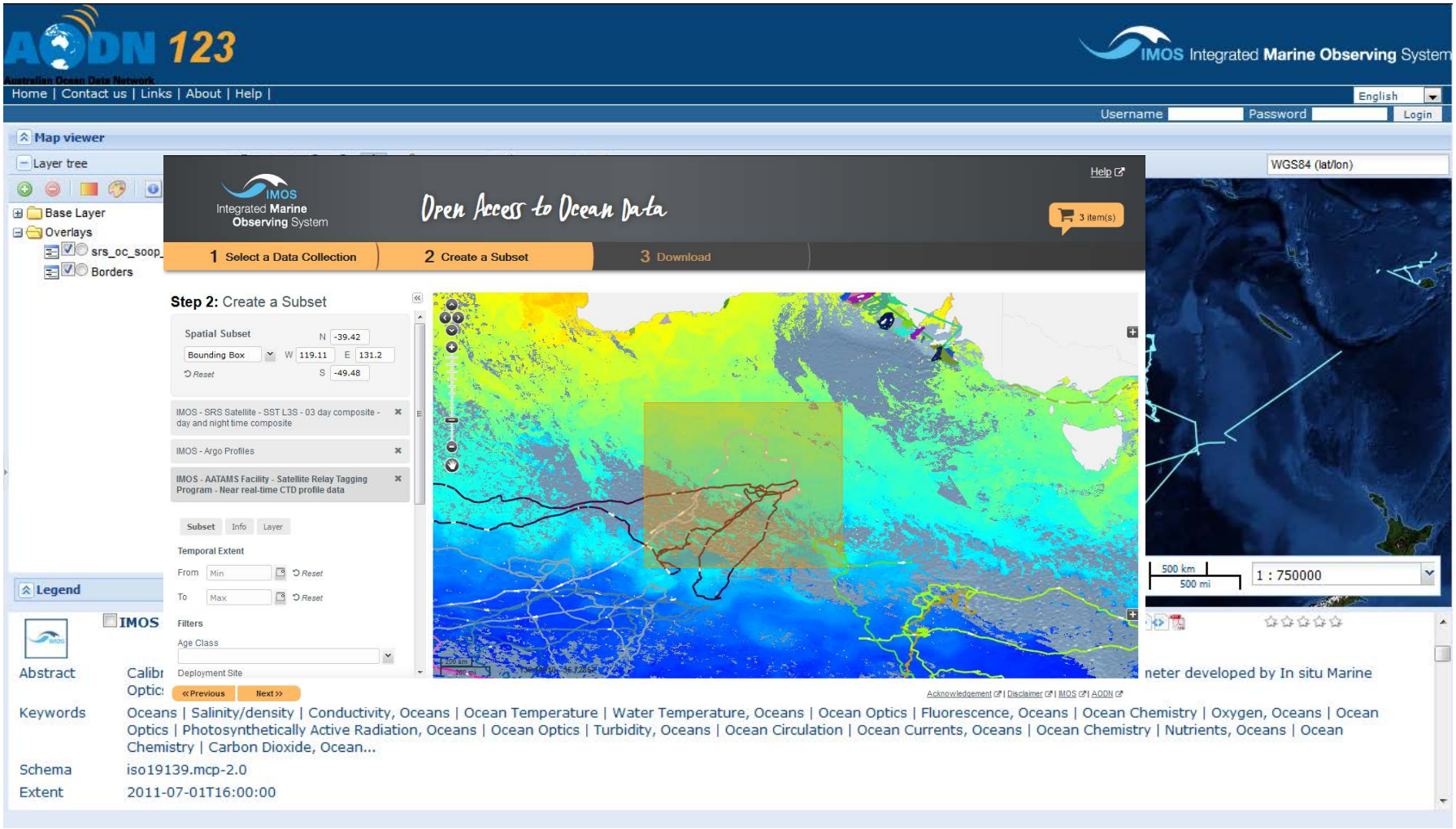
Metadata Catalogues



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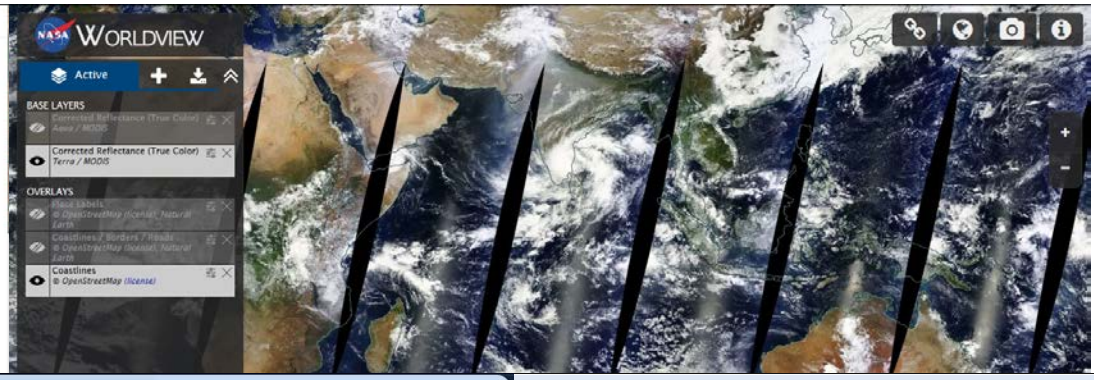
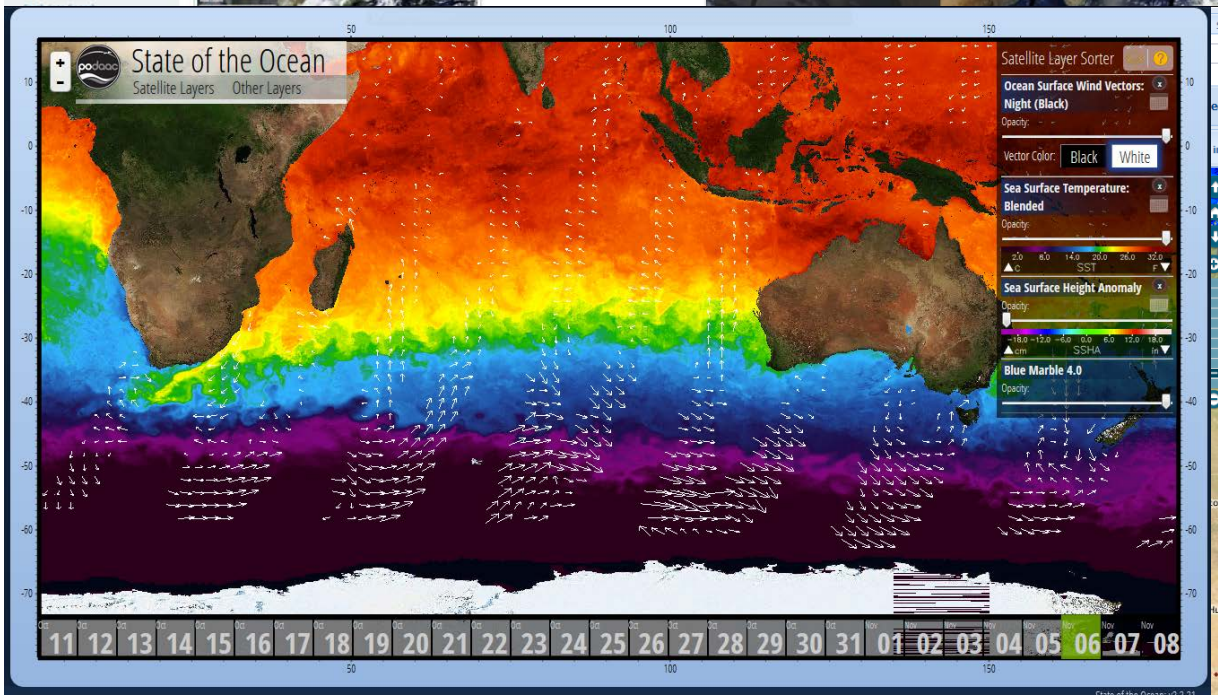
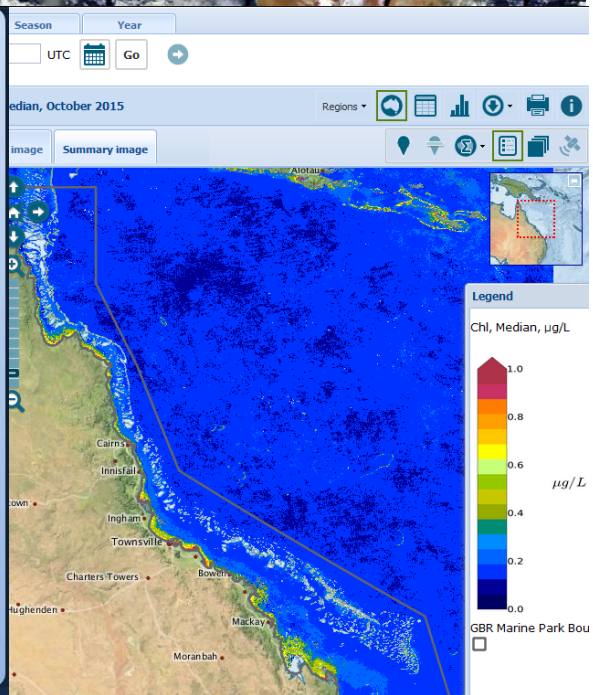
Web Services and APIs







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Increasing Importance

- Incorporate metadata into your research plan
  - Researchers are subject to ever greater scrutiny
  - Need to be transparent about the data you use
  - Desire reproducibility
- Funding models may be tied to use/uptake
  - Make it easy for people to find and use
- Data systems are becoming more interconnected
  - Catalogue of searchable catalogues
  - Making it easier to get what you need

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Thanks. Questions or comments

Contact: Leon.Majewski@bom.gov.au