

Outcomes of the Marine and Climate Data Discovery and Access Project (MACDDAP)

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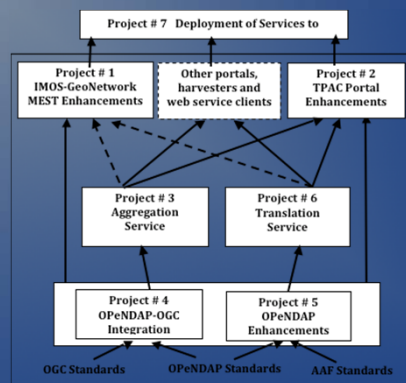
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Project objective: Integrate large marine and climate
data sets, and deliver them through a wide range of
data streams – thus engaging a broad community.

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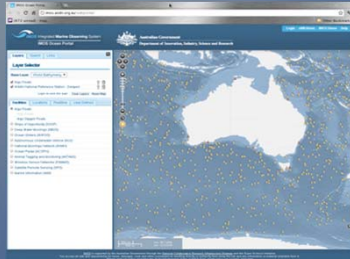
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Sub-project #1: IMOS-GeoNetwork MEST

This sub-project comprised a number of enhancements to the Geonetwork geo-spatial catalog used by IMOS and the AODN to catalog geographic datasets and services. In particular, enhancements to:

- (1) Streamline cataloging of datasets and services made available by Thredds, OGC Web Feature Services and OGC Sensor Observation Services
- (2) Improve searching against these catalogs by including searching via data parameters and hardening programmatic searching using the OGC Catalogue Services for the Web interface.

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The IMOS web portal and the IMOS-Geonetwork MEST are publicly accessible via the following URLs:

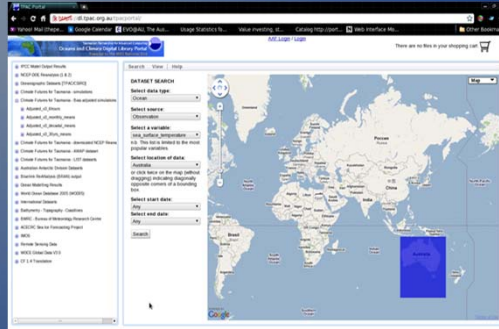
- IMOS Web Portal: <http://imos.aodn.org.au/webportal>
- IMOS-GeoNetwork MEST: <http://imosmest.aodn.org.au/geonetwork/srv/en/main.home>

The streamlined cataloguing of THREDDS, OGC WFS and OGC SOS services by the GeoNetwork MEST has led to improved data availability within the IMOS and AODN portals.

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- (1) Geospatial and temporal search capability for the TPAC portal.
- (2) Upgraded harvesting and database design.
- (3) Redeveloped Spring/GWT based web application that includes an improved user interface, and the ability to search across categories.
- (4) Meta data access and notification service.
- (5) User registration interface.
- (6) Administrator's monitoring and notification service.

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- The TPAC Digital Library Portal: <https://dl.tpac.org.au>
- TPAC Digital Library sourceforge code: <http://sourceforge.net/projects/tpac-dip>

Large, previously unmanageable, datasets are now easily accessible and usable within the TPAC digital library portal. Examples include Argo, WOCE and MODIS satellite images.

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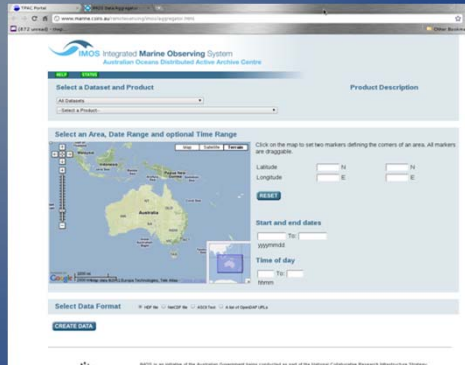
Sub-project #3: Aggregation Services

The two major deliverables for this sub-project are:

- (1) the aggregator itself.
- (2) the aggregation harvester.

The Aggregator includes polygon matching, visualisation capabilities, enhanced unit and metadata management and single file update.

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The aggregator is publicly accessible via the following URL:
<http://www.marine.csiro.au/remotesensing/imos/aggregator.html>

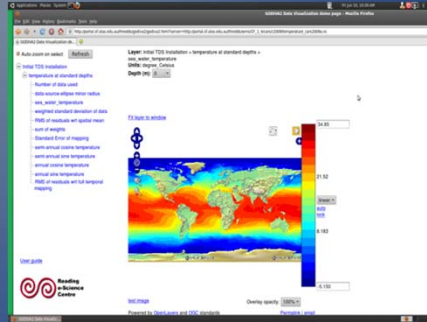
The usability of marine and terrestrial satellite data has been improved through the AO-DAAC aggregation service, which can aggregate data subsets (that match OPeNDAP constraint URLs) into a single output file with a common set of axes.

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Sub-project #4: OPeNDAP Integration

The deliverable for this sub-project is the THREDDS DATA SERVER Version 4.0 (TDS4.0) which is an OPeNDAP-based data server with OGC-based Web Map Service (WMS) facilities built in.

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An example of THREDDS supporting ncWMS is accessible via the following URL: <http://portal.sf.utas.edu.au/thredds>

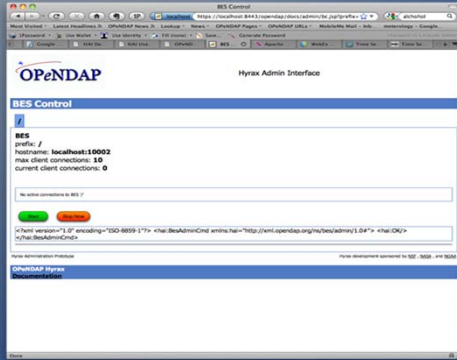
The THREDDS WMS capability has made gridded datasets, with an identifiable coordinate system, available to any WMS client.

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Subproject #5: OPeNDAP Enhancements

The deliverables for this sub-project are enhancements to the OPeNDAP-based HYRAX data server to equip it with AAF-based security facilities, including single sign-on user security for distributed data sets and trusted web service communications. The Hyrax and THREDDS data servers work with the AAF authentication and ARCS certificate-based authentication methods, and have been tested internally at the Bureau of Meteorology.

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1. NMOC forecast and analysis products (latest two weeks)
2. global, regional, city atmospheric prediction products
3. ocean prediction products
4. wave prediction products;
5. multiple years of ocean model analysis and observation assimilation analysis;
6. multiple years of high & low resolution SST satellite products (L2P, L3, L4);
7. new TERN satellite products coming;
8. seasonal forecast products,
9. Tsunami scenario database for inundation modelling.

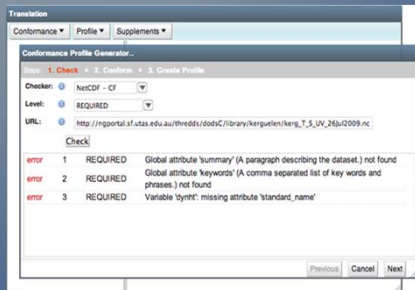
Datasets that were not previously accessible will now be available through the hyrax enhancements and the TPAC portal metadata access service.

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Sub-project #6: Translation Services

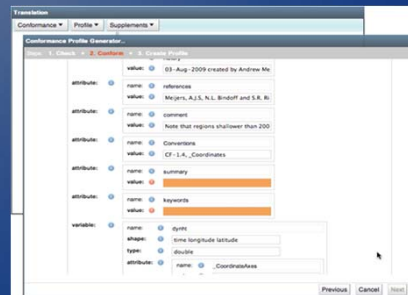
The deliverables: publicly accessible system that enables people to create profiles to conform their THREDDS data to some agreed standard (e.g. Climate and Forecast (CF) Metadata Conventions version 1.5).

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The translator:

1. Analyses THREDDS catalogs
2. Suggests additional changes based on a selected level of conformance
3. Executes in the background, and can send notification (via e-mail) when completed – some translations can take a very long time to complete
4. Allows translated data sets to be downloaded sometime later



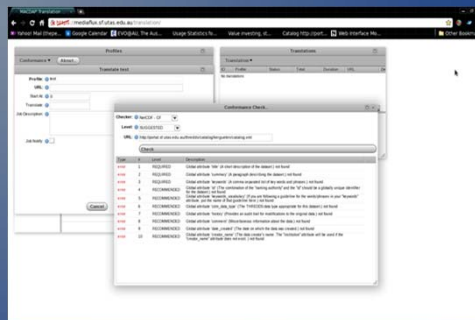
Available at:

<https://mediaflux.sf.utas.edu.au/translation/>

Support queries:

jason.lohrey@arcitecta.com

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Non-conforming datasets can now be translated to community standards through the translation services. This means, for example, that previously non-conforming data can be made accessible through technologies such as the WMS capability in THREDDS. TPAC has already translated (and re-published) the following datasets: cars2009, Kerguelen GEM, AWAP Australia, auscom. Next to be translated will be: cars2006, AWAP, argo, cmap, aspect, ace crc mooring and ctd. The translation services will also be made available (via the web) to the wider community, which has the potential to benefit other data management groups (and their customers) such as IMOS, BoM, TERN, and many others.

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Conclusion

The MACDDAP project uses international and national data standards, including the OPeNDAP standard protocol for scientific data exchange, the OGC standards for geo-spatial data exchange and the AAF national security standards for single sign-on across federated databases, to support the creation of aggregation and translation web services, which have been made available to marine and climate researchers via the IMOS GeoNetwork MEST, the TPAC Digital Library Portal and other portals.

The ultimate desired outcome for the MACDDAP project is that marine and climate data throughout Australia is more readily discoverable, searchable and conformable with standard vocabularies, enabling researchers to collect and aggregate data across disciplines for knowledge discovery.

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