IMOS Integrated Marine Observing System

Distributed Gridded Data Delivery for Marine Research

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CSIRO, TPAC and ARCS

An Australian Government Initiative
National Collaborative Research Infrastructure Strategy

IMOS is an initiative of the Australian Government being conducted as part of the National Collaborative Research Infrastructure Strategy

Credits

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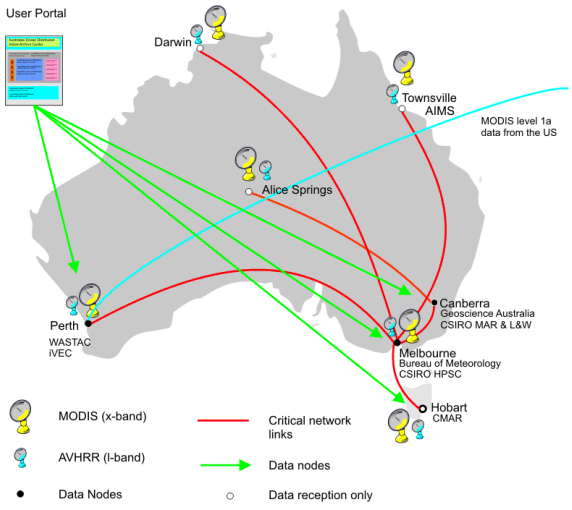
IMOS

Summary

- Background
- Objectives
- System Overview
- System Components
- Roadmap
- Conclusions

National Data Reception Network



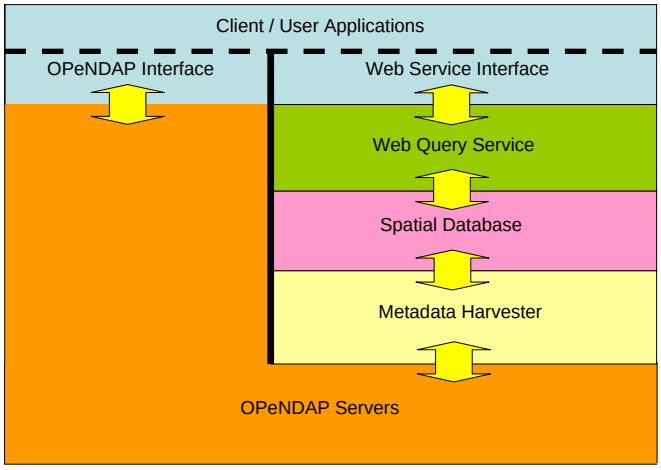
Objective

- To deliver gridded satellite data products to the Australian Marine Research Community.

Requirements

- To deliver data in near real time.
- To automatically catalogue data sets.
- To automatically manage meta-data.
- To deliver time series data.
- To provide data in a number of formats

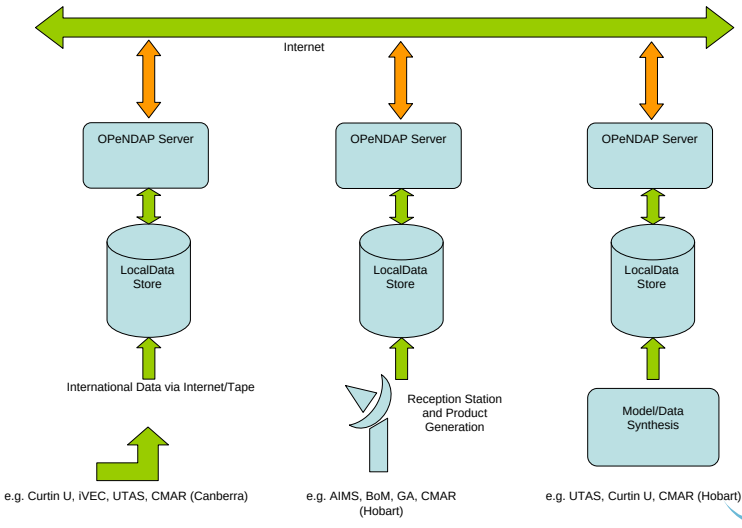
Multi-tiered Design of the AO-DAAC



OPeNDAP

- Open-source Project for Network Data Access Protocol
- Unifies access for self-describing file formats such as HDF and NetCDF across the network
- Uses HTTP as the transport protocol
- Publishes metadata of self-describing data formats
- Supports subsetting
- Application support
  - analysis program such as Matlab and Ferret
  - C, Java and Python clients libraries

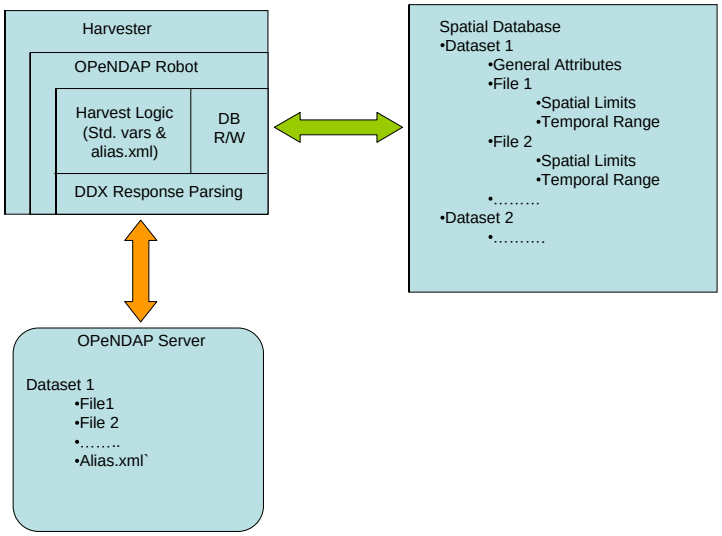
OPeNDAP Data Transport Layer



Metadata Harvester

- Java
- Based on the TPAC Digital Library Crawler
- Crawls OPeNDAP sites to find files and retrieves metadata
- Retrieves metadata already present in files
- Uses aliasing system to extract spatial and temporal extent of variables
- Stores all metadata in database

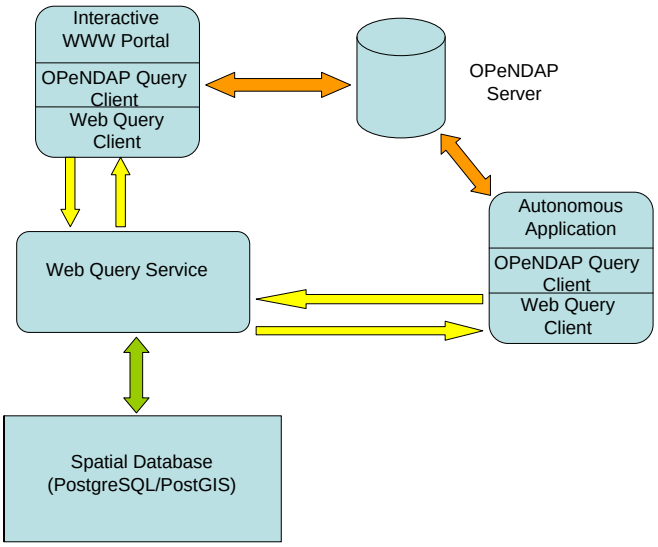
Harvester Database System



PostGIS Database

- Geospatial extension for the Postgres database
- Supports OGC Simple Feature Specificaion
  - Points, linestrings, polygon, mixed collection, etc
- Supports a wide range of geo-referencing systems
- Supports spatial operations
  - Intersection, points within polygon, distance
  - Coordinate system translation

Web Query Service

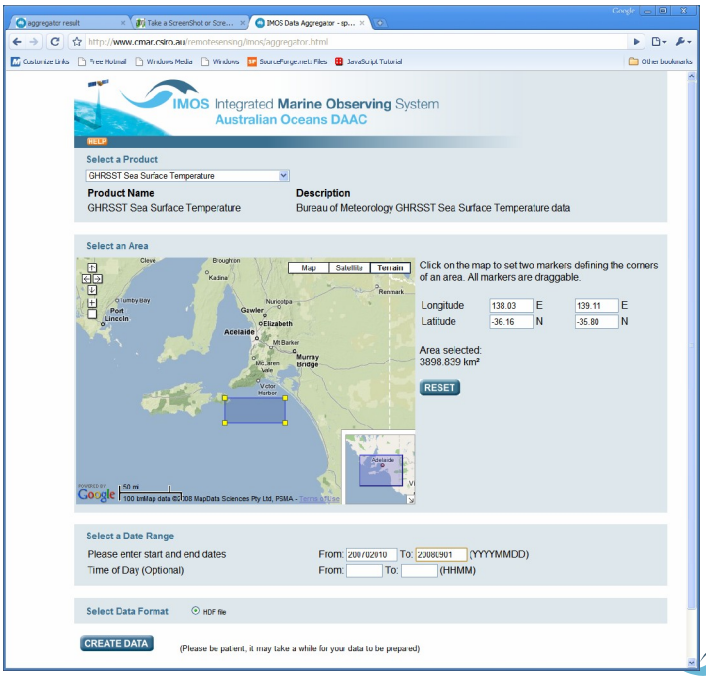


Aggregator

- Interface between the user GUI and the web query service
- The aggregator accepts a list of OPeNDAP URL's specifying indexes within each file which matches the user query.
- The aggregator reads data from each input URL and combines (aggregates) each data array into one array for output to the user.
- The aggregator the data output file (HDF, netCDF, text or image)

User Interface

- Creating both client and server interface.
- The initial server interface uses cgi and Google maps .
- The client GUI is a Java application which includes a bundled aggregator.
- May try to rationalise the the GUI to use the same Java interface.



Conclusions

- We have build a system which can deliver satellite derived marine data products in near real time
- The system is layered and can be accessed a number of ways
- The system automatically harvests metadata information
- The system has been built by reutilising existing technologies with some “glue” and the development of an aggregator and GUI
- IT SEEMS TO WORK AS EXPECTED!

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