The Australian Ocean Data Network: The one-stop shop for Australian marine data and data products

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Our Vision

A single distributed, federated network for Australian marine science data and information.

To:

• Provide a key enabling technology for e-research.

• Promote the discovery, transfer and implementation of knowledge about marine environments by facilitating the management and exchange of, and ready access to, marine data and information.
The AODCJF

Australian Ocean Data Centre Joint Facility

A formal partnership among Commonwealth Agencies:

- Australian Antarctic Division (AAD)
- Australian Institute of Marine Science (AIMS)
- Bureau of Meteorology
- CSIRO Marine and Atmospheric Research
- Geoscience Australia
- Royal Australian Navy
- with support from the National Oceans Office

To manage ocean data to meet national and international obligations
BlueNet

A DEST-funded project with three main roles:

1. Join universities to the AODN
   • data facilitators
   • BlueNet Champions

2. Help agencies prepare to host 'external' data
   • building the virtual repository

3. Develop technologies for the AODN
   • Metadata Entry and Search Tool (MEST)
   • support for Oceans Portal
BlueNet - partners

- AODCJF Agencies
- James Cook University
- University of Sydney
- Australian National University
- University of Melbourne
- University of Tasmania
- University of Western Australia
- University of Queensland
- Deakin University
- University of New South Wales
BlueNet - collaborators

- **MAMS** (Macquarie University)
  - Authentication, Authorisation, and Access

- **OAK Law** (Queensland University of Technology)
  - IP, ownership and licencing

- **ASK-OSS** (Macquarie University)
  - Open source software related issues

- **APSR** (Australian National University)
  - Best practice for sustainable repositories
The Network (AODN)
The Network (AODN)

TPAC + others
AIMS
RAN
BoM
CSIRO
AODC J F
AAD
GA

Data
Metadata for web services
Data
Bind
Data
metadata for data
Data
Data to storage
Data
Bind (access, visualise, download)

MEST
Data Collector

End User

Marine Catalogue

Oceans Portal

UK NERC Data Grid

OBIS

End User
Technologies

Portal
- GUI: search for data + call services listed in Catalogue
- Integrate & visualise disparate datasets
- GIS-like functionality (map layering, zoom, etc.)

Catalogue
- Harvests metadata records
- Stores and indexes metadata records for datasets and web services

MEST
- ISO19115 compliant
- Offers several metadata templates including Marine Profile
- Provides federated searching of other MESTS
- Manages permissions to view, create & edit metadata records
The Future: eMII

e-Marine Information Infrastructure

Key component of Integrated Marine Observing System (NCRIS)

IMOS facilities:
1. Argo Australia (CSIRO)
2. Ships of Opportunity (CSIRO, AIMS, BoM)
3. Southern Ocean Time Series (University of Tasmania)
4. National Facility for Ocean Gliders (UWA)
5. Autonomous Underwater Vehicle Facility (Univ Sydney)
6. Australian Ocean Mooring Network (CSIRO + others)
7. Australian Coastal Radar Network (James Cook University)
8. Acoustic Tagging and Monitoring (Macquarie University)
9. Marine Sensor Networks (AIMS)
10. Ocean Remote Sensing Services (BoM, CSIRO, GA, AIMS)
The Future: eMII

Integrated Marine Observing System

Primary Users
Research Community

Open Ocean / Climate
- Ocean Circulation
- Ocean Chemistry
- Ocean state
- Surface temperature
- Sea level
- Ocean colour

International Contribution
Australian Contribution
- Satellites
- Moorings, buoy networks
- Floats, autonomous
- Ships of Opportunity
- Sections

Coastal
- Remote sensing
- Reference sites
- Common networks
- Coastal monitors

National Backbone
- Data standards
- Interoperability
- Exchange protocols

Regional Node
The Future: eMII

Diagram:

- Data Collection
  - Raw Data
  - Local Data Centre
  - User

- AODN Host
  - Data Storage
The Future: eMII

Data Collection

- Raw Data
  - Initial QA/QC
  - Local Data Centre
  - Further QA/QC

AODN Host

- Final QA/QC
- Data Storage

User
The Future: eMII

Data Collection

- Raw Data
  - Initial QA/QC
  - Local Data Centre
  - Further QA/QC
  - Data Preparation

Internet Transfer → Data Harvesting → Internet Transfer

AODN Host

- Exchange Protocols
- Integration Protocols
- Final QA/QC
- Data Storage

User
The Future: eMII

Data Collection

- Raw Data
- Initial QA/QC
- Local Data Centre
- Metadata

Data Preparation

Internet Transfer

- Data Harvesting
- Further QA/QC

AODN Host

- Internet Transfer
- Exchange Protocols
- Integration Protocols
- Final QA/QC
- Data Storage

User

Final QA/QC

Integration Protocols

Exchange Protocols

Data Storage

Internet Transfer

Data Harvesting

Further QA/QC

Initial QA/QC

Metadata

Local Data Centre

Raw Data

Data Preparation

The Future: eMII
The Future: eMII
The Future: AODN Challenges

- **Culture**: data sharing
- **Technologies**: Portal, Catalogue, MEST
- **AAA**: permissions at each stage of data discovery and re-use
- **Interoperability**, standards, community practice
- **QA/QC**
  - Ensuring adequate descriptions of quality
  - Ensuring appropriate re-use of data
  - Resources for QA/QC
- **Outreach and support**
- **IP and data ownership**
- **User uptake**
Opportunities for Synergy

**Generic cross-domain issues**
- technologies: portal, MEST, catalogue, crawlers
- AAA issues
- interoperability
- legal solutions

**Need for interoperability above the research domain level**
- e.g. need for federated portal, catalogue and MEST systems
- the nature of major science challenges at national level, e.g. climate change, environmental management
- within NCRIS:
  - Evolving Biomolecular Platforms and Informatics
  - Integrated Biological Systems
  - Networked Biosecurity Framework
  - (Terrestrial Ecosystem Research Network)