



# **An International Registry of Maritime Regulation**

**An MSDI tool to support international maritime regulatory information**

Matthew McGregor – Law of the Sea and Maritime Boundary Advice Section,  
Geoscience Australia, Australia

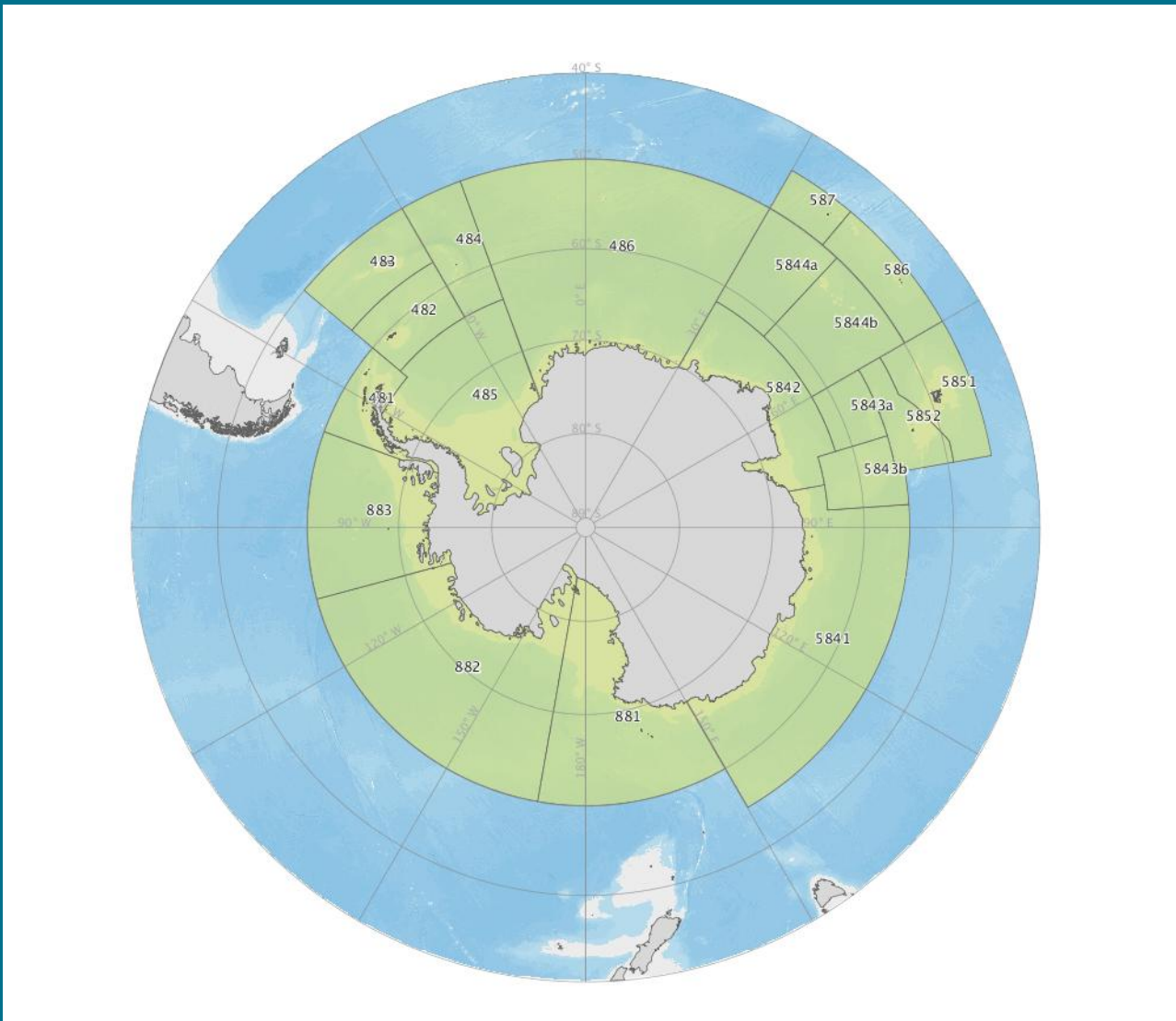
[matthew.mcgregor@ga.gov.au](mailto:matthew.mcgregor@ga.gov.au)



# Regulation in the Marine Domain

Typical regulatory information:

- Maritime boundaries
- Fisheries zones (International, Regional and Country)
- International Treaties (eg CCAMLR, RFMO)
- Security Zones
- International Seabed Authority
- Ship routing systems
- Environmentally sensitive sea areas
- Oil and gas permits
- And many more to come.....





# Regulation in the Marine Domain

## Problems:

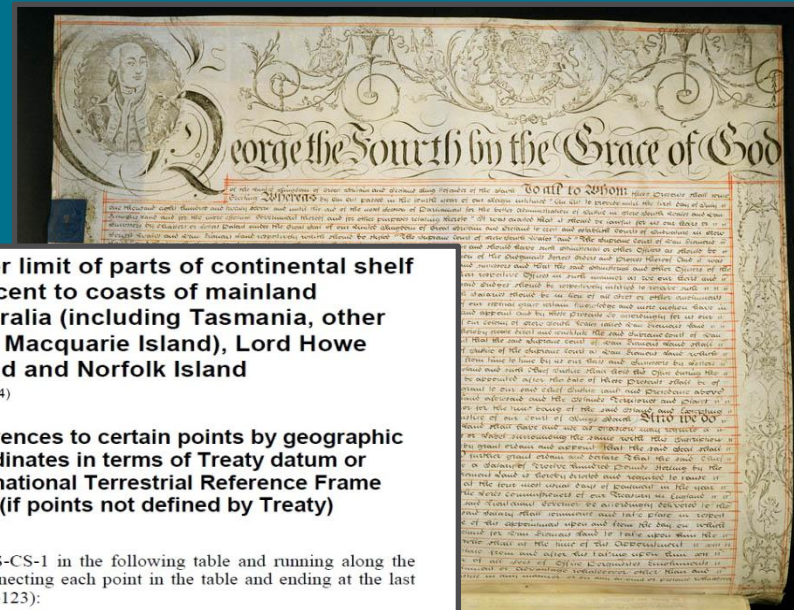
- Sectoral
- Duplication
- Inefficiency
- Regulatory burden
- Increased cost
- Increased RISK



Photo: MRCC Mumbai

the sea is already risky enough

# The Good, the Bad and the Ugly



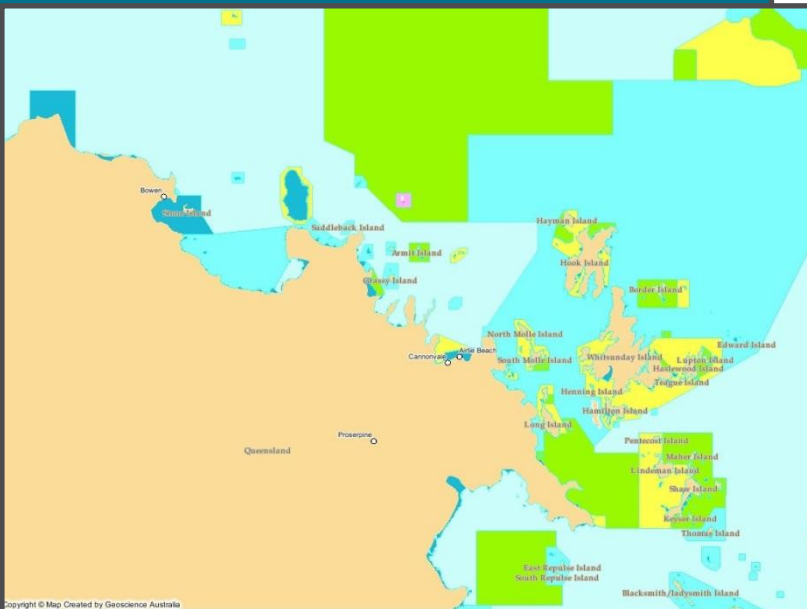
## Schedule 1 Outer limit of parts of continental shelf adjacent to coasts of mainland Australia (including Tasmania, other than Macquarie Island), Lord Howe Island and Norfolk Island (section 4)

### Part 1 References to certain points by geographic coordinates in terms of Treaty datum or International Terrestrial Reference Frame 2000 (if points not defined by Treaty)

The line:

(a) commencing at point AUS-CS-1 in the following table and running along the geodesics sequentially connecting each point in the table and ending at the last point mentioned (AUS-CS-123):

Point identifier	Latitude	Longitude	Treaty point reference(s)	Datum
AUS-CS-1	10°50'00.0000"S	139°12'00.0000"E	(a)	AGD66
AUS-CS-2	11°09'00.0000"S	139°23'00.0000"E	(b)	AGD66
AUS-CS-3	10°59'00.0000"S	140°00'00.0000"E	(c)	AGD66
AUS-CS-4	09°46'00.0000"S	142°00'00.0000"E	(d)	AGD66
AUS-CS-5	09°45'24.0000"S	142°03'30.0000"E	(e)	AGD66
AUS-CS-6	09°42'00.0000"S	142°23'00.0000"E	(f)	AGD66
AUS-CS-7	09°40'30.0000"S	142°51'00.0000"E	(g)	AGD66
AUS-CS-8	09°40'00.0000"S	143°00'00.0000"E	(h)	AGD66
AUS-CS-9	09°33'00.0000"S	143°05'00.0000"E	(i)	AGD66
AUS-CS-10	09°33'00.0000"S	143°20'00.0000"E	(j)	AGD66
AUS-CS-11	09°24'00.0000"S	143°30'00.0000"E	(k)	AGD66



# An international approach

- An MSDI provides an ideal platform to deploy a internationally-consistent portal for a GIS-enabled registry of maritime regulatory information
- The registry cannot be exclusive to hydrographic offices – many States utilise a variety of agencies
- The registry would not replicate the roles or data of other agencies – rather it aims to provide a centralised platform for information discovery, access and visualisation
- The concept is not new, however recent technological developments make it cheaper and easier to deploy
- Distributed model e.g. [www.marine-geo.org](http://www.marine-geo.org)

# An international Marine Registry

## Benefits:

- One stop shop for international regulatory information
- Essential for States without a domestic hydrographic capacity
- Ideal for regulatory activity beyond national borders (Regional Fisheries Organisations etc)
- Reduces reliance on nautical charts
- Once the data is available, creating new themes is simple and cost effective
- Updates are instantaneous
- Also forms an excellent platform for consultative processes



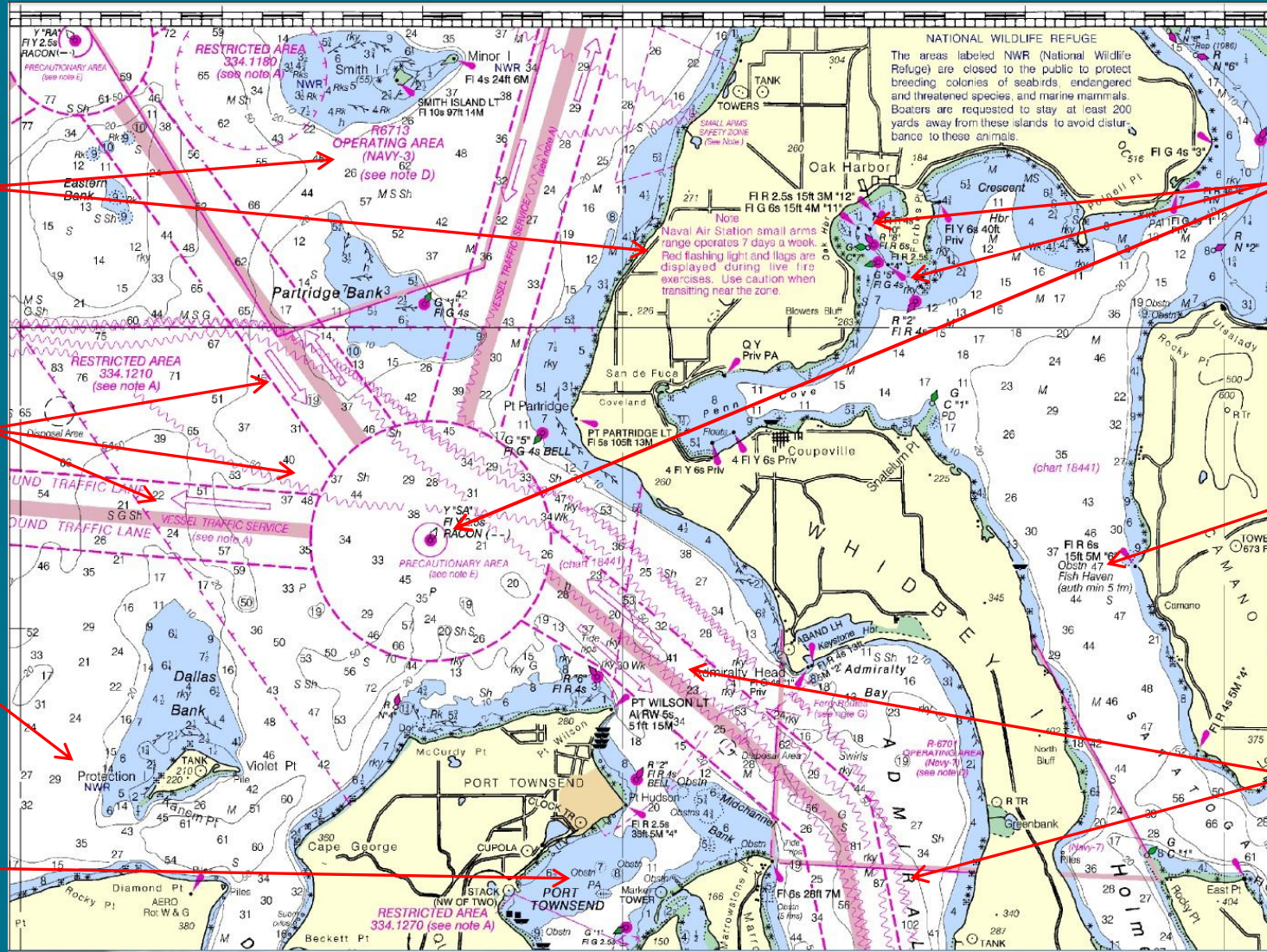
# Marine regulatory information

There exists a pressing need internationally for a platform to exchange digital marine regulatory information.

Many of the drivers for developing this system are the same both domestically and internationally:

- Existing mariner centric delivery methods are inadequate or unsuitable for most users
- Requirement for regulatory information aggregation and query tool
- There is a need to provide directly-sourced legal/technical information – facilitates security, trade and environmental protection
- spatial data via web services

# Examples - Regulation in the Marine Domain



Defence

Ship Routing

Environ.

Ports

Aids to Navigation

Fisheries

Cable Protection

# S-121 Maritime Limits and Boundaries Exchange Format

- A component of the IHO S-100 Universal Data Model
- Non-prescriptive – sympathetic to States' interpretation of UNCLOS
- Non-proprietary
- Platform agnostic – essentially a text string allowing maximum usability
- Extensible – can be expanded to incorporate domestic requirements



S-10X

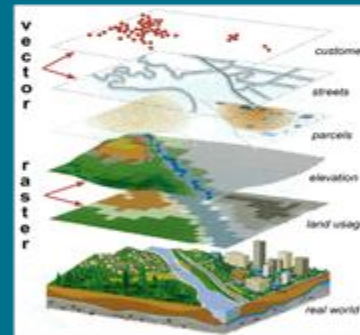


DOALOS



ECDIS

Style Sheet



Marine Spatial Data Infrastructure



Legislative Instruments



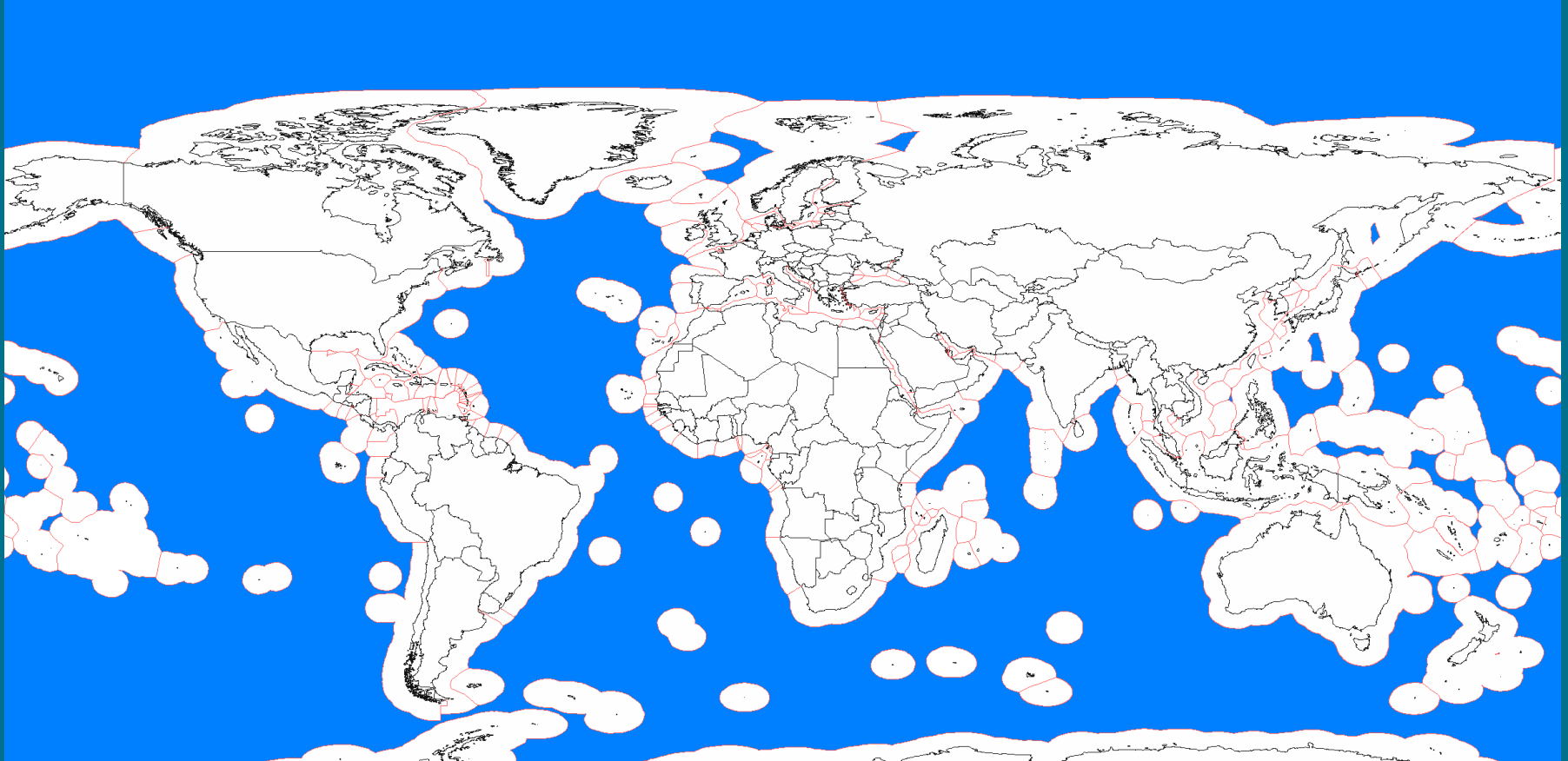
Web Services



# S-121 and an International Registry

- S-121 allows States to exchange maritime boundary information.
- Maritime boundaries are internationally significant regulatory datasets

# Maritime Boundaries



Indicative EEZ limits of the World. Source <http://en.wikipedia.org/wiki/File:Internationalwaters.png>

# Maritime Boundaries

- More than 165 States claim a maritime jurisdiction
- Each of these States have between one and thirty delimitation treaties with neighbouring States
- The international legal framework for marine jurisdictions is the United Nations Convention on the Law of the Sea (166 parties)
- Articles 16, 47, 75 and 84 of the Convention require States to deposit and give due publicity to the limits of their maritime jurisdiction
- To date only 41 States have supplied full or partial deposits
- Non-party States have their own framework, though similar objectives

# Deposit and Due Publicity

UNCLOS requires States to publish their baselines or maritime limits and zones:

- On appropriately scaled charts, or
- As a list of geographic co-ordinates

And to deposit a copy of these with the Secretary-General of the UN. The purpose of this requirement is to ensure marine domain users are aware of their rights and responsibilities.

States not party to UNCLOS publish their boundaries by a variety of means with similar limitations

Other States do not produce charts



# Deposit and Due Publicity - Considerations

These UNCLOS articles were written at a time when the marine user was assumed to be a mariner – this is no longer the case as technology and economic/environmental activities have developed. Non-UNCLOS States have similar considerations.

## Charts

- Paper – problems with scale, and the regulatory framework has become too complicated for paper charts
- ENC – an encrypted format unknown to non-mariners

## List of Co-ordinates

- Requires interpretation – plotting, digitising etc.
- No recognised format (yet)

# Deposit and Due Publicity - Ideal

Maritime boundary information should be:

- Authorative – primary source. Not “recapitulative”
- Accessible - publically available unencrypted digital data
- Comprehensible - ensure the boundary’s status, geometry and application is clear
- Fit for purpose - provide the information in a way that suits the greatest number of users e.g. GIS, Web mapping applications, portable devices, Google, Bing
- Free

# An International Registry of Maritime Boundaries

## Potential benefits

- Fulfils the need for due publicity
- Improve international peace and security
- One-stop-shop for maritime boundary information
- Ability to convey complex legal and spatial information easily
- Data is directly sourced from State – no legitimacy, legacy or recapitulation problems
- Reduce reliance on inappropriate distribution media – e.g.. paper nautical charts
- Reduced cost for delivering boundary information – especially for developing nations

# An International Registry of Maritime Boundaries

## Requirements

- A central GIS-enabled aggregation catalogue and launch pad
- A collaborative international project
- Non-prescriptive – does not attempt to impose UNCLOS or an interpretation of UNCLOS on States
- Non-restrictive – use of the system is open to all States
- Distributed data model – each State maintains primary source linked to Registry
- Spatial Data - via web services
- Compatible with State's domestic legal/technical arrangements



# Maritime Boundaries via MSDI

The screenshot displays the Australian Marine Spatial Information Systems (AMSIS) web application. The browser address bar shows the URL: <http://www-dev.ga.gov.au/gamaps/maps.html?config=amsis>. The page title is "Australian Marine Spatial Information Systems (AMSIS)". The map shows the eastern coast of Australia and the Pacific Ocean, with various maritime boundaries overlaid in different colors and patterns. A legend on the right side of the map, titled "Show layers on map", lists the following layers:

- Base Layer
  - World Image (checked)
  - World Political Boundaries
- Overlays
  - Australian Topography
  - Graticular Blocks
  - Maritime Boundaries (checked)
  - Australian Landsat Mosaic
  - Marine Jurisdiction

At the bottom of the map, there is a "Reference Map" section with the following information: "Tile Level: 7 Lat: 7°08'20" S Long: 131°06'19" E". A scale bar indicates 100 km. The footer of the page includes the following text: "World CC-BY-AU and Natural Earth", "Privacy", "Freedom of Information", "Information Australia", "FOI Overhaul Log", "Disclaimer", "© Commonwealth of Australia 2013", "Creative Commons Attribution 3.0 Australia Licence", and "Department of Resources, Energy and Tourism".



# Examples - Regulation in the Marine Domain

The screenshot displays the Geoscience Australia web application for the Offshore Petroleum and Greenhouse Gas Storage Act. The main map area is a grid of blocks, each labeled with a unique identifier (e.g., SC51\_2443, SC51\_2444, SC51\_2445, SC51\_2446). The map is overlaid with various geographical features, including the 'Admiralty and Carter Islands' and 'Western Australia'. A 'Show layers on map' panel is open, showing the following layers:

- Base Layer
  - World Image
  - World Political Boundaries
- Overlays
  - Scheduled Areas of the States and Territories
  - Offshore Areas of the States and Territories
  - Blocks

The panel also includes a 'Hide Geolocation marker' option. The browser address bar shows the URL: <http://www-dev.ga.gov.au/gamaps/maps.html?config=opggga>. The footer contains the following information:

World CC-BY-AU and Natural Earth  
Privacy | Freedom of Information | Information Publication Scheme | FOI (Request) Log | Disclaimer | © Commonwealth of Australia 2013  
Geoscience Australia logo | Department of Resources, Energy and Tourism



# Conclusion

There exists an international need to develop a platform for discovering and aggregating State-sourced maritime regulatory information for both UNCLOS and non-UNCLOS States.

The driver is not spatial or data, it is a tool to deliver a legal and technical certainty.

To be successful the system should be digital, flexible, non-prescriptive and distributed.

An MSDI can provide the technology and data handling rigour to support the system.

The system has the potential to be expanded to include a more extensive range of marine regulatory information if required by States.

# Suggested Websites

Australian Marine Information Spatial System

<http://www.ga.gov.au/marine/jurisdiction/amsis.html>

PacGeo - Open Access Geospatial Data Repository for the Pacific Region

<http://www.pacgeo.org/>

MarineCadastre.gov

<http://www.marinecadastre.gov/default.aspx>

Marine Geoscience Data System

<http://www.marine-geo.org/index.php>