

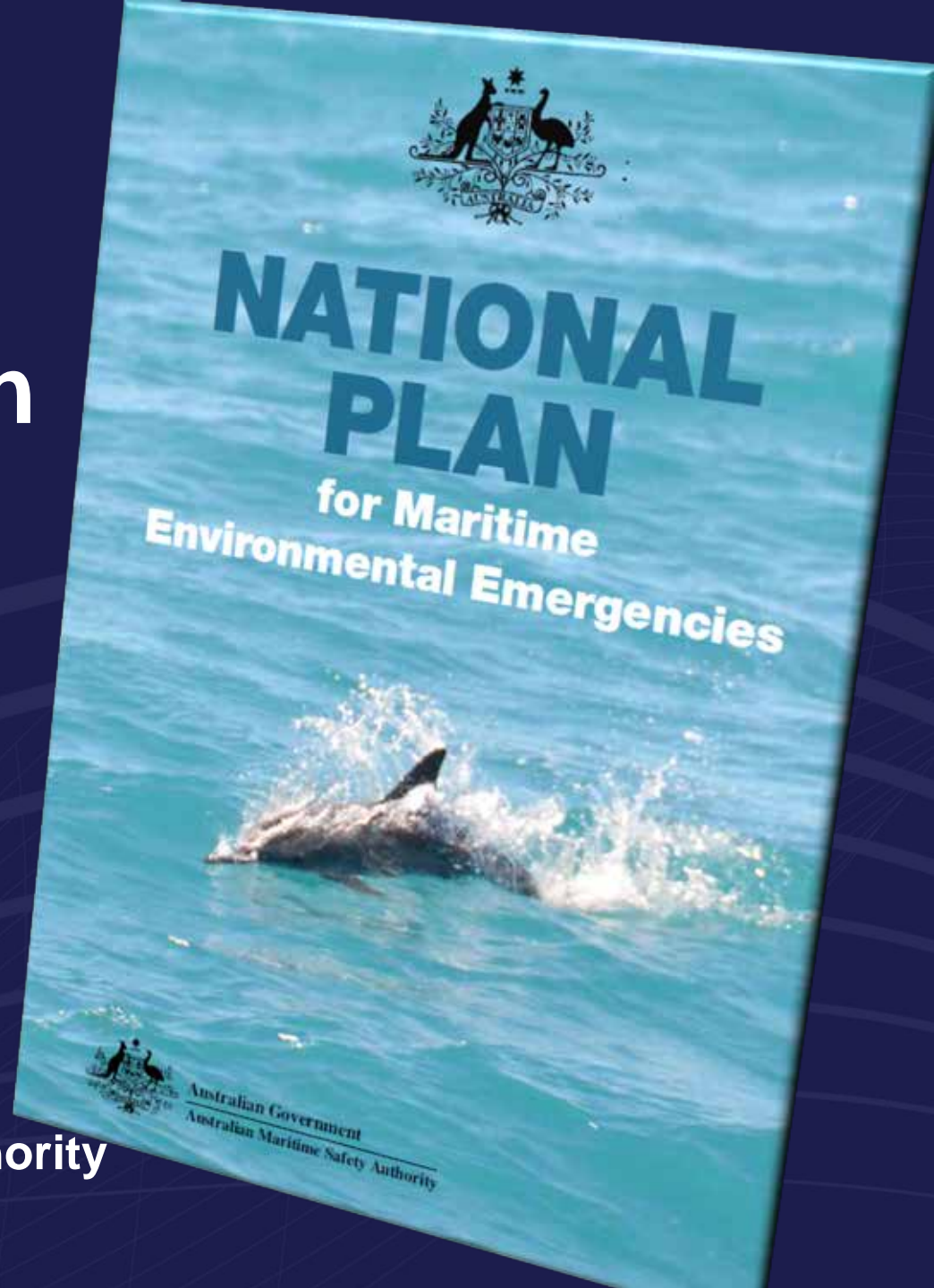


Australian Government

Australian Maritime Safety Authority

# Oceanography in support of the National Plan

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# Introduction





- ▶ The National Plan for Maritime Environmental Emergencies (NPMEE)
- ▶ Marine Pollution Response
- ▶ Decision support systems

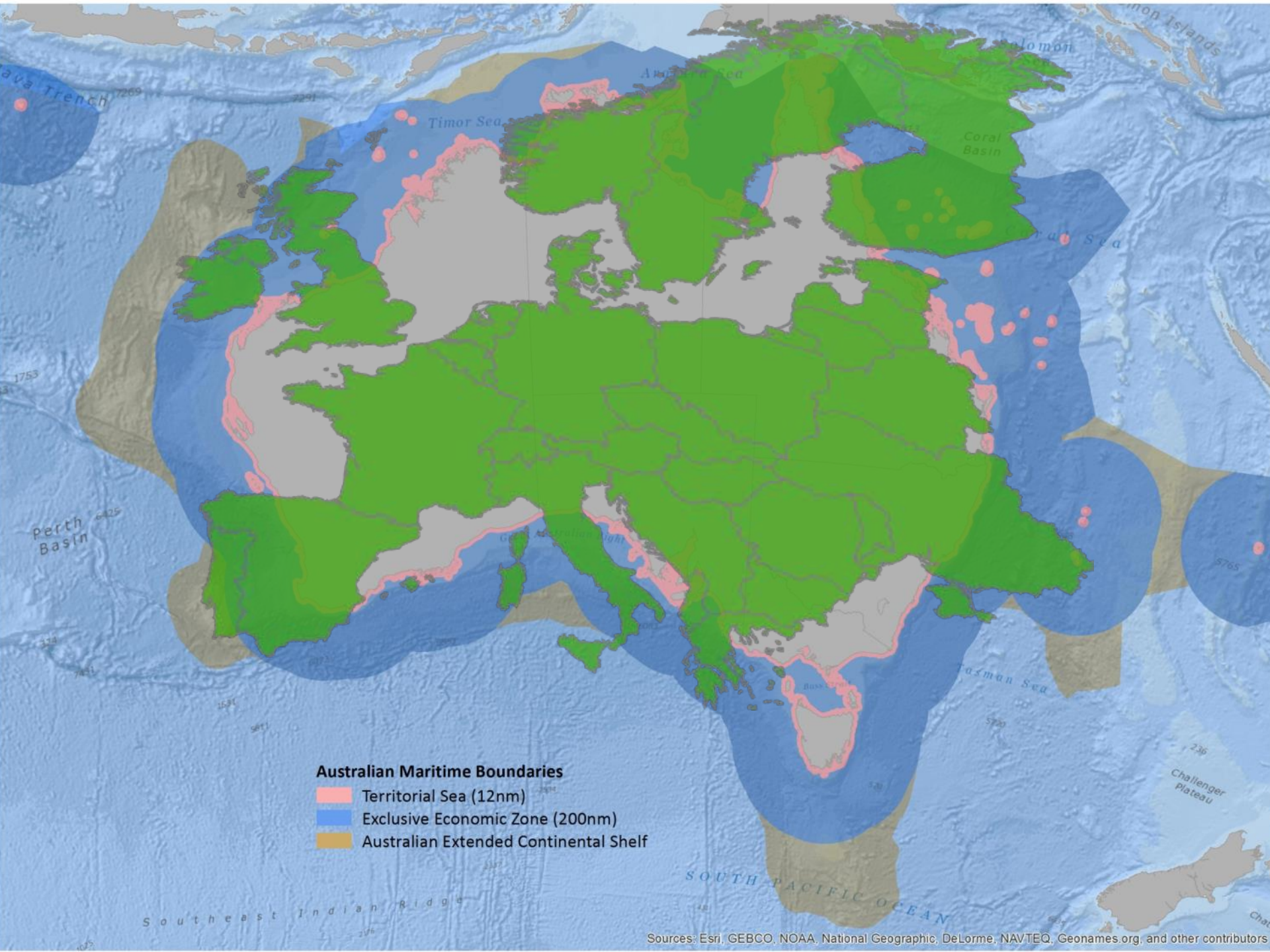


A map of Australia and the surrounding Indian Ocean. The map shows the Australian continent in the center, with various maritime boundaries and search and rescue regions overlaid. A red line outlines the Australian Search & Rescue Region, which covers a large area of the Indian Ocean. Blue lines represent the Exclusive Economic Zone (EEZ), and yellow lines represent the Australian Extended Continental Shelf. The map also shows the Ninetyeast Ridge, Mid-Indian Basin, Wharton Basin, and Southeast Indian Ridge. The Indian Ocean is labeled in the bottom left, and the Southern Ocean is labeled in the bottom center. The text 'Australian Context...Big!' is overlaid on the map in a large, bold, black font.

# Australian Context...Big!

- Covers 6 ocean climate zones, 4 time zones, 6 maritime boundaries
- 60,000 km coast & 12,000 islands
- Land: 7.7m km<sup>2</sup> - EEZ (excl. Antarctica): 8.232m km<sup>2</sup> (World's 3<sup>rd</sup> largest!)
- Search and rescue area = 10% of Earth surface
- 10% world sea trade by volume via 35,000 int'l visits through 79 ports
- 80% growth in maritime traffic expected over next decade

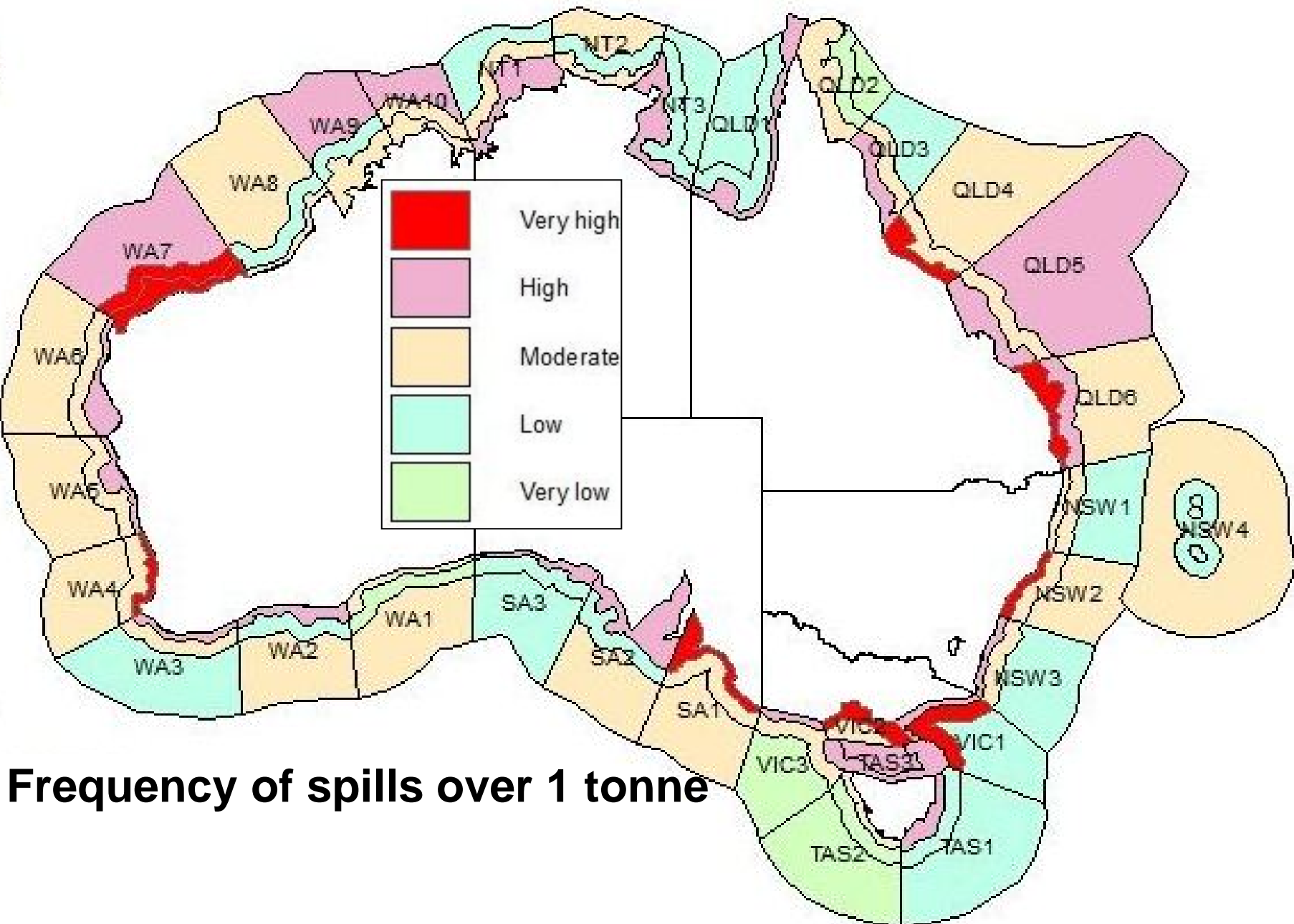
-  Territorial Sea (12nm)
-  Exclusive Economic Zone (200nm)
-  Australian Extended Continental Shelf
-  Australian Search & Rescue Region



- Australian Maritime Boundaries**
- Territorial Sea (12nm)
  - Exclusive Economic Zone (200nm)
  - Australian Extended Continental Shelf

Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, NAVTEQ, Geonames.org, and other contributors

# Australian 2009 oil spill risk assessment



Frequency of spills over 1 tonne

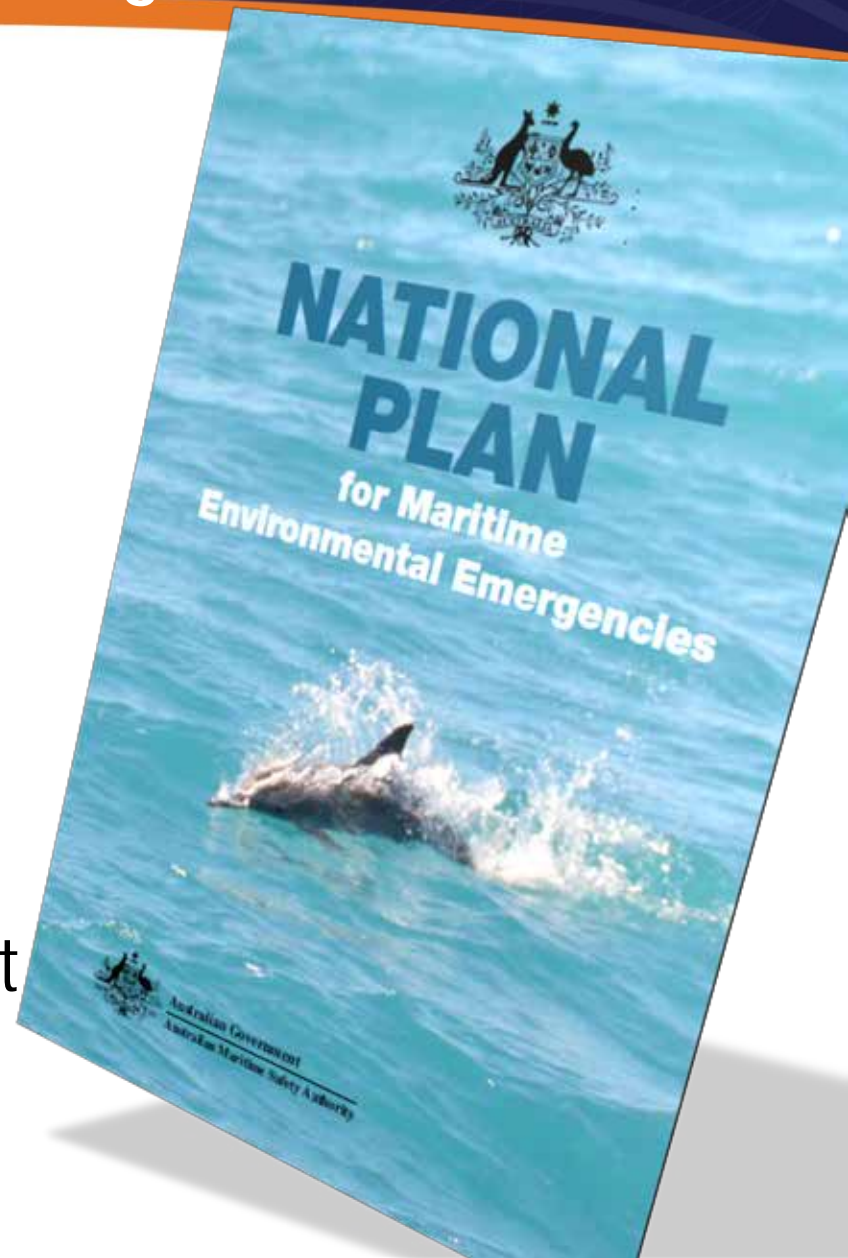


Ship happens! Now what?



# The 2014 National Plan for Maritime Environmental Emergencies

- ▶ All hazards, all agencies, PPRR.
- ▶ Single, national, integrated **co-operative** government and industry **arrangement** for effective response to maritime
  - Casualties
  - Oil spills
  - Chemical spills
- ▶ Common incident management integrated with jurisdiction emergency services.



International conventions  
and agreements,  
and national legislation  
and regulations

National Plan for Maritime  
Environmental Emergencies

National Plan policies, guidelines,  
and scientific, technical and  
operational advisories

Australian Government response  
arrangements

State and Northern Territory  
Government response arrangements

AMSA Marine  
Pollution  
Contingency Plan

External  
Territories  
Contingency Plan

Offshore petroleum  
industry oil spill  
contingency plans

Port, oil and chemical  
industry terminal  
contingency plans

Regional and  
local contingency  
plans





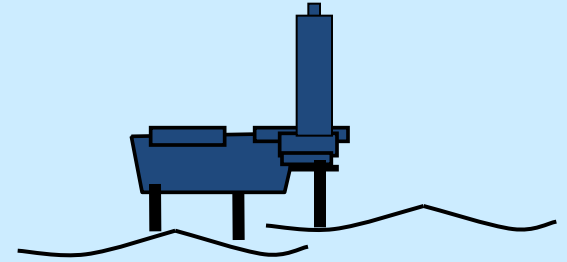
# Response jurisdictions

GREAT BARRIER REEF  
- QLD Government

IN PORTS  
(OTHER THAN TERMINALS)  
- State/NT Authority

OIL/CHEMICAL TERMINAL  
- Relevant company

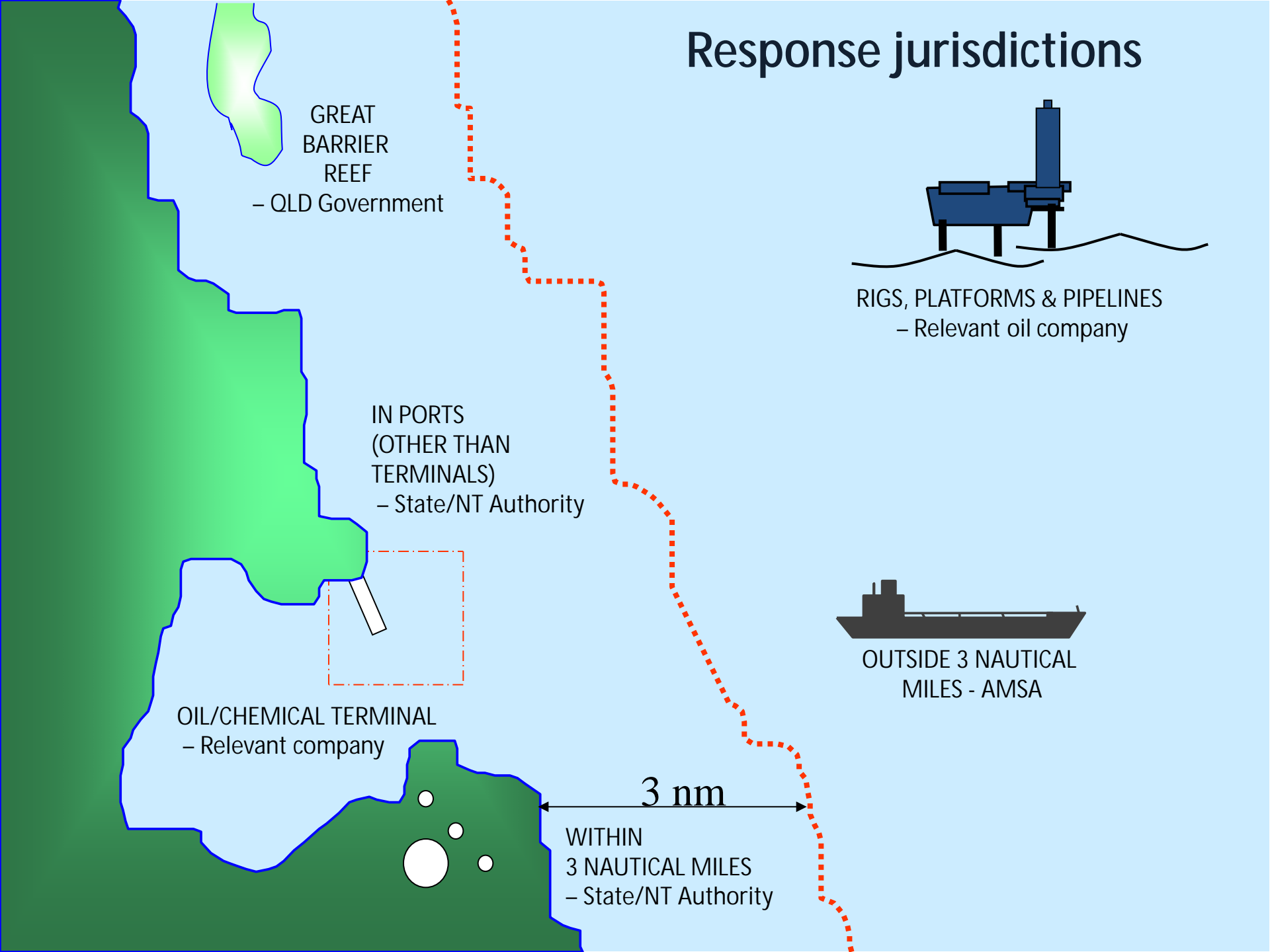
3 nm  
WITHIN  
3 NAUTICAL MILES  
- State/NT Authority



RIGS, PLATFORMS & PIPELINES  
- Relevant oil company



OUTSIDE 3 NAUTICAL  
MILES - AMSA



# Recent headline events - Montara

- ▶ Timor Sea – 370nm W of Darwin
- ▶ 74 days of discharge
- ▶ 4.7m – 13m litres
- ▶ 105 days of response
- ▶ 250 responders
- ▶ 175,000 litres of dispersant
- ▶ 844,000 litres of waste recovered
- ▶ 9 aircraft, >130 surveillance flights
- ▶ 51nm – closest oil observed to Indonesia (21 September)
- ▶ 19 – nm closest oil observed to Australian coastline (5 November)
- ▶ Lots of false reports



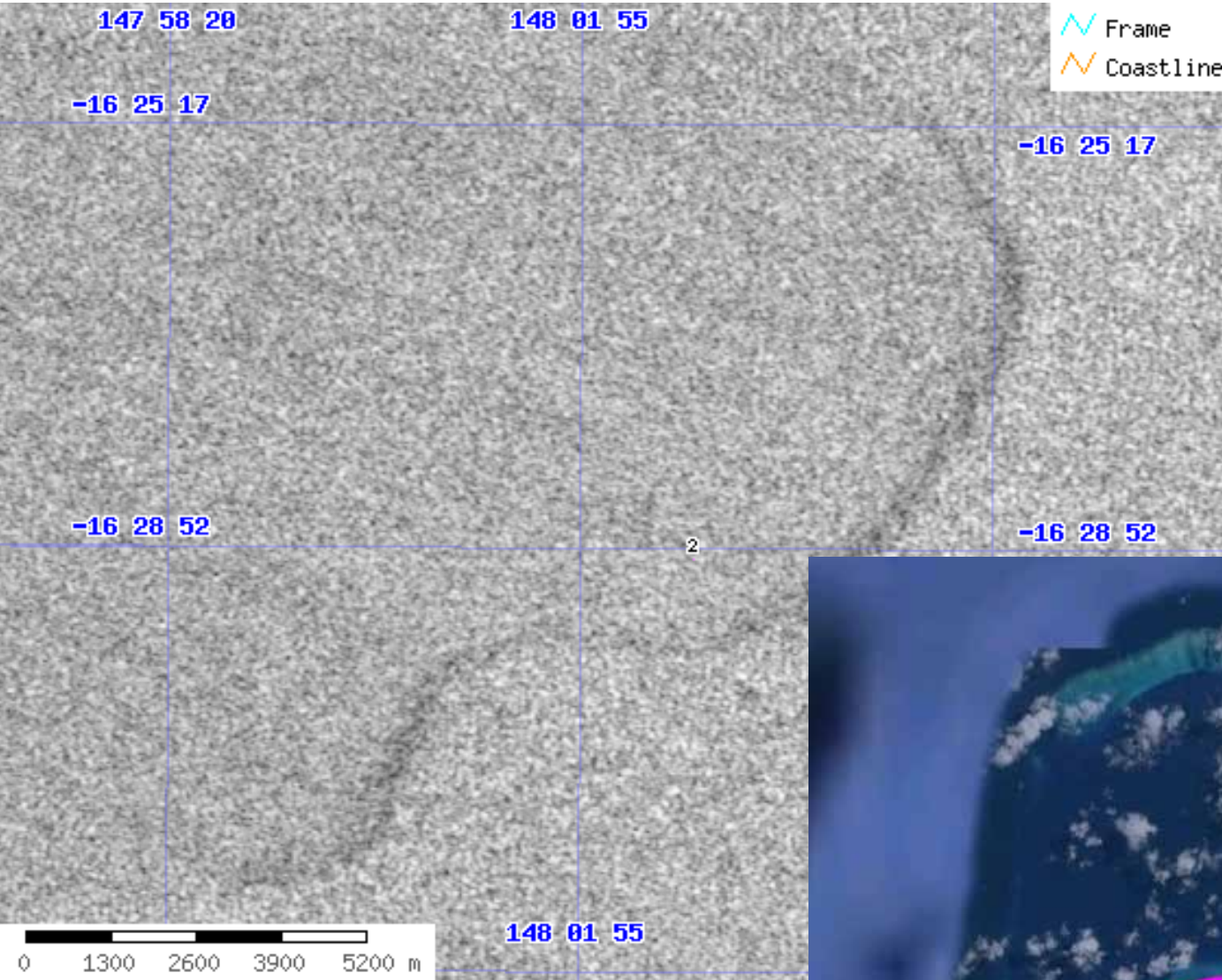
# Recent headline events – Shen Neng 1

- ▶ Great Barrier Reef – 40nm E of Great Keppel Island
- ▶ 4 t of fuel oil released
- ▶ High uncertainty of release volumes.
- ▶ 5000 L of aerial dispersant applied
- ▶ DOR of 1.2 to 1!
- ▶ Review had significant questions over dispersant use in coral dominated area



**My day is more likely to start like the**





Or this



**And very quickly gets to:**

**Operational Intelligence and Situational Awareness – first 1-24hrs**

***What?***

***How much?***

***Where?***

***When?***

***What will it effect?***

***Where's it going?***

***When will it get there?***

***How will it change?***

***Change into what?***

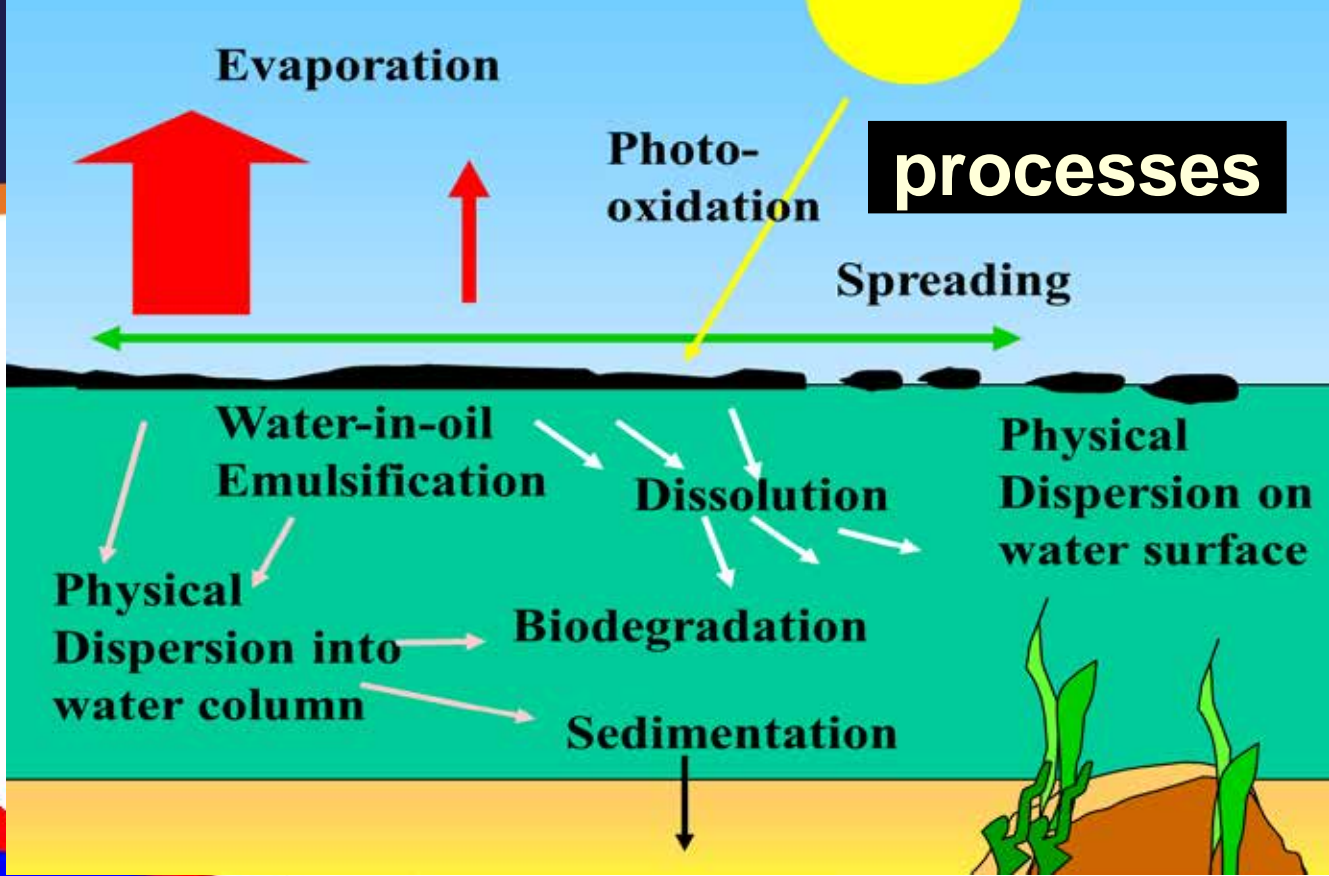
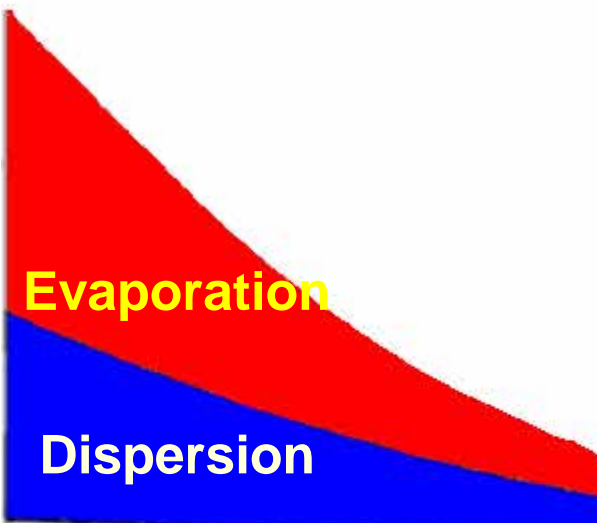
***What can we do?***

***How long will it last?***

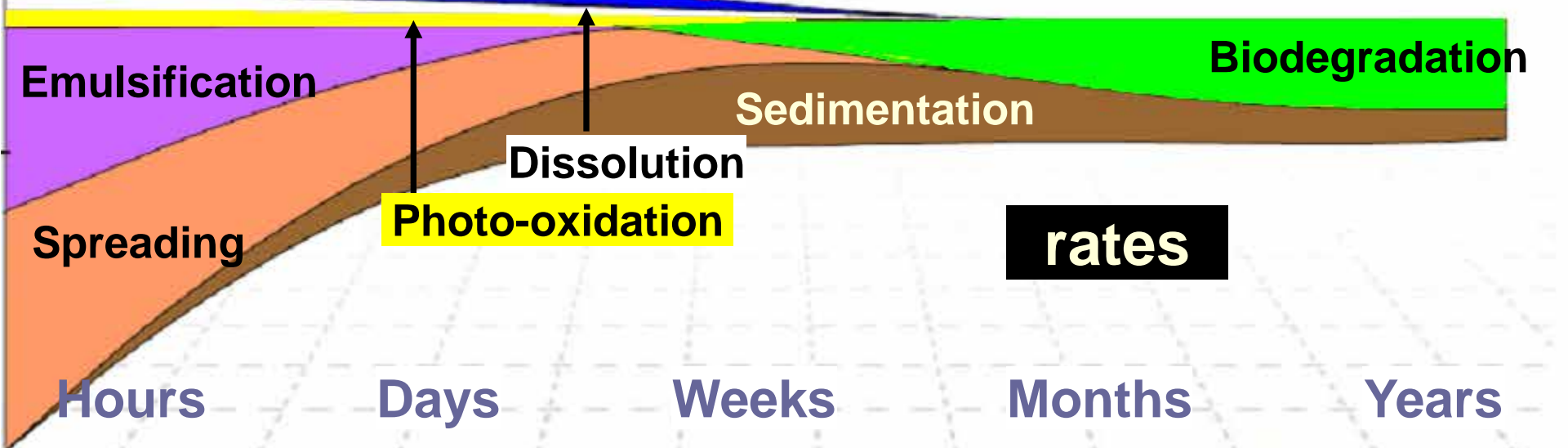
***Will it work?***

***Who can help?***

# The chemistry of oil weathering

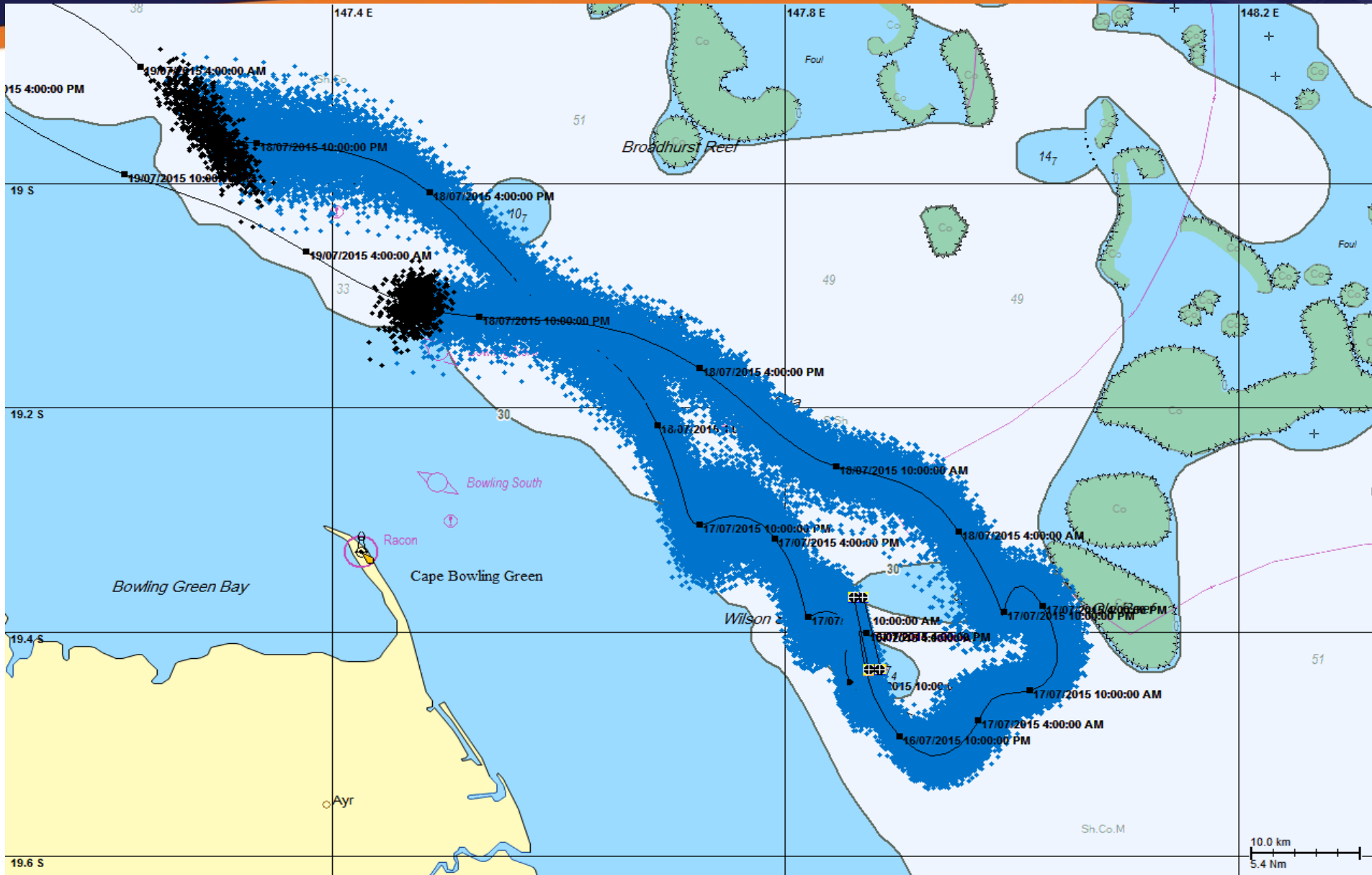


**processes**



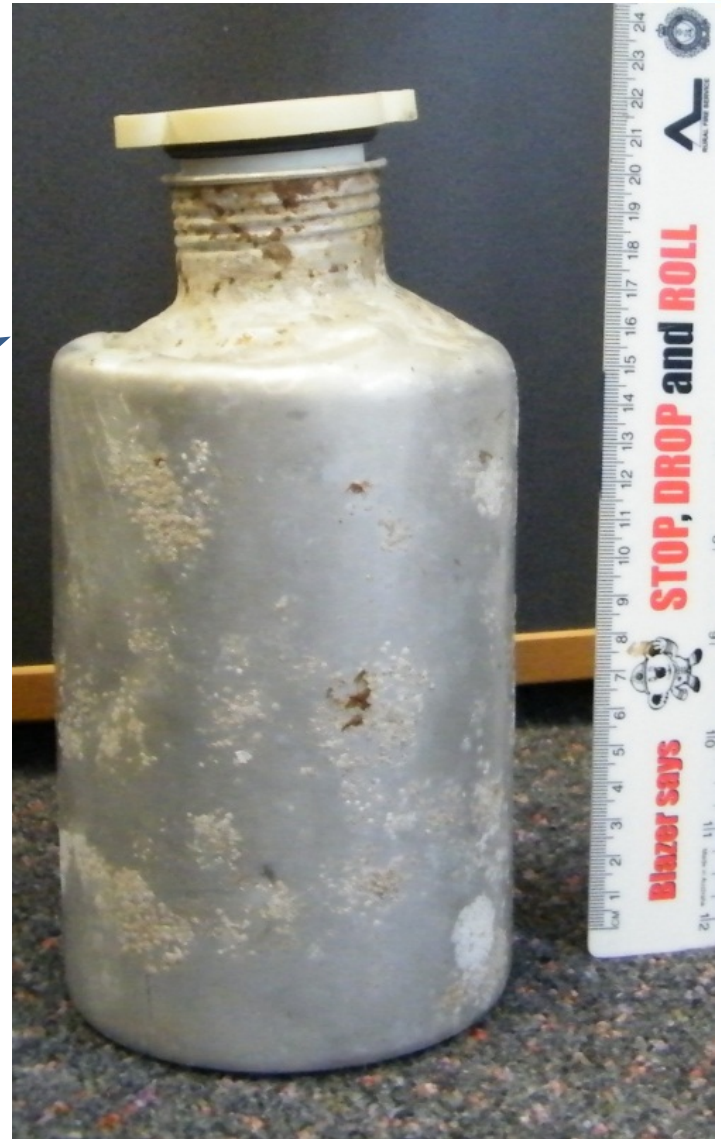
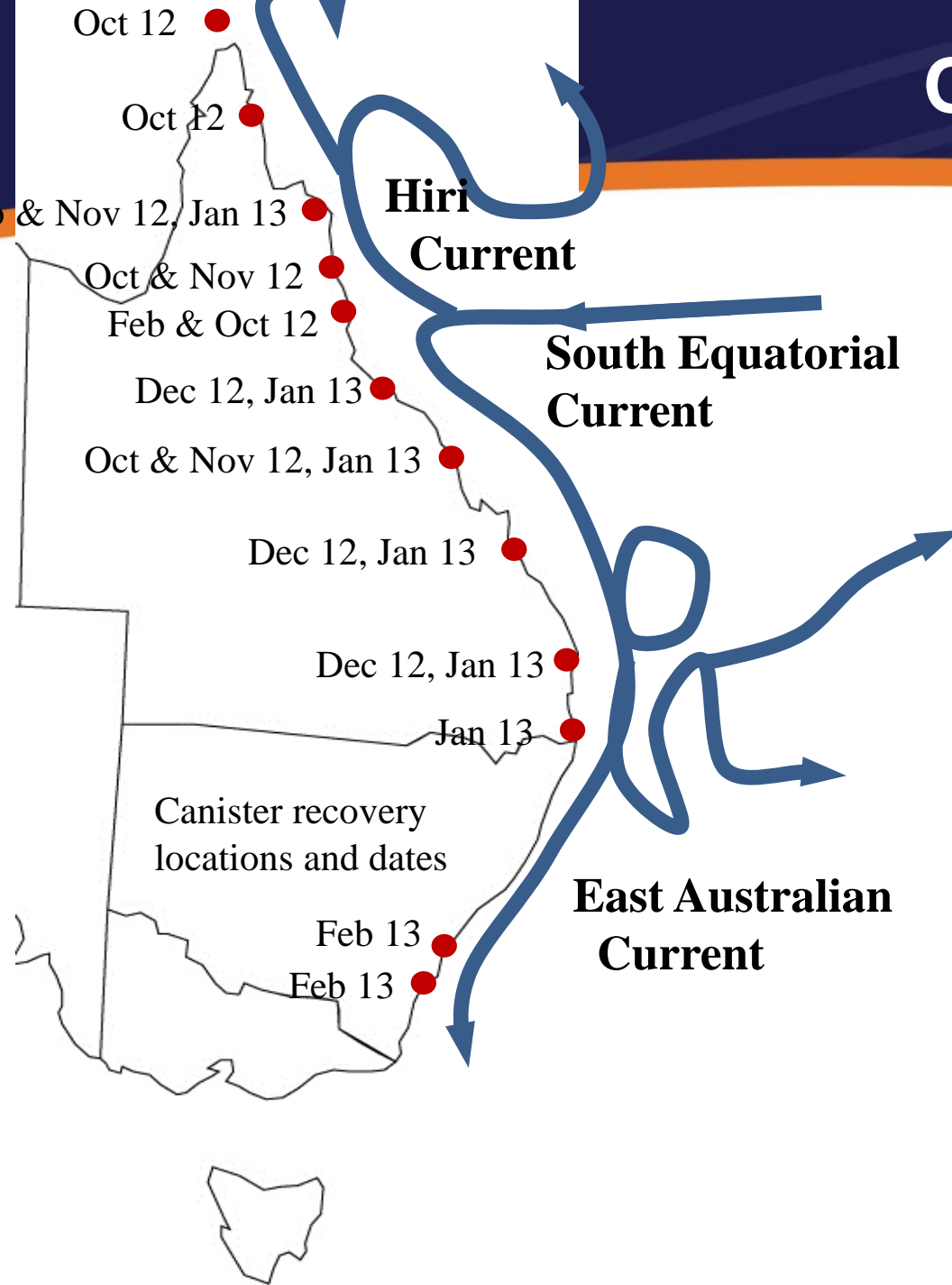
**rates**

# Models [output] can be very seductive



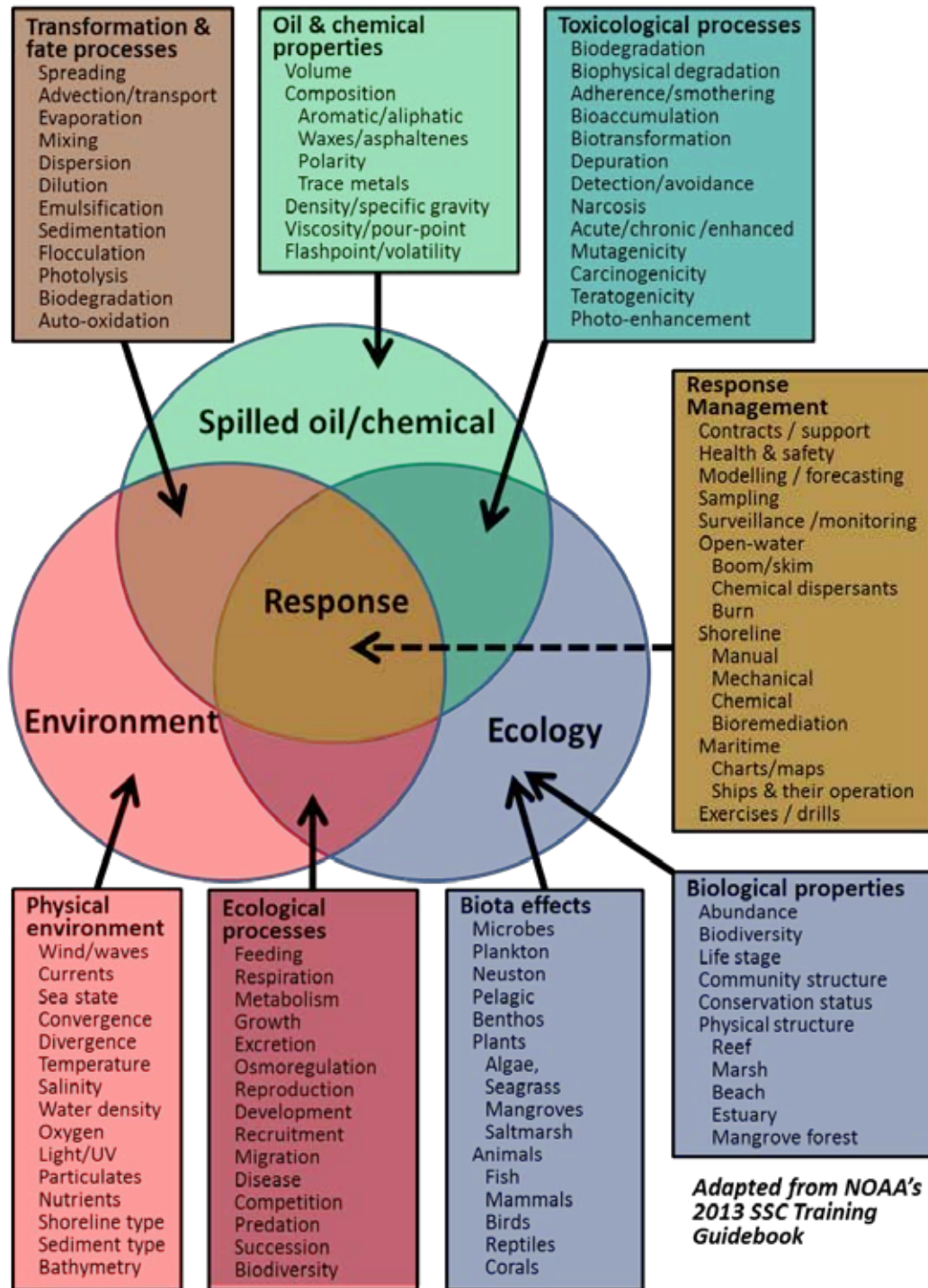


# One out of the box!



# The National Plan ES&T Network





Tell me  
these people  
don't need  
technical  
support!

*Adapted from NOAA's  
2013 SSC Training  
Guidebook*

# National Plan – decision support systems & tools

- ▶ Spill Trajectory modeling contract (**RPS-APASA**)
- ▶ Incident Science Support (**CSIRO**)
- ▶ Oil Spill Response Atlas in **jurisdictions**
- ▶ Large drifting vessel forecast contract (**DHI**)
- ▶ Satellite Radar – compliance & response (**KSaT**)
- ▶ **Environment, Science & Technical Network**
- ▶ **Me**

Thank you...



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