



Australian Government
Geoscience Australia



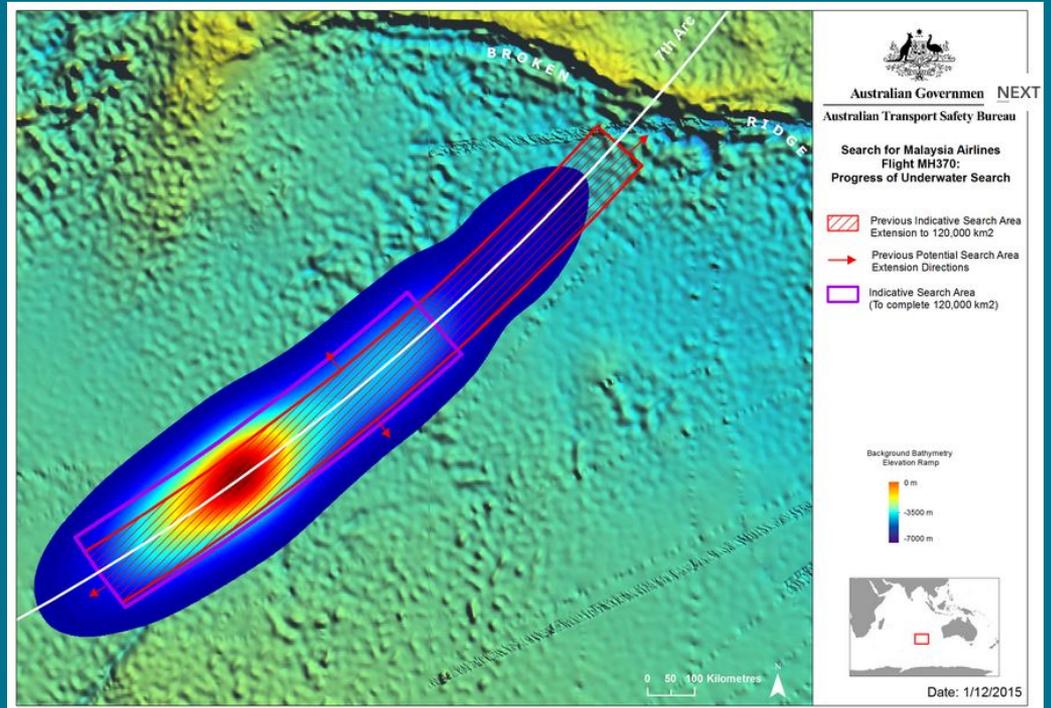
MH370 SEARCH – Managing & Delivering Large Seabed Data

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GEBCO Map the Gaps Symposium, Canberra, 14 Nov 2018

The MH370 Disaster

- Flight MH370 disappeared March 8, 2014.
- Search led by Tripartite Committee (Malaysia, Australia, China)
- GA assisting Australian Transport Safety Bureau



Geoscience Australia's Role in the search

Supporting search managers - Australian Transport Safety Bureau (ATSB)

Tasks	Phase 1 Ship-mounted acquisition of multibeam bathymetry (Fugro and Chinese)	Phase 2 Underwater search (Fugro, Go Phoenix and Chinese)
Contractual support	X	X
Technical specifications – acquisition and data parameters	X	
Data QA/QC	X	
Multibeam and backscatter data processing	X	
Interpretation to identify features of interest	X	X
Data management and archival	X	
Technical GIS support – Survey planning	X	X
Mapping, data visualisation, media responses	X	X

Product delivery during the search - Data Interpretation

➤ NAVIGATION FEATURES

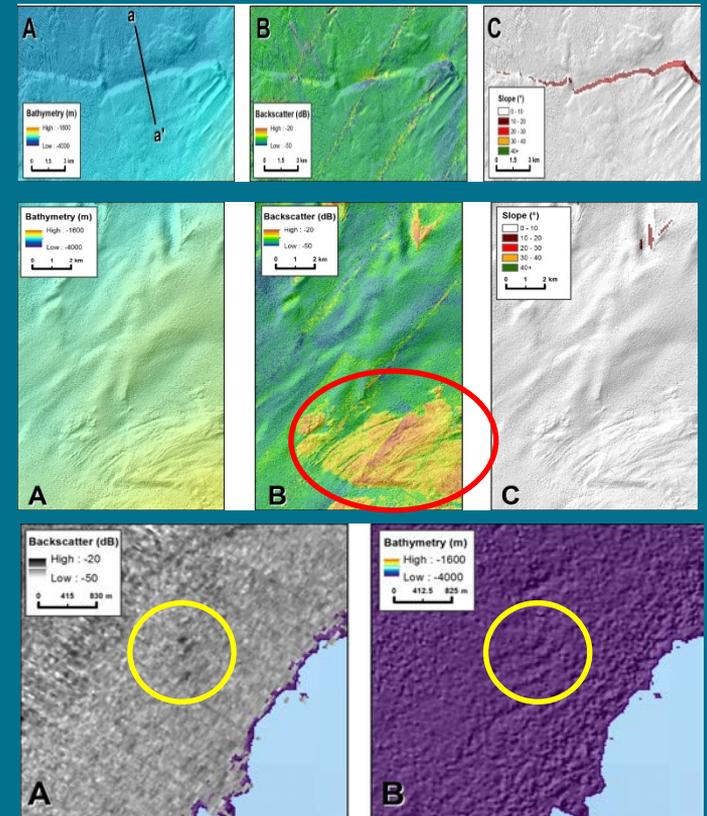
- For planning of underwater vehicle surveys

➤ RESPONSE UNCERTAINTY FEATURES

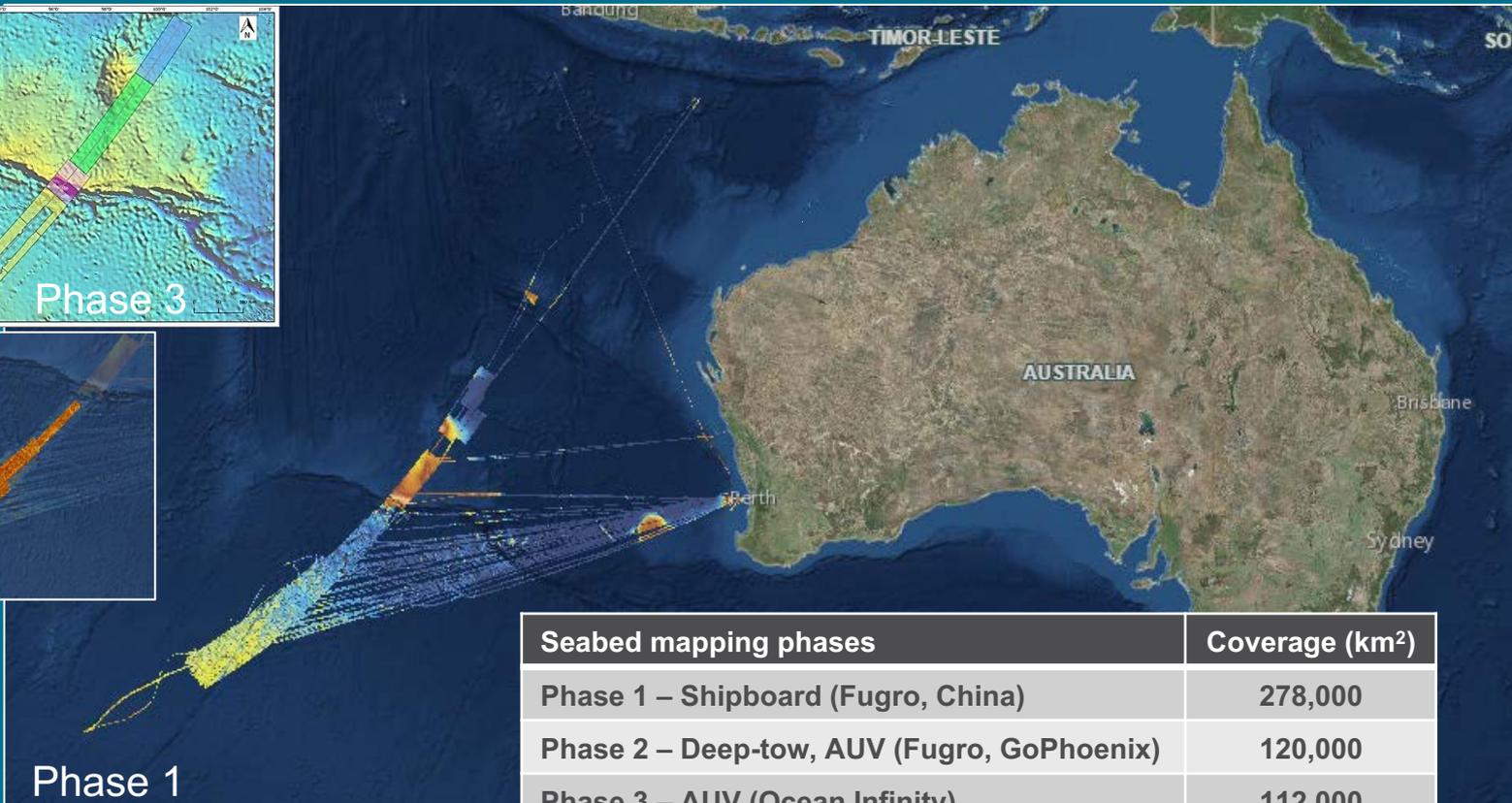
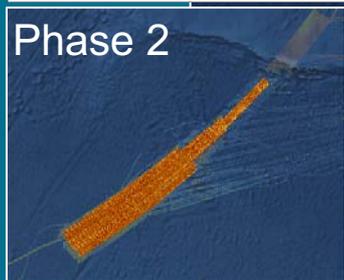
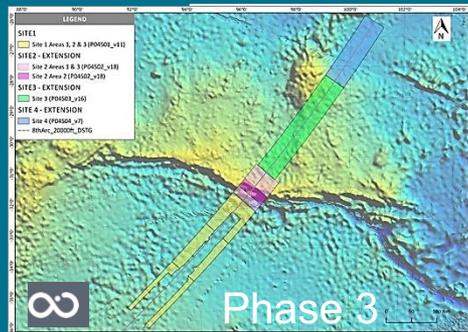
- Seabed with relatively complex / highly reflective acoustic characteristics that could hinder the detection of plane wreckage and may warrant attention in the subsea survey

➤ POTENTIAL TARGETS (for closer examination)

- Potential targets based on data anomalies
- Small features (<250 m in length)
- Difficult to explain based on the geomorphology

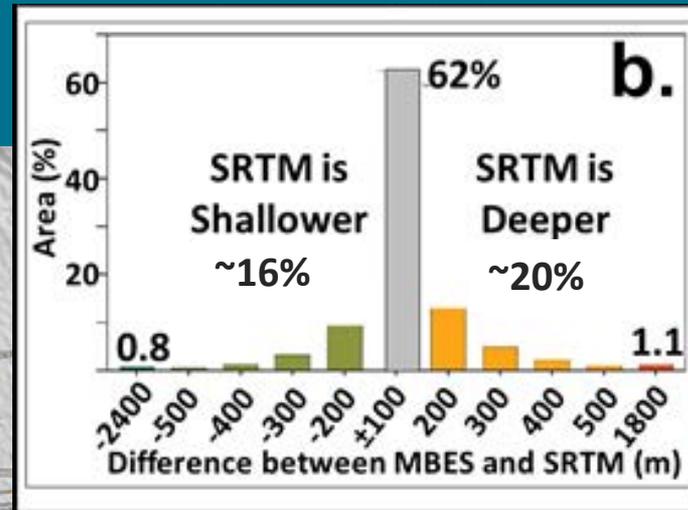
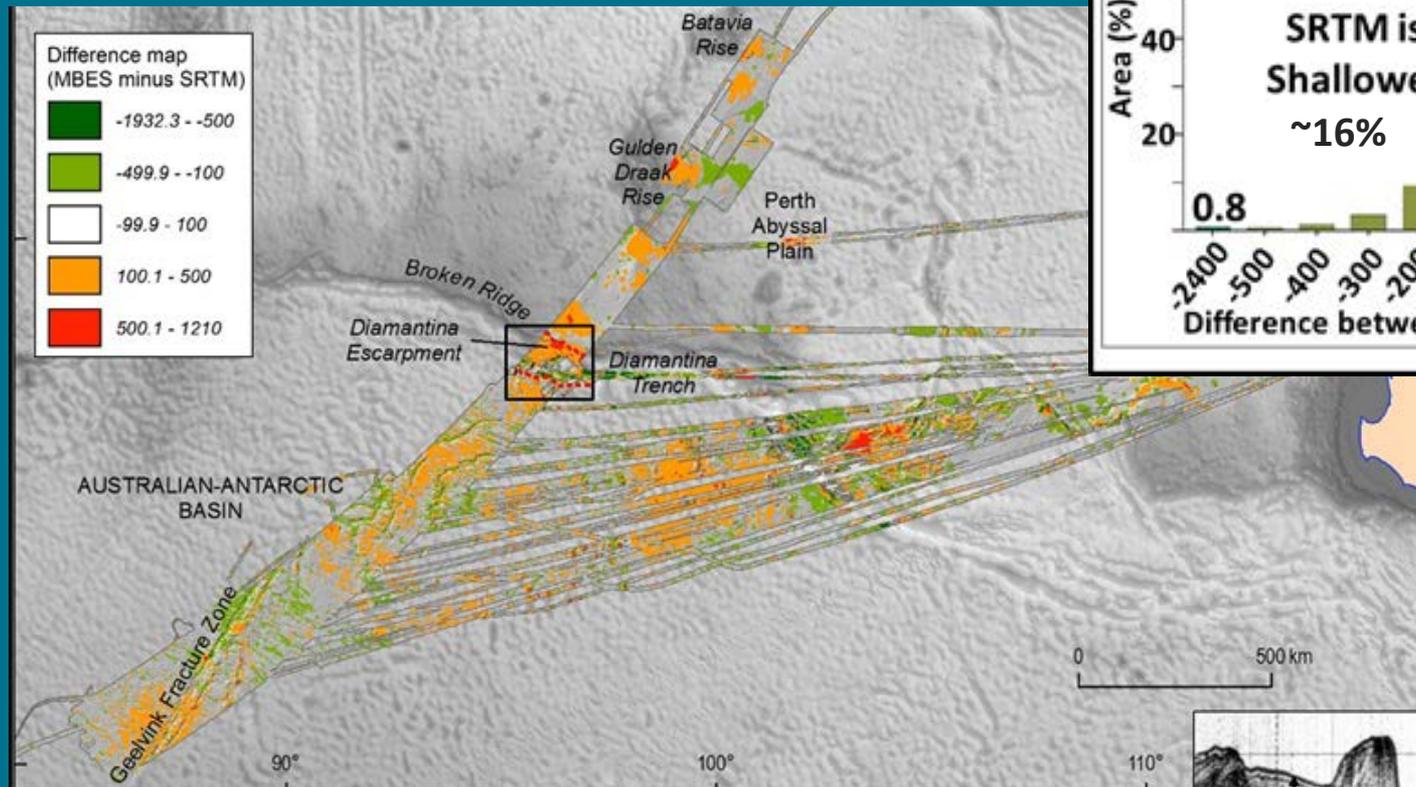


Final Data extent



Seabed mapping phases	Coverage (km ²)
Phase 1 – Shipboard (Fugro, China)	278,000
Phase 2 – Deep-tow, AUV (Fugro, GoPhoenix)	120,000
Phase 3 – AUV (Ocean Infinity)	112,000
Transits – Shipboard (Fugro)	430,000

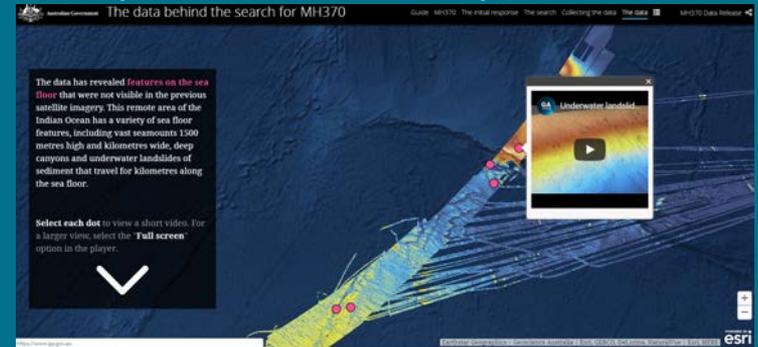
Vertical accuracy



Dealing with big marine data

MH370 seabed product delivery post search – key challenges

- Data volume (~300 TB of raw data to make openly available)
- Diverse array of information (different sensors, file formats, standards)
- Deliver in consistent way
- Develop & coordinate multiple modes of accessing data (web services, database, NCI, Storymap)
- Tailor to a wide range of end-users:
 - A view for the general public AND well-cured data for expert scientific consumption
- Information products for media

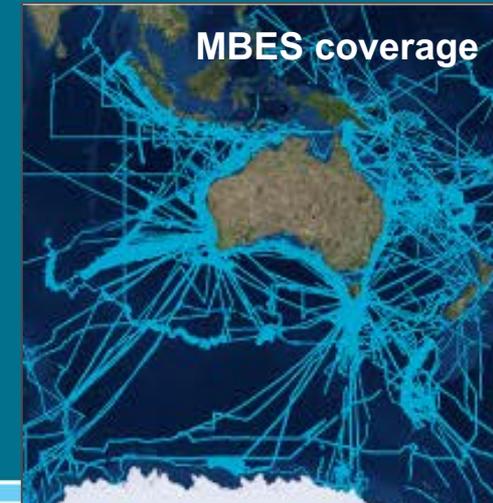




Enhancing national capability

Australian seabed data management & delivery challenges

- Many end users & uses:
 - Charting
 - Baseline data for coastal & marine planning & management
 - Scientific analyses (including Antarctic science)
 - Operational oceanography
 - Australia's marine territorial claims
- Data Replication
- Huge data gaps
 - >75% EEZ unmapped at sufficient resolution



Enhancing national capability

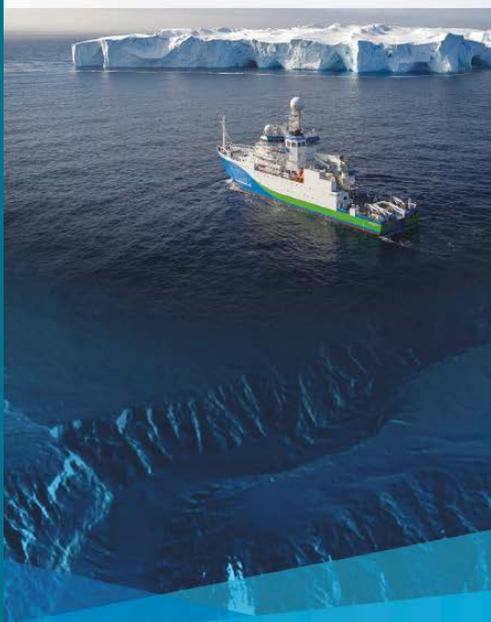
Australian Hydrographic Office (AHO): mandated to hold all seabed mapping data for the production and distribution of charts

Geoscience Australia: unofficial custodian of various seabed data types (receiving/acquiring/collating data) to support non-chart related data uses

CSIRO: Collector of large amount of seabed data (*RV Investigator, others*)

Results: not one place to access data suited for purpose





**BRINGING THE SEABED
TO THE SURFACE**

ausseabed.gov.au



**BECOME A PART OF
THE NATION'S SEABED
MAPPING FUTURE**

**To develop initiatives and
products to improve the
quality, discoverability
and accessibility of
seabed mapping data for
the Australian community.**

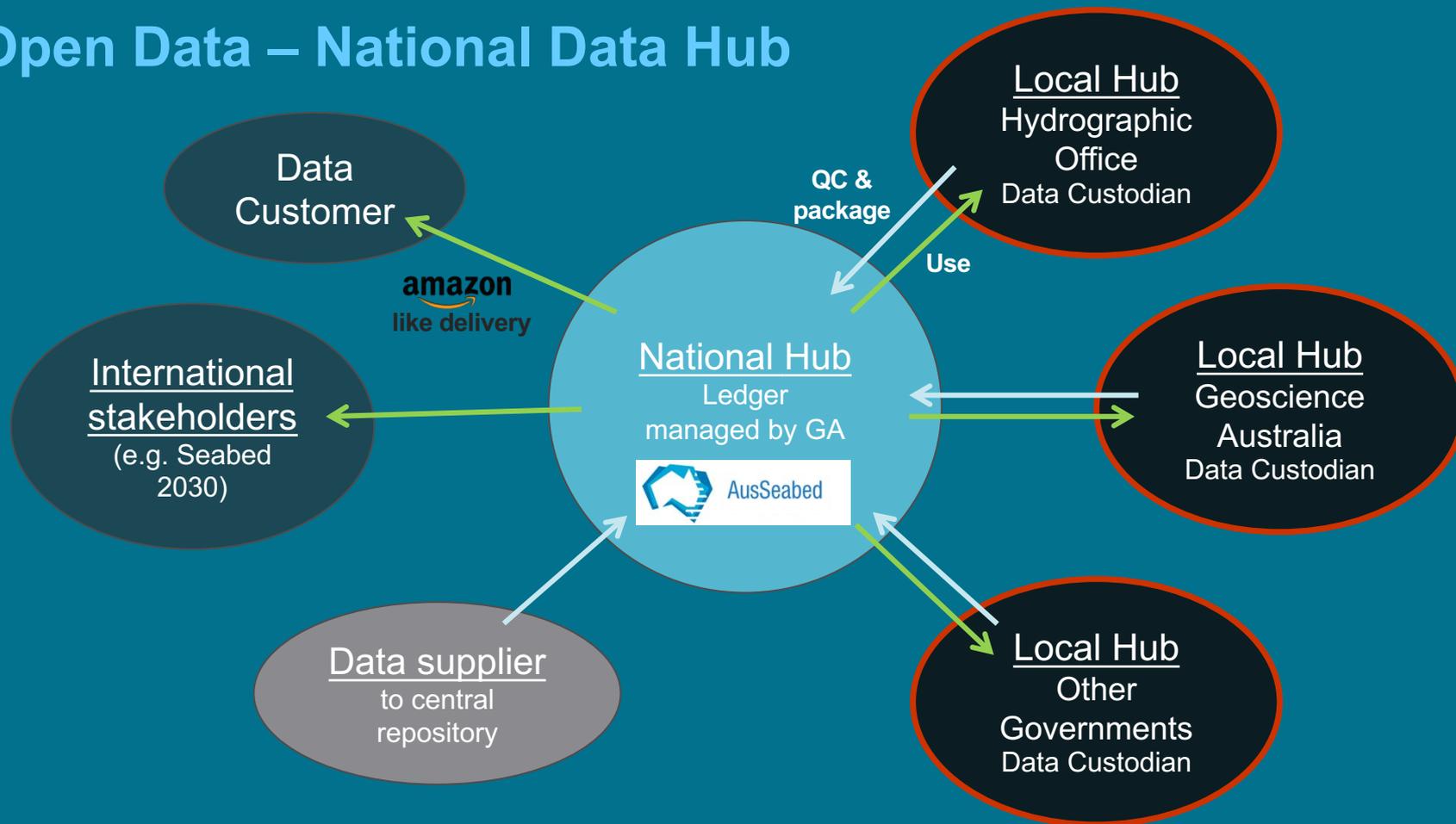


CURRENT PARTNERS



26 + partners

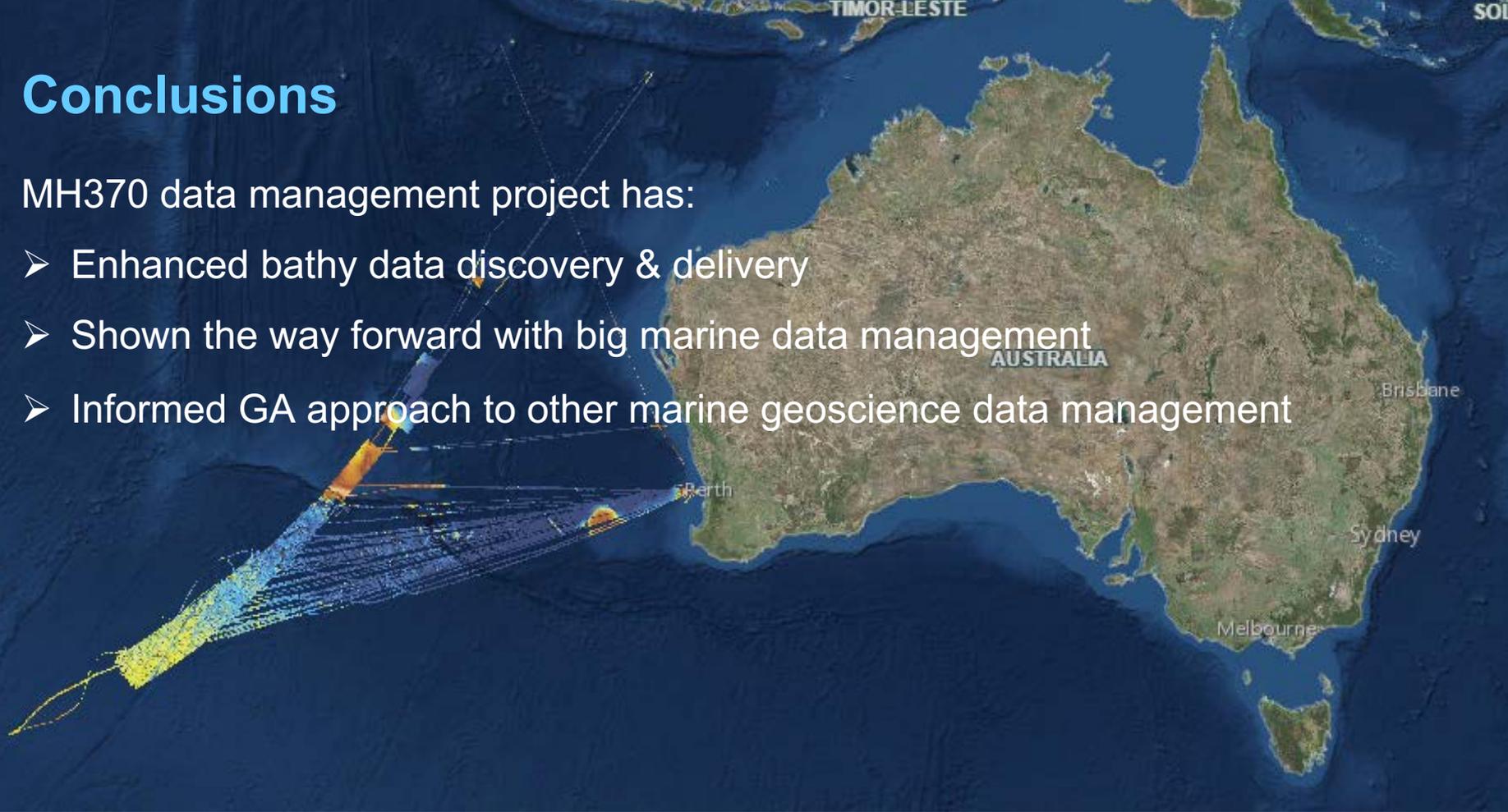
Open Data – National Data Hub



Conclusions

MH370 data management project has:

- Enhanced bathy data discovery & delivery
- Shown the way forward with big marine data management
- Informed GA approach to other marine geoscience data management





Australian Government

Geoscience Australia

Questions

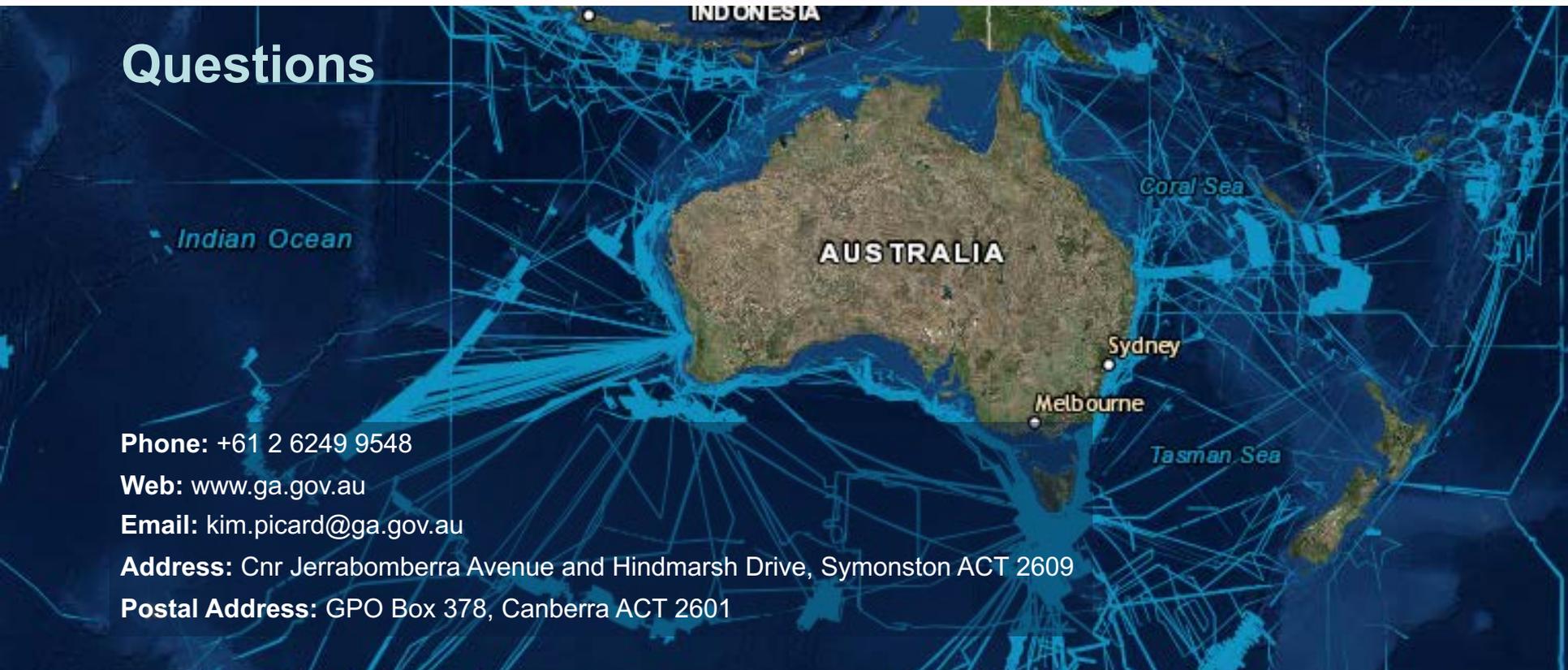
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Next steps in enhancing bathy data delivery – point clouds

The screenshot displays the Geoscience Australia Marine Data Discovery web application. The interface includes a top navigation bar with the Australian Government logo, the title 'Geoscience Australia Marine Data Discovery', and a search bar. Below the navigation bar, there are several panels and a central map. On the left, a sidebar contains filters for 'Upcoming Surveys', 'National Priorities', 'MH370 Phase 2 Data', 'MH370 Phase 1 Data', 'Individual Survey Data', and 'Regional Bathymetry and Topography'. The central map shows a bathymetric point cloud with a cyan polygon overlaid on it. On the right, a 'Select Product' panel is open, showing 'Unprocessed Multibeam' as the selected product. Below this, there are buttons for 'Search by Area' and 'Search by Attribute'. A yellow warning box indicates that the total data size exceeds the 2GB limit. Below the warning, there is a 'Shape Type' dropdown set to 'Polygon'. At the bottom of the right panel, a table shows the search results:

Name	File Size
0004_15A_MBES_EM2040_20...	313.23 MB
0005_15A_MBES_EM2040_20...	315.74 MB
0005_15C_MBES_EM2040_20...	299.03 MB
0006_15A_MBES_EM2040_20...	2.98 MB

The bottom of the application features a footer with various links and the Geoscience Australia logo.