The 'Atlas of Living Australia' comes to life

by Anthony Wallace, Spatial Source

Original article at https://spatialsource.com.au/gis-data/atlas-living-australia-comes-life

In a new project designed to document species and share traditional Aboriginal names and knowledge of plants and animals, Aboriginal community members of Arnhem Land are leading the way in sharing biodiversity knowledge.

Left: Justine Rogers and Yugul Mangi Ranger Maritza Roberts collecting plants in eastern Arnhem Land. The remoteness of the area means there is little documented data to inform land management, despite thousands of years of local knowledge. Credit: Dr Emilie Ens.

The Yirralka, Numbirindi and Yugul Mangi Rangers of eastern Arnhem Land in the Northern Territory are working with Macquarie University scientists to develop new tools for biodiversity assessment that can be applied across Australia.

The data collected will then be analysed, communicated and recorded in the *Atlas of Living Australia* (ALA), a national biodiversity open data service hosted by CSIRO. Currently users can use the database to perform location-based or species-based searches. As of August 2017, there are 73 million data entries comprising 119,095 species of flora and fauna. The ALA is licensed under a Creative Commons Attribution 3.0 Australia License, and as a result has seen a huge 1.4 million data downloads.

By adding the local knowledge of Aboriginal custodians to ALA, users of the data will have access to unique insights for how we understand and manage the Australian environment. The challenge is recording and sharing this information to support good land management decisions.

This is part of the reason the ALA project was recently awarded an Inspiring Australia Citizen Science Grant to support community participation in scientific research projects that have a national impact.
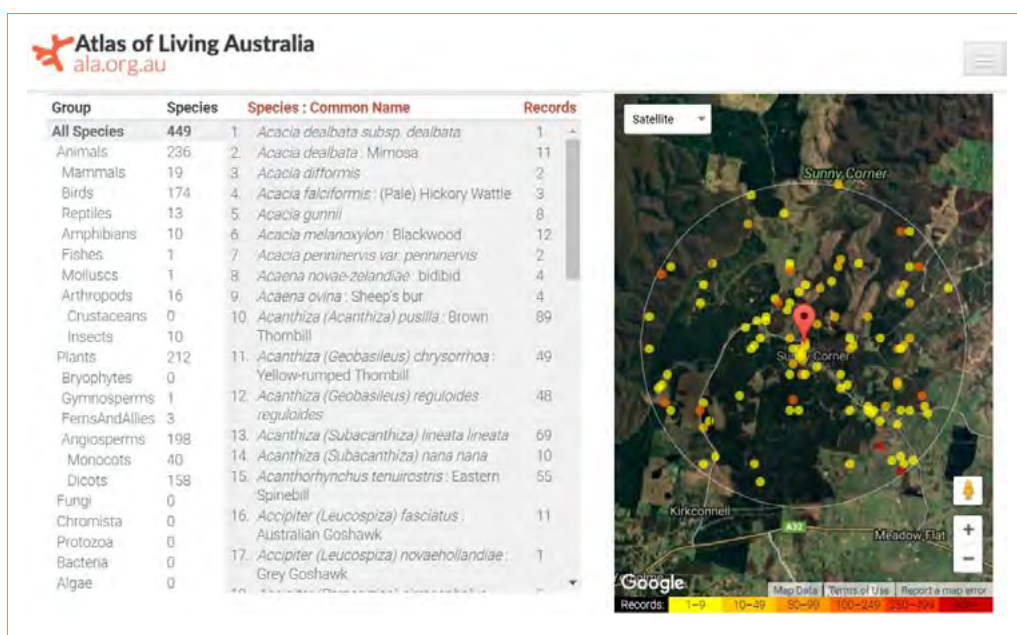
The **Atlas of Living Australia** is a collaborative, national project that aggregates biodiversity data from multiple sources and makes it freely available and usable online.

To share this vital Aboriginal knowledge and support the language and biodiversity of the region, Aboriginal citizens of eastern Arnhem Land communities (Laynhapuy Homelands, Numbulwar and Ngukurr) will trap, observe, identify and record flora and fauna using a combination of Western and Aboriginal science. Data that is approved by Traditional Owners, including in Aboriginal languages, will then be entered in the ALA, making it available for everyone to access.

Dr Emilie Ens, a Macquarie University scientist co-leading this project with Traditional Owners, is working with Aboriginal communities in Arnhem Land to develop research projects that incorporates local Aboriginal knowledge and Western Science.

"This project is not just about citizens collecting data but about being integrally involved in all stages of biodiversity research to empower community decision-making about remote land management," said Dr Ens.

For users wishing to use the data, the ALA also includes a spatial portal, which allows users to perform advanced queries and to download the data.

This work forms part of ALA's Indigenous Ecological Knowledge program, which is making the ALA more relevant and useful for Aboriginal and Torres Strait Islander people. In partnership with Indigenous communities working on country, the ALA is exploring the role that information management platforms play in bridging the boundaries between traditional and contemporary Indigenous Ecological Knowledge and western science.

Left: Yirralka Miyalk Ranger Djuranbil found some tree orchids. Credit: Dr Emilie Ens

CSIRO's hope is to give prominence to Aboriginal content in the ALA and to enable a greater understanding of Australia's biodiversity.

For more information about the Atlas of Living Australia follow the link to the Atlas website https://www.ala.org.au

The **Atlas of Living Australia** is a collaborative, national project that aggregates biodiversity data from multiple sources and makes it freely available and usable online.

MH370: View the data behind the largest search in aviation history

by Anthony Wallace, Spatial Source
Original article at http://spatialsource.com.au/category/gis-data

The search for missing flight MH370 is a famously ongoing saga.

The aircraft and the 239 people aboard the flight are still tragically unaccounted for, however in the almost three and a half years since the tragedy occurred, details of an investigation of untold proportions are now being revealed. The multinational team behind the search have just released the first phase of an open data release and the incredible story it tells.

The first clue to the MH370's whereabouts was determined using the Doppler effect to establish that the aircraft was likely to have crashed in the Indian Ocean. As a result, a multinational search effort for the aircraft was underway, one that went on to become the largest and most expensive search in aviation history. In the face of many challenges, the team behind the search used the most advanced hydrographic surveying equipment and methodologies to map this little explored part of the ocean floor in very fine detail. Unfortunately, there was no aircraft found among the incredible 3D models created.

Altogether the search is a compelling, albeit devastating, story. It is also a story defined by geography, technology and data. A storymap, therefore, is one of the best ways to for telling this particular story (See follow story and link in this edition).

In line with the release of the sea floor mapping data collected during the first phase of the search for missing Malaysia Airlines flight MH370, Geoscience Australia, one of the leading authorities behind the search, chose to use Esri Story Maps.

The Story Map shares the story of the search for MH370 in an interactive, visual format, showing the most interesting geomorphic features in a web browser, with flythrough visualisations, images and annotations.

"It was important for us at Geoscience Australia to make sure we delivered this data so that it is accessible to a
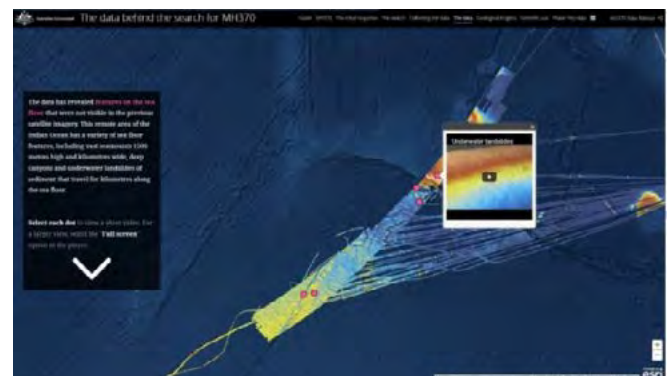

Screenshot from the MH370 search story map accompanying the Phase One open data release.

range of users, not only experts," said Dr Stuart Minchin, the Chief of Geoscience Australia's Environmental Geoscience Division.

"This data will contribute to a greater understanding of the geology of the deep ocean and the complex processes that occur there," he said.

Tobias Schubert from Esri Australia said the MH370 storymap tells the story of the search, the collection of data and how the public can now access the available data.

"Along with identifying large geological formations and several shipwrecks," he said. "the search uncovered a number of smaller items on the sea floor, including whale bones, steel cables and oil drums."
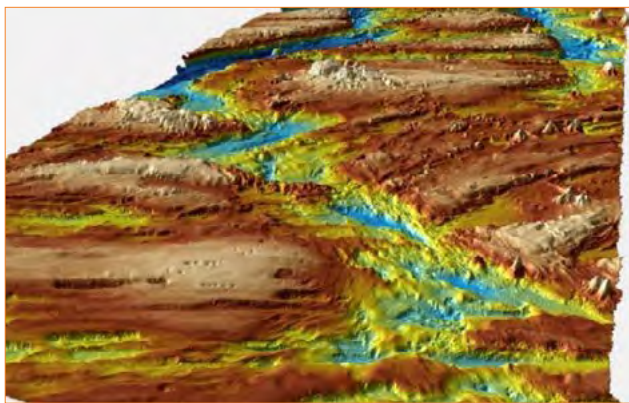
A 3D image of the bathymetry of the sea floor with a view looking northeast into a 'fracture zone'.
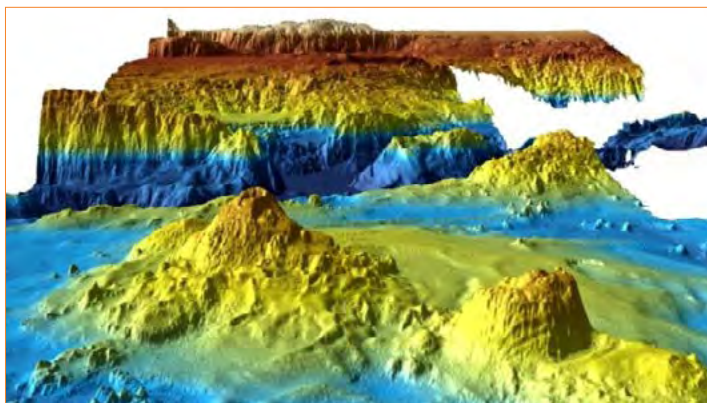
A 3D image of the bathymetry with view looking northeast into the Diamantina Escarpment.

The search for MH370 involved collecting large volumes of data in two phases – the first phase was a survey to collect bathymetry data, or data of the sea floor topography, to develop maps of the sea floor in the search area. These maps were used to safely guide the second phase of the search, the underwater search. With the Story Map, viewers can look at locations of debris and view drift modelling conducted by CSIRO.
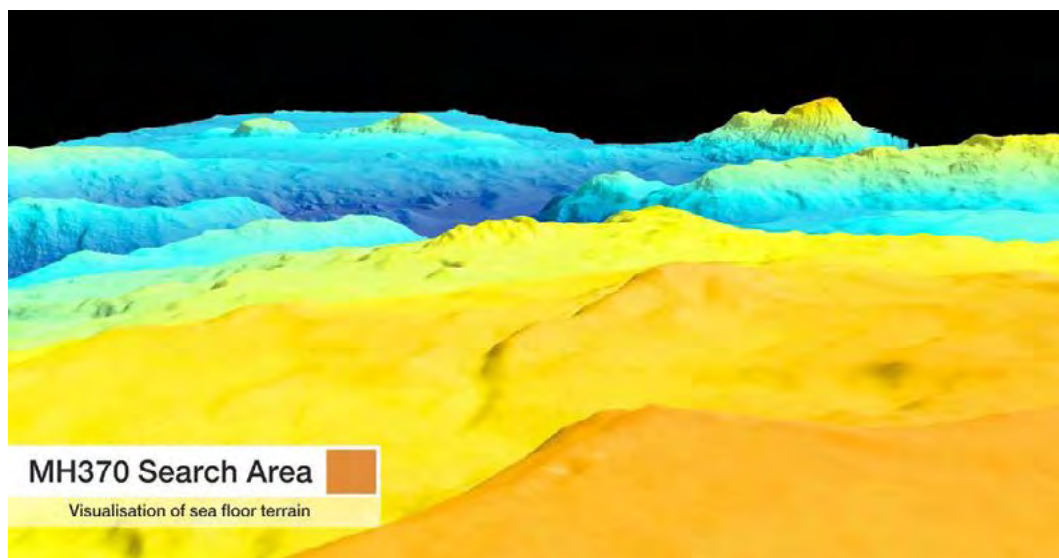
Australia, with the support of Malaysia and the People's Republic of China, committed to releasing the data acquired during the two phases of the search to the public. Geoscience Australia is delivering the data

on behalf of the Australian Government. Phase Two is scheduled for release in mid-2018.

The technical and scientific community is able to download the raw datasets to build their own conclusions and to study the ocean's depths in this hard to access part of Earth.

Users wanting to download the processed datasets from marine.ga.gov.au or select an area of interest to download from bathymetry-extractor.ga.gov.au.

For technical users wanting to download the raw data can download the multiple raw datasets from the National Computational Infrastructure or from the Amazon Web Service portal (via s3://mh370.phase1.data).

Screen shot from vdeo at http://spatialsource.com.au/gis-data/mh370-view-data-behind-largest-search-aviation-history

Hope for a new search area

This, however, may not be the end of the story. There is growing evidence that the search authorities have been looking for the aircraft in the wrong place all along.

As the storymap goes on to explain, drift modelling from the wreckage found so far suggests that a crash site is likely located north of the area subject of both Phases One and Two of the search. Even the government bodies behind the search have admitted as much. For now, however, the search has been officially suspended.

Related resource: The search for MH370 – An interactive story map

Geoscience Australia have created an interactive story map using Esri's ArcGIS Story Map software so the public could explore the data collected during the search and learn more about the search for MH370.

Story maps include maps, text, photographs, statistical data and video clips.

The data behind the search for MH370

The Australian Government led search operations for the missing Boeing 777 aircraft operating Malaysia Airlines flight MH370 in the southern Indian Ocean. The search involved the collection and analysis of large volumes of marine data from a remote area. The data obtained during the first phase of sea floor mapping is now available to the public.

SYLLABUS LINKS

Geographical tools: Spatial technologies

Spatial technologies are used to visualise, manipulate, analyse, display and record spatial data

Cross curriculum priority: ICT

Students develop ICT capability by maximising use of the technologies available to them, adapting as technologies evolve and limiting the risks to themselves and others in a digital environment. Students locate, select, evaluate, communicate and share geographical information using digital and spatial technologies. They explore the effects of technologies on places, on the location of economic activities and on people's lives and understand the geographical changes produced by the increasing use of technology.
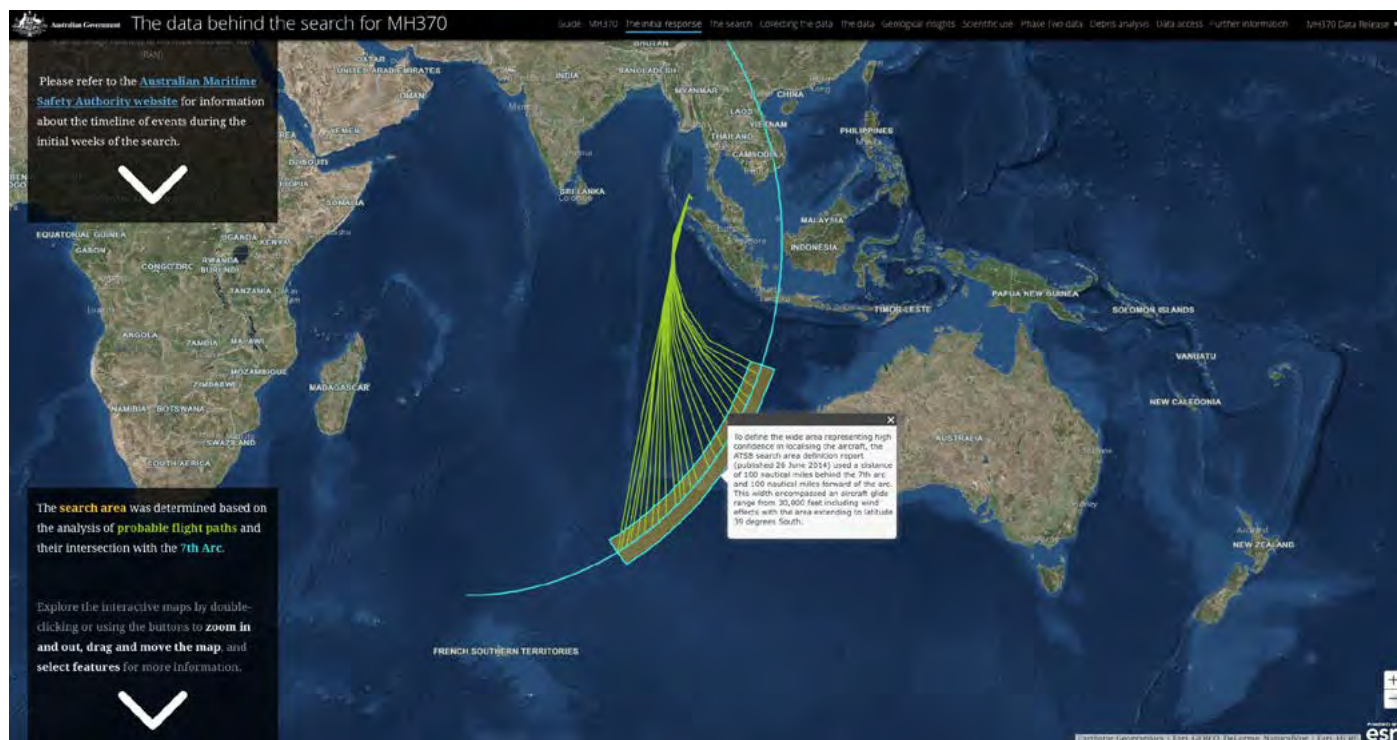
Geography 7–10 Outcomes

A student:
– locates and describes the diverse features and characteristics of a range of places and environments GE4-1
– explains the diverse features and characteristics of a range of places and environments GE5-1
– acquires and processes geographical information by selecting and using geographical tools for inquiry GE4-7
– acquires and processes geographical information by selecting and using appropriate and relevant geographical tools for inquiry GE5-7

Elective Geography: Oceanography

Students investigate features of the world's oceans, for example:

– description of the spatial distribution of the world's oceans and ocean currents
– examination of the major physical features of the ocean floor

Go to the Geoscience weblink below to follow this amazing story –
https://geoscienceau.maps.arcgis.com/apps/Cascade/index.html?appid=038a72439bfa4d28b3dde81cc6ff3214

Learn more about Story Maps – http//storymaps.arcgis.com/en/