# National coastal website released

*Major source of coastal information and data*

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Geoscience Australia, the national custodian for coastal geoscientific data and information, launched the OzCoasts web-based database and information system in August. The website will contribute to improving natural resource management and the conservation of Australia's coastal zone, estuaries and near-shore environments.

The website was designed with input from over 100 scientists and resource managers from more than 50 organisations including government, universities and the National Estuaries Network. Each month approximately 15 000 unique visitors from more than 138 countries visit the website to view around 52 000 pages. Maps, images, reports and data can be downloaded to assist with estuary and coastal science, monitoring and management.

## Range of information

Geoscience Australia developed OzCoasts in conjunction with the National Land and Water Resources Audit (NLWRA) and the former Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management (Coastal CRC). Previously known as OzEstuaries the website draws together a diverse range of data and information on Australia's coasts and estuaries (figure 1). The website includes links



**Figure 1.** The home page and opening pages of the different modules include shorter and more precise text and shortcuts to key information and the most frequently visited pages.

to the Climate Change, Capacity Building and Monitoring and Evaluation priority areas in the Implementation Plan for a National Cooperative Approach to Integrated Coastal Zone Management.

OzCoasts currently consists of six inter-linked modules: Search data, Conceptual models, Coastal Indicators, Geomorphology & Geology, Environmental Management and Natural Resource Management (NRM) Reporting. These modules can be accessed from a global navigation bar on the home page.

The NRM Reporting module, which is the most recent addition to the website, provides online access to the key information and data that supports NRM. It includes the national Estuary Coastal and Marine (ECM) indicator protocols, and has data exploration tools for viewing information that relates to Habitat Extent, Distribution and Monitoring Reports and Estuary Report Card Reporting (see below). The NRM Reporting module, was developed in conjunction with the NLWRA to assist in delivering national-level assessments on the broad ecological integrity of estuaries based on the National Monitoring and Evaluation Framework.
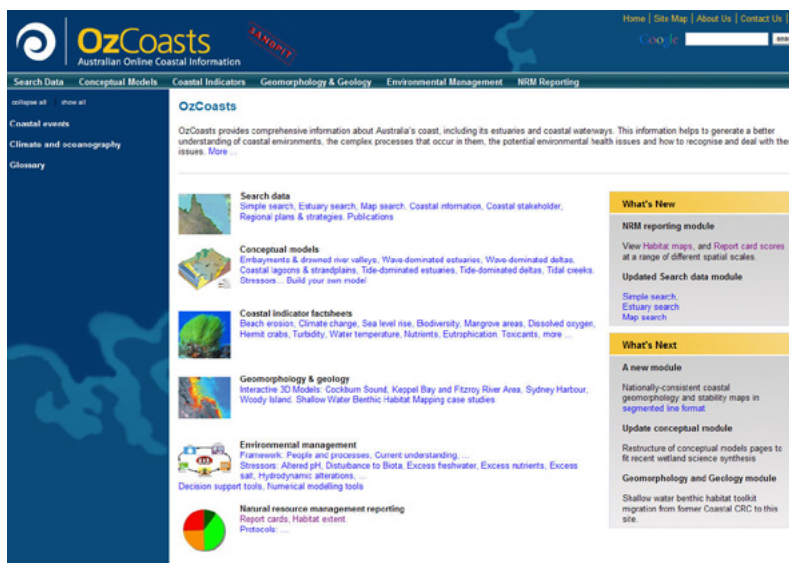
## Habitat extent and distribution reporting

The Habitat Extent, Distribution and Monitoring interface comprises high spatial resolution polygons as mapped by the state and territory agencies with thematic attributes based on the recently-agreed National Intertidal/Sub-tidal Benthic (NISB) Habitat Classification scheme (Mount, Bricher and Newton 2007). The NISB classification scheme was developed as part of a collaborative project between the Department of Climate Change and the NLWRA. It will contribute to an initial vulnerability assessment of the whole Australian coastline and will support the development of marine 'ecoregions' or bioregional subregions.

Prior to the NISB Habitat Classification scheme, there was no consistently-classified coastal habitat mapping of the entire Australian coastline, except at scales that were not detailed enough to be of practical use in a coastal vulnerability assessment. The habitat classes occur between the location of the outer limit of the photic benthic zone (usually at the 50 to 70 metre depth contour) and the approximate position of the highest astronomical tide mark. These habitat classes include: coral reef, rock dominated, sediment dominated, mangroves, saltmarsh, seagrass, macroalgae and filter feeders (such as sponges). An account of the development of the map series and the resulting scheme is included in Mount, Bricher and Newton (2007).

There are national, state and regional summaries that comprise vector polygon layers of 10 and 50 kilometre grid cells which include a colour code indicating whether a habitat is present, absent or unknown within a given grid cell (figure 2a, b: Mount and Bricher, 2008). The grid cells have 50 kilometre grid spacings at the national scale, and 10 kilometre spacings at state and regional levels. The summary maps are designed to help users visualise the occurrence of the different habitats around the continent. The summary maps also depict the nature of data availability around the continent. The national, state and regional summary maps will be made available through the Australian Resources Online website. The actual habitat maps from some states (Tasmania, South Australia, Western Australia and most of Queensland) as well as the Northern Territory are accessible to users at scales less than 50 square kilometres (figure 2b).

## Report Card facility

The ECM Report Card Reporting tool allows users to view aggregated ('national') report scores and trends (if available) on an annual basis at a range of different spatial scales including national, state/territory, regional (Catchment Management Authorities, NRM zones and Local Government Areas) and bioregional (Interim Marine and Coastal Regionalisation for Australia and Marine Planning regions).
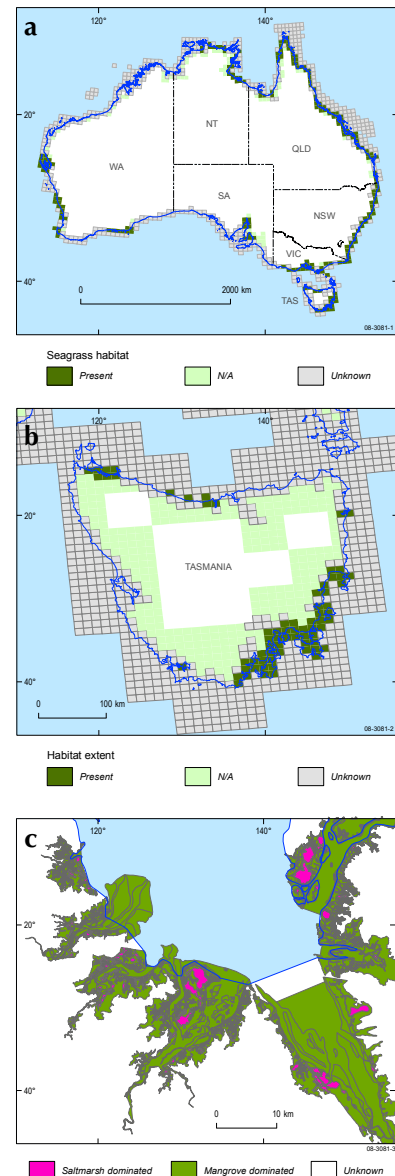
Seagrass habitat   ■ Present   ■ N/A   ■ Unknown

Habitat extent   ■ Present   ■ N/A   ■ Unknown

■ Saltmarsh dominated   ■ Mangrove dominated   □ Unknown

**Figure 2.** Output from the habitat mapping component of the NRM Reporting module illustrating the presence and absence of seagrass-dominated habitats: (a) at the national scale (50 kilometre grid cells) and (b) regional scale (10 kilometre grid cells). Users can also zoom to scales <50 square kilometres to obtain the actual habitat maps (c).

This tool also enables users to get a statistical breakdown of the scores for the area selected (figure 3). The map interface shows the reporting regions (estuaries) as dots with a colour coding that matches that of the condition assessment in an accompanying
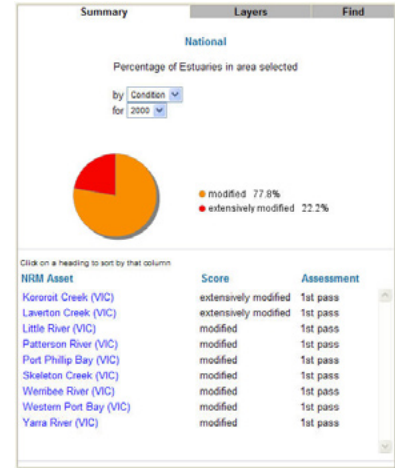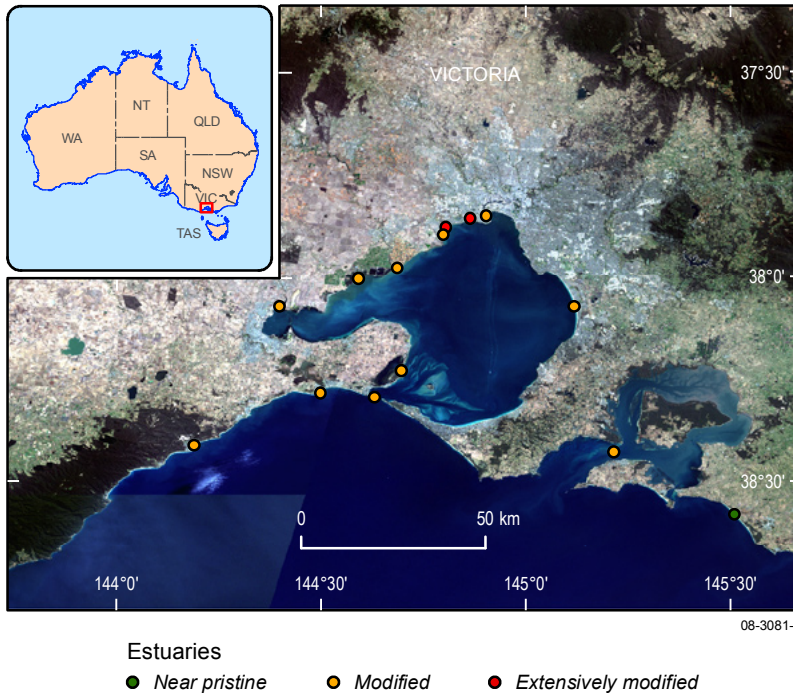
Estuaries
● *Near pristine*    ● *Modified*    ● *Extensively modified*

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**Figure 3.** Sample of report card, showing the statistical break-down of the condition of scores of estuaries in the Southern Rivers NRM region in 2000.

pie chart. A dialogue box at the bottom of the screen provides hyperlinks to more detail on the report cards and other information behind the assessments.

Though the report cards for the NLWRA 2000 assessments are available in OzCoasts, those from future assessments may be found at state/territory or regional websites. The condition classification dataset from the first NLWRA (NLWRA 2002) comprises the first year of data in the website, and has been used for the proof of concept.

There are also interactive tools to capture the more individualistic approaches of the states/territory or regional groups to reporting and monitoring. For example, the Burnett Mary region (Queensland) reports against condition and risk using a range of different stressors (Scheltinga and Tilden 2008). The functionality in OzCoasts allows users to view the distribution and statistical breakdown of the scores for each of the different stressors listed in both the 'condition' and 'risk' fields. More detailed information about the indicator results behind these stressors will be made available through the Burnett Mary website constituting the second tier in the web-reporting process (Scheltinga and Tilden 2008).

## Coastal vulnerability to climate change

The Department of Climate Change and the Department of Environment, Water, Heritage and the Arts (DEWHA) are working with the states and territories through the Intergovernmental Coastal Advisory Group to assess Australia's coastal vulnerability to climate change, including impacts on coastal habitats and infrastructure. The Department of Climate Change and Geoscience Australia have

signed a collaborative agreement to contribute to the Coastal Vulnerability Assessment Project. It will provide fundamental datasets to support decision-makers in identifying those areas in Australia's coastal zone where potential climate change impacts may be rated as high, medium and low. To provide a foundation for the initial assessment, Geoscience Australia has contracted the University of Tasmania to conduct a National Shoreline Geomorphic and Stability Mapping Project.

The Project includes the preparation of a nationally-consistent geomorphic map of the entire Australian shoreline in a geographic information system (GIS)-based segmented line format (figure 4). Each line segment will include multiple attribute fields that describe important aspects of the shoreline geomorphology (or landforms). This format, which
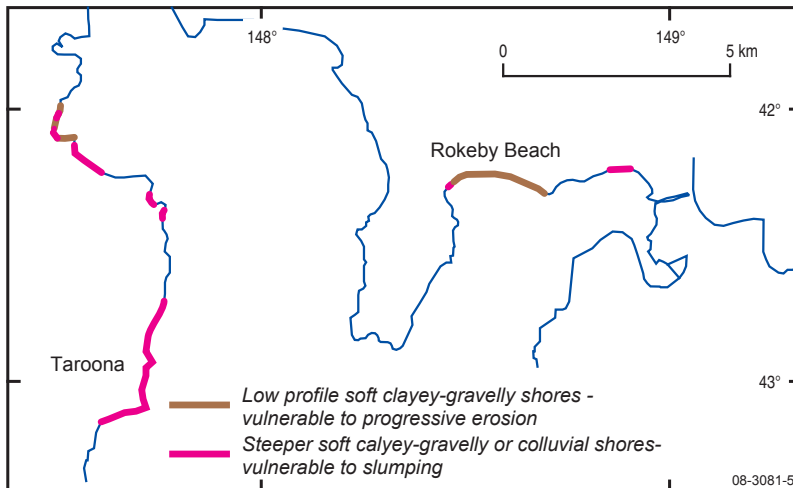
**Figure 4.** A 'smartline' geomorphology map. Each line segment includes multiple attribute fields that describe important aspects of the geomorphology of the coast as illustrated in figures 1 and 2 (from Sharples 2006).

has been termed a 'Smartline', is based on an approach that has been used in Tasmanian studies and expanded to incorporate the broader range of coastal landforms found around Australia (Sharples 2006). Interactive Smartline maps and query functions will be delivered through OzCoasts via a module dedicated to Coastal Stability. The three Smartline maps already scoped for development in 2008-2009 include: Geomorphology (simple), Geomorphology (advanced), and Stability.

The Smartline stability map will be based on an assessment of the geomorphology (or landform) data and includes potential impacts of climate change and sea level rise, including shoreline erosion. The stability map will also be made accessible through the NRM Reporting module so that it may be used in the context of NRM assessments.

Geoscience Australia is concurrently developing a national approach to coastal geomorphological mapping, especially the classification of Quaternary coastal depositional environments to overcome current inconsistencies in nomenclature. Once accepted, this classification scheme will be used in the development of a comprehensive, nationally-consistent GIS of Australia's coastal depositional features (geomorphological units). This GIS will provide one of the fundamental datasets for more detailed and rigorous coastal vulnerability assessments.

## For more information

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### References

Mount R & Bricher P. 2008. ECM National Habitat Map Series User Guide. Report to the National Land and Water Resources Audit.

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Scheltinga D & Tilden J. 2008. [CD ROM] Final Report on the 'Development of report card content to trial local and national level reporting on estuaries in the Burnett Mary NRM region' project. Report to the National Land and Water Resources Audit, April 2008. FARI Australia Pty Ltd.

Sharples C, 2006. Indicative Mapping of Tasmanian Coastal Vulnerability to Climate Change and Sea-Level Rise: Explanatory Report (Second Edition). Consultant Report to Department of Primary Industries & Water, Tasmania.

### Related websites

OzCoasts website

www.ozcoasts.org.au