Australian Government
Geoscience Australia

Digital Earth
AUSTRALIA

Digital Earth Australia Coastal Zone Products

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Continental Scale Products for the Coastal Zone

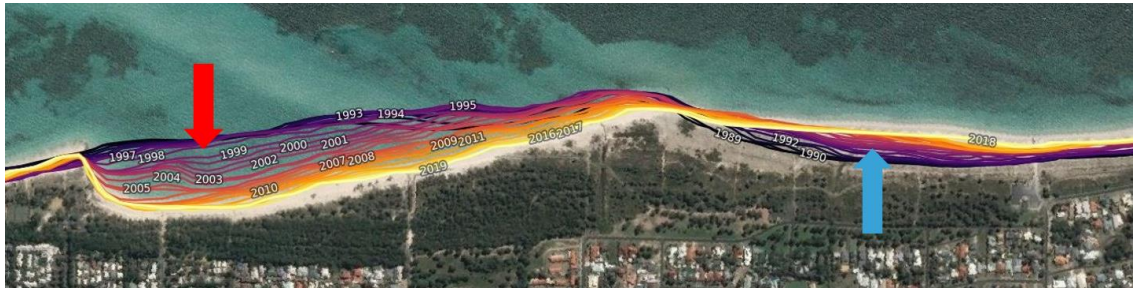
DEA Aquatic Product Development Team

- Historical Characterisation > Ongoing Monitoring
- Focus on the intertidal zone
  - Mangroves > Saltmarsh > Intertidal Mudflats
- Existing mapping utilises the Landsat archive in Digital Earth Australia 1987 - 2021
  - Ground resolution of 30m
  - Future work to take advantage of the 10m resolution of Sentinel-2
- ***A key role going forward for DEA is to assist in the operationalisation of collaborators algorithms / workflows***

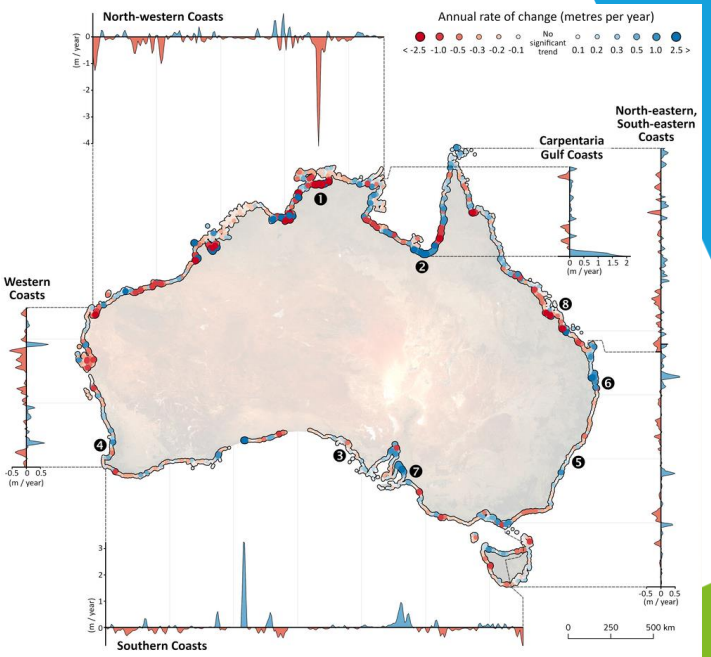
DEA Coastlines

Annual shorelines and rates of coastal change along the entire Australian coastline from 1988 to the present

Annual Coastlines (median position of the coastline at mean sea level)



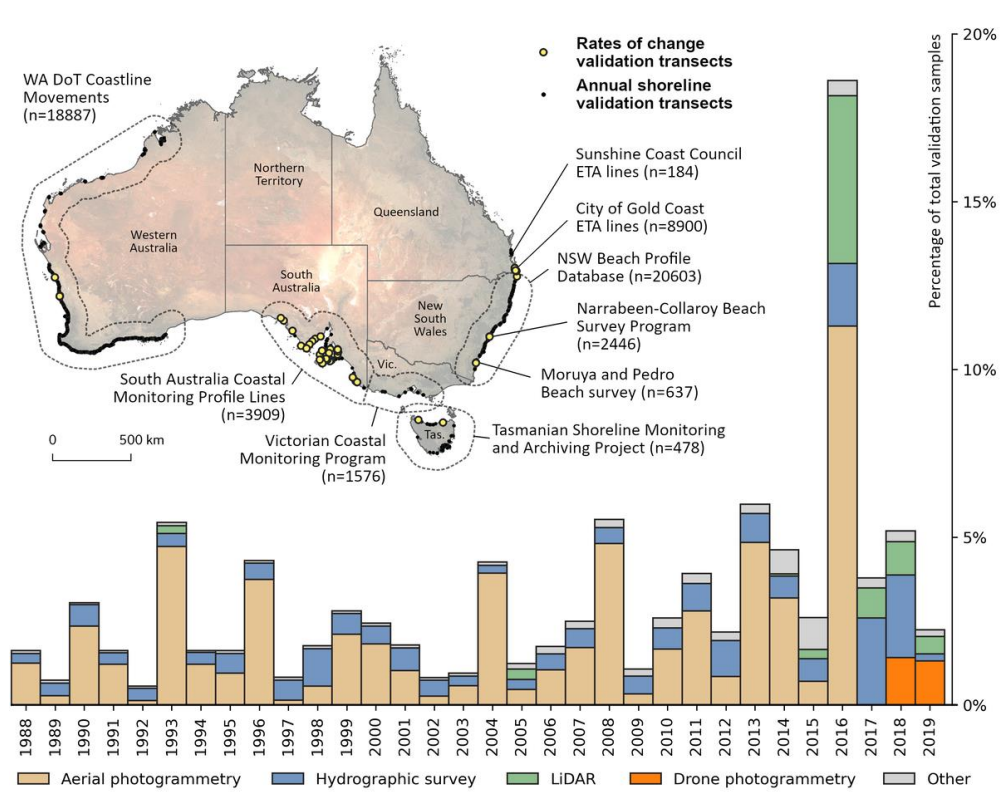
Rates of coastal change (metres growth or retreat per year since 1988)

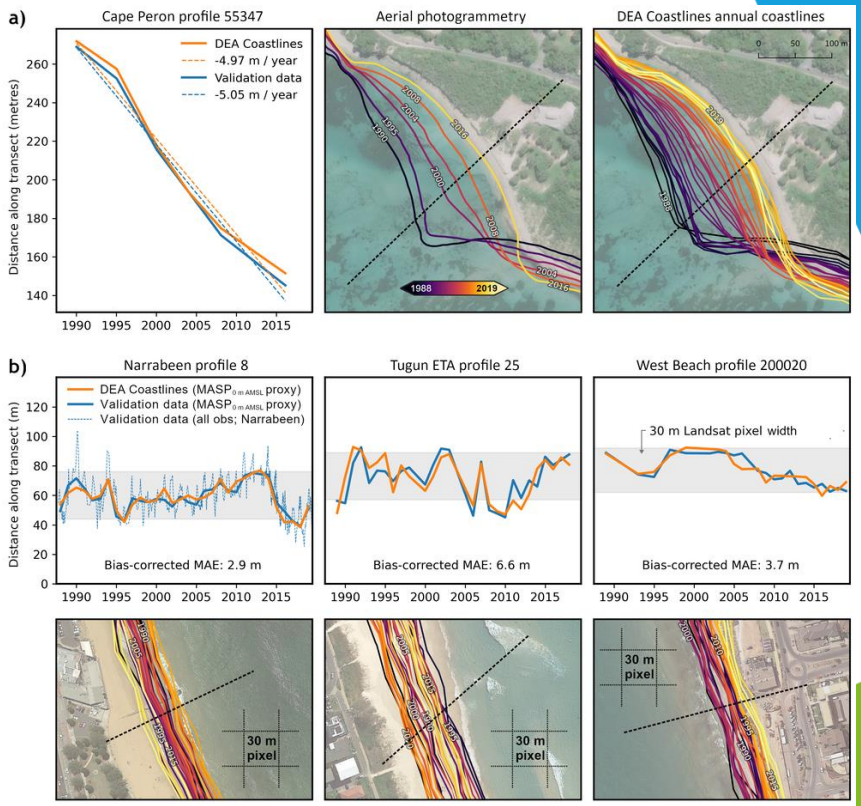


https://maps.dea.ga.gov.au/#share=s-DEACoastlines&playStory=1

DEA Coastlines

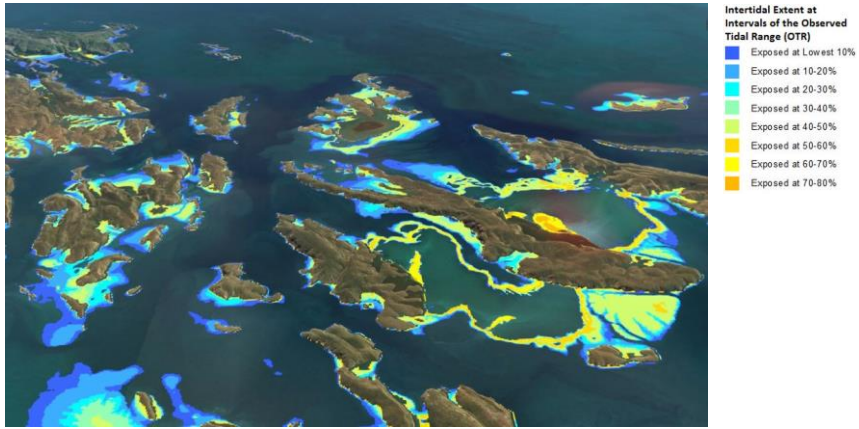
Continental scale validation against historical rates of change and individual observations



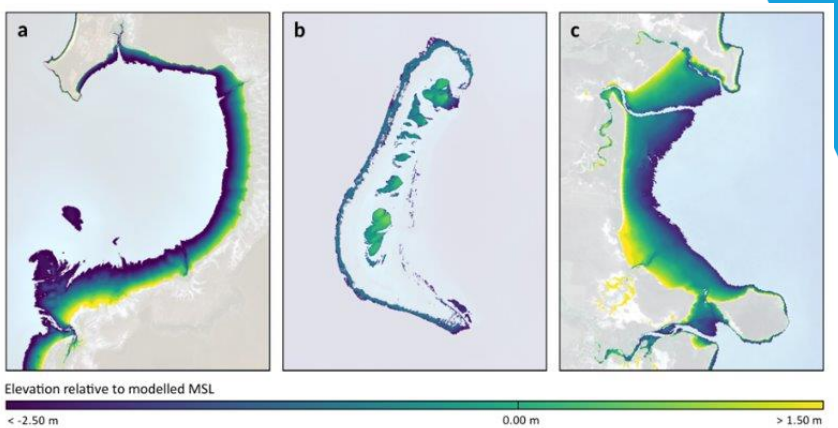


DEA Intertidal Products

Intertidal Extent Model (ITEM) - shown in Talbot Bay, WA

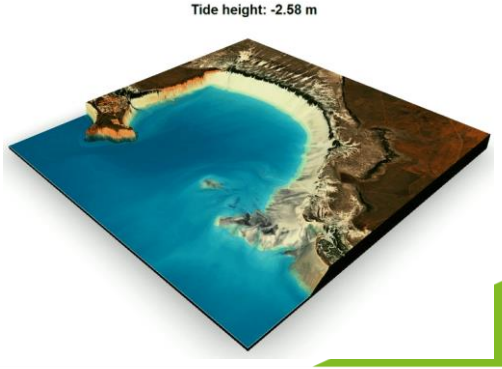


National Intertidal Digital Elevation Model (NIDEM)

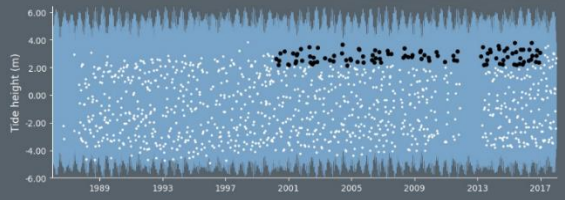


A suite of products that can address a range of applications in the coastal zone:

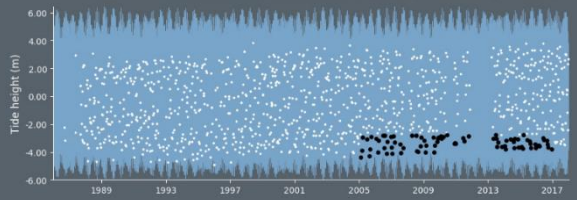
- Fundamental spatial data (AusSEABED Great Barrier Reef bathymetry)
- Environmental Assessment (e.g. Toondah Harbour)
- Hazard Modelling (storm surge etc)
- Tidal flat mapping (Native Title boundary definition)



High tide composite



Low tide composite



Intertidal Exposure for Migratory Species Applications

Prepared for
Gladstone Ports Corporation Limited (GPC)

Subject
Annual Report: Migratory Shorebird Monitoring – Understanding Ecological Impact (CA12000284)

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4 Aug 2016

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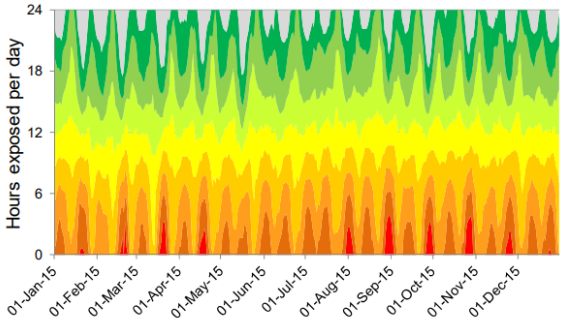
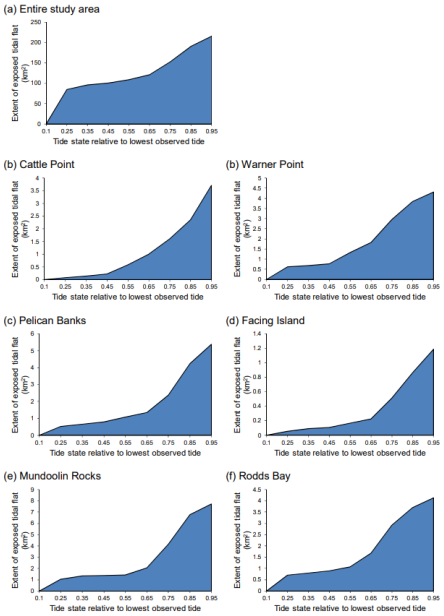
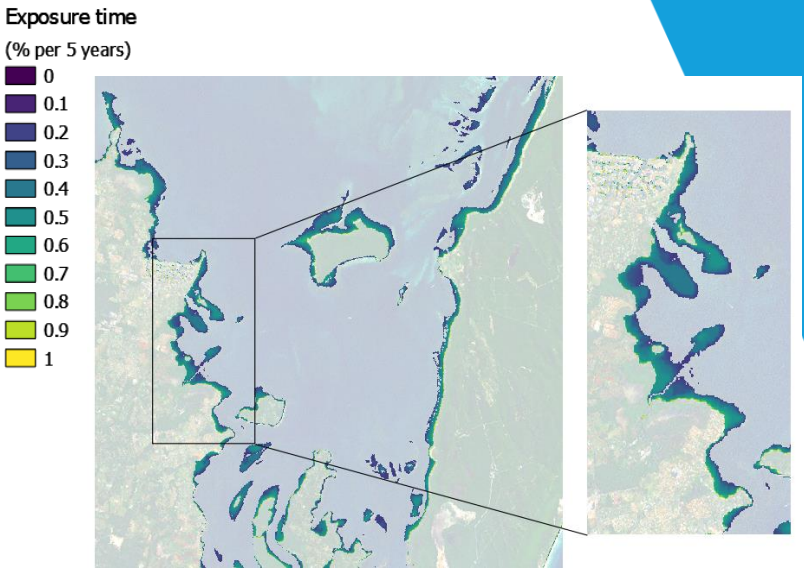




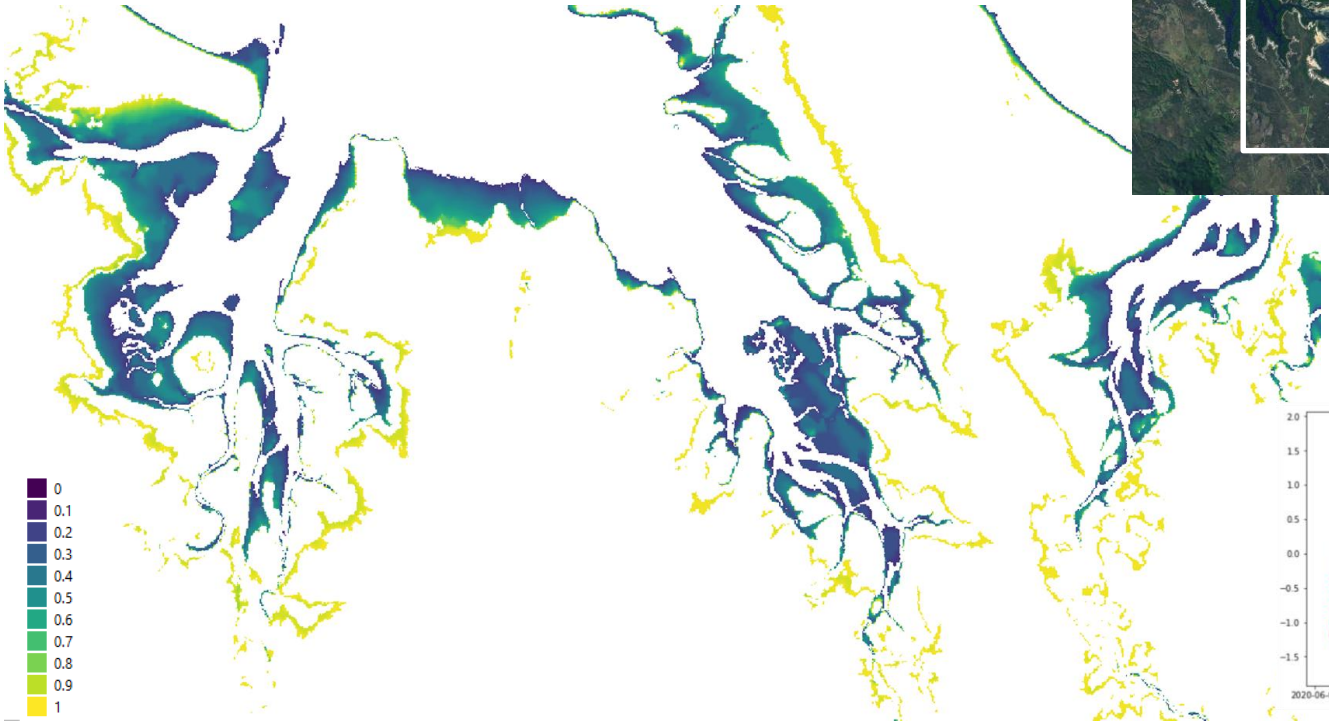
Choi et al. 2016 utilised DEA ITEM to derive exposed intertidal areas and exposure durations for Gladstone Harbour and surrounds

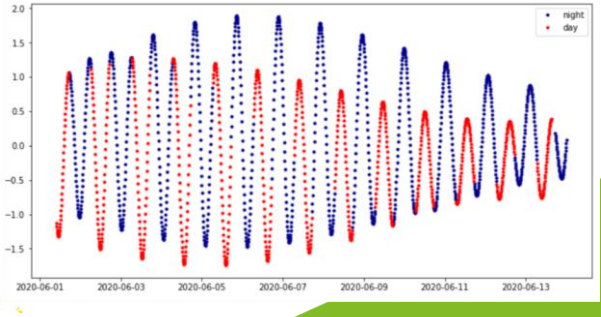


DEA is developing an Intertidal Exposure product that can be tailored for seasonal applications - Example here shown at Toondah Harbour, Moreton Bay

Intertidal Exposure for Habitat Characterisation (in development)

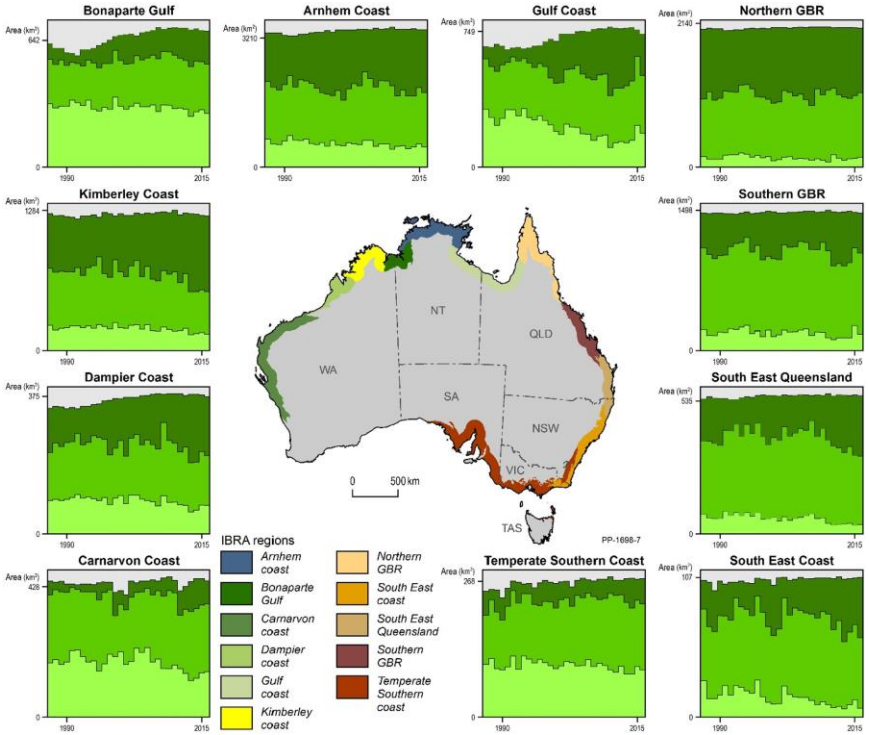
Daytime Exposure for Rodds Bay, south of Gladstone, QLD
Filtering of the tidal cycle allows analysis for day/night, seasonal and tidal components such as spring/neap/low/high tide

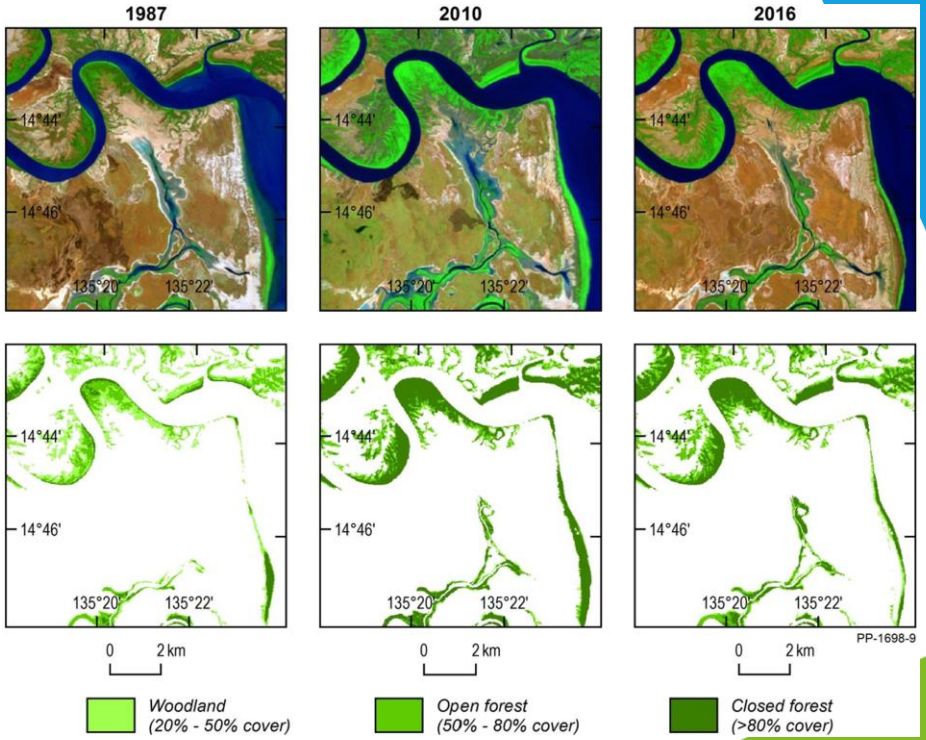




DEA Mangroves

Mapping the canopy density and distribution of Mangrove communities across Australia 1987-2020



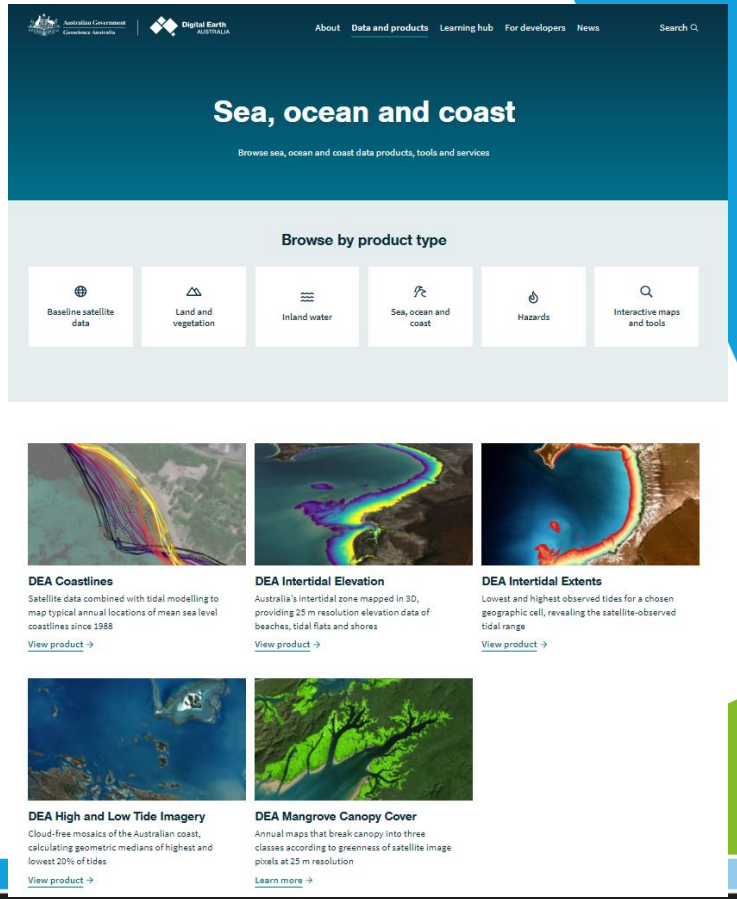


Operational Workflows and Products on DEA

Two key roles for the DEA Product Teams

- Development of products to feed into stakeholder decision making and reporting

- Facilitate the operational implementation of science workflows and products with external partners



Example:

- Coastal habitat change detection and classification.
- A global method and application developed on Google Earth Engine.
- Working with the developers at JCU, UQ, UNSW, and with the Clean Energy Regulator.
- Aim to develop an operational application tailored for Australian coastal environments to run on DEA infrastructure.

Thanks!

Find out more at:

https://www.dea.ga.gov.au/

https://maps.dea.ga.gov.au/

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