A Guide to VIC Coastal Data for DEECA Suppliers
from the VIC Coastal Monitoring Program (VCMP)

VCMP-Marine-BPI-DEECA
(Nov 2022)

VICTORIA State Government | Energy, Environment and Climate Action

DEAKIN UNIVERSITY AUSTRALIA

THE UNIVERSITY OF MELBOURNE

AUSTRALIAN MUSEUM EUREKA PRIZES WINNER 2020

Purpose…

What coastal data are available?

How can they be accessed?
(and which data are available through the VCMP?)

What are the expectations of suppliers regarding coastal data?

- Prior to 2018 VIC had no long-term monitoring
  - No long-term beach surveys
  - No long-term wave buoys
- As a result, limited understanding of drivers of coastal change
- VIC Coastal Monitoring Program (VCMP) established in 2017 as a partnership between government and universities

VCMP StoryMaps established by Deakin University

https://bit.ly/38gyiZi

The Victorian Coastal Monitoring Program (VCMP) is now a major field, data delivery and knowledge management program.

The program provides coastal managers and communities with information on present day coastal processes and hazard risks, and has established a foundation for predicting the impacts of climate change on coastlines.

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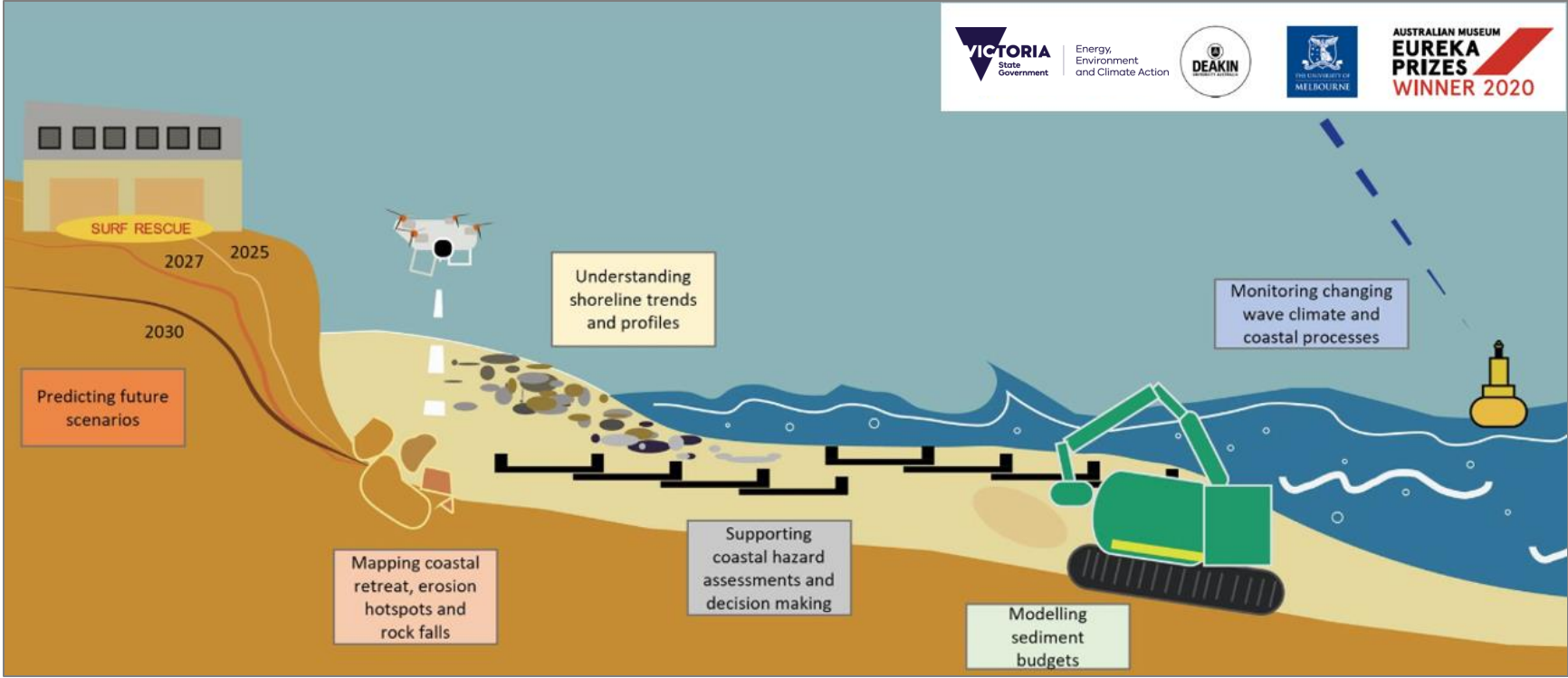
Core Data

Survey, Image, DEM
1. Drone **(VCMP Drone Program)**
2. Aerial
3. VIC Coastal DEM **(VCDEM)**

Wave-Hydro
4. Wave buoys **(VCMP Wave Buoys)**
5. Tide gauges
6. Wave +/- Hydro models

Engineering / Admin / Hazards
7. VIC Coastal Inundation Model **(VCIM)**
8. VIC Erosion Vulnerability
9. Coastal Structures **(CAMS)**
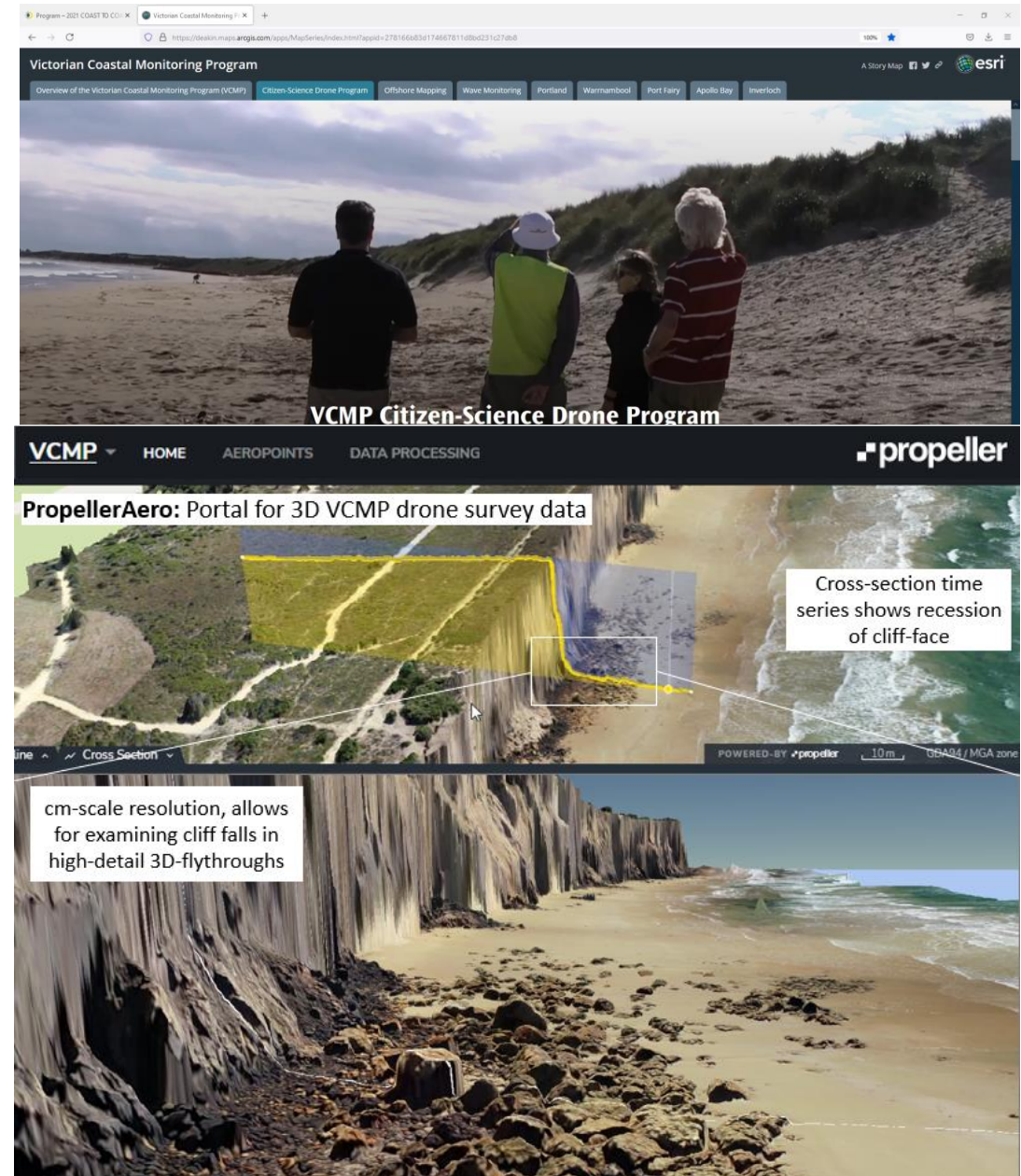10. Local Coastal Hazard Studies

Processed Data

11. Satellite - Digital Earth Australia Coastlines (GA)

12. Coastal OmniLine and OmniSites **(Multi-method data viewable on CoastKit)**

13. Bulk Data Transfers

- 40+ sites, 700+ surveys, >200 surveys/year

- How to access?
  - Propeller Data Portal
    - Established by Deakin University
    - https://vcmp.prpellr.com
    - Login: vcmp@delwp.vic.gov.au (view-only)
    - Password: VCMP12345
    - For download access, contact: vcmp@delwp.vic.gov.au

  - File types: DSM, Orthomosaic, Point Cloud

  - 3-D Visualisation and analysis within Propeller

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DELWP Coordinated Imagery Program (CIP)
- Wide range of images statewide, back to 1930

How to access?
- Go to "Join the program" at:
  https://www.land.vic.gov.au/maps-and-spatial/imagery/coordinated-imagery-program

- Web portal: DELWP Image Web Server (IWS)
  - https://images.maps.vic.gov.au/iws/
  - Search by location (very useful!)

- Access in GIS using Web Map Services (WMS)

- Vicmap Imagery & Elevation Coverage can be used to search for Lidar and Aerial Imagery

https://images.maps.vic.gov.au/iws/

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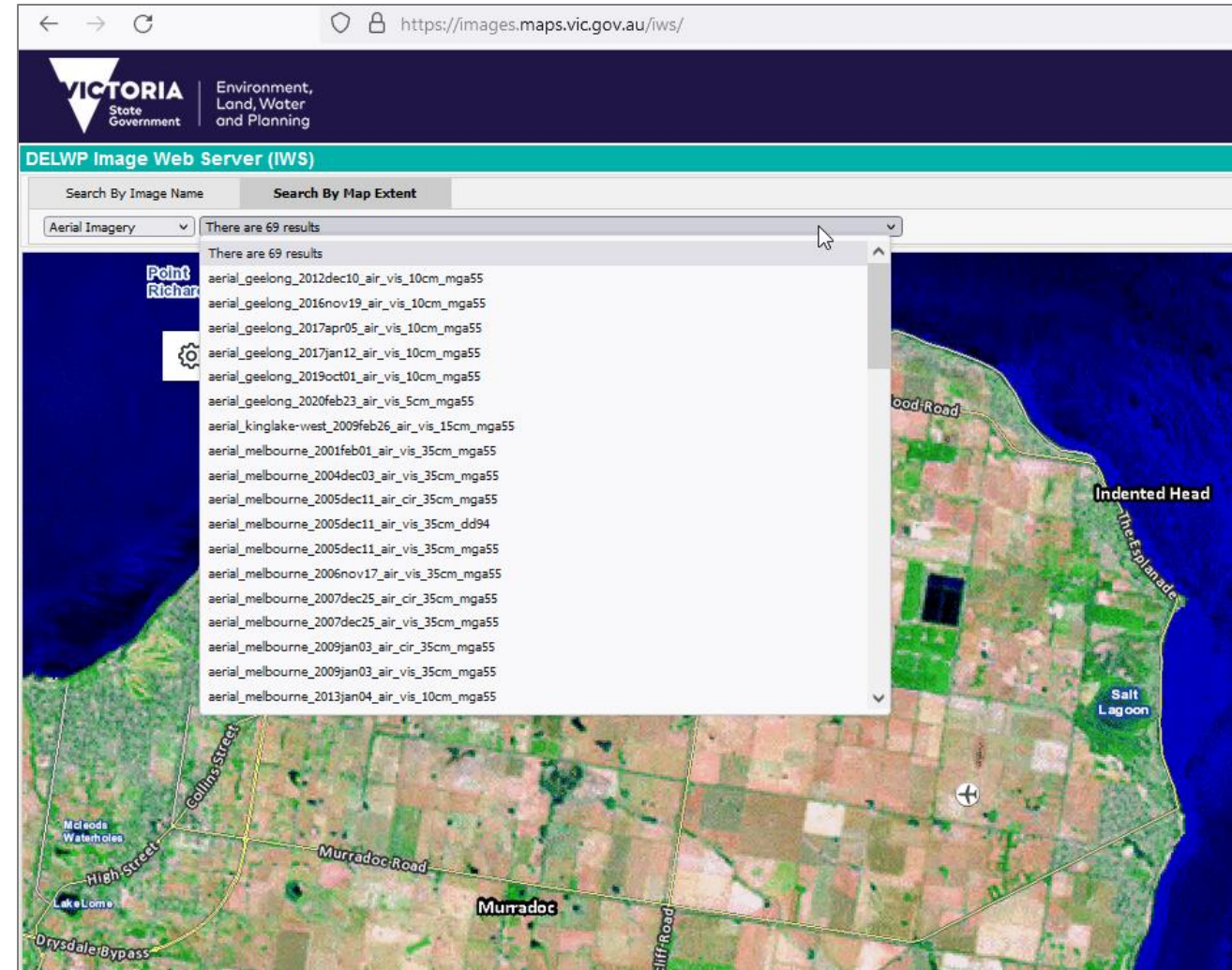
3. VIC Coastal DEM (VCDEM)

- Commissioned through the VCMP
- Seamless statewide topo-bathy, to 3 NM offshore
- Two versions:
  - VCDEM (2017)
    - Mostly based on c. 2010 LIDAR
    - 10-m grid (statewide), 2.5-m tiles
  - VCDEM (2021)
    - Updated bathymetry in select areas
    - 10-m, 2.5-m grids

How to access?
- VCDEM (2017)
  - Available for download through AODN
    - https://portal.aodn.org.au/

- VCDEM (2021)
  - To be made available through the DELWP DataShare platform (Jan 2023)
    - https://datashare.maps.vic.gov.au
  - For interim access, contact: VCMP@delwp.vic.gov.au

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- 13 Spotter wave buoys across VIC
- 2018 - present

How to access?
- VicWaves
  - Established by Deakin University
  - https://vicwaves.com.au/
  - Live data and historical time series download

https://vicwaves.com.au/

http://www.bom.gov.au/oceanography/projects/ntc/monthly/
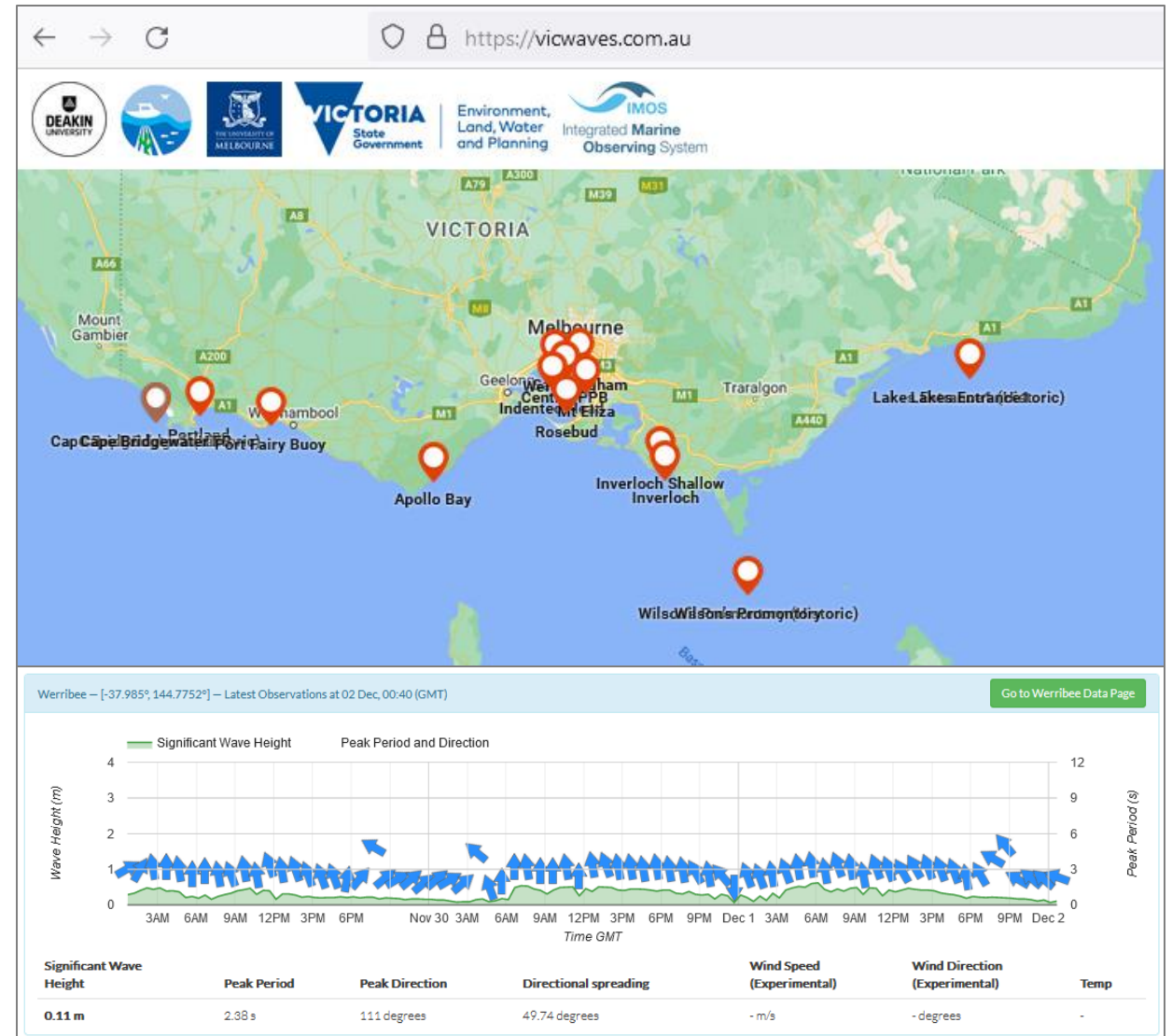
Data gap: Time series data for VIC tide gauges are not currently available through the VCMP

How to access?
- BoM - Monthly Tide Gauge Statistics
 - http://www.bom.gov.au/oceanography/projects/ntc/monthly/

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Available Models

* Wave (WW3) VIC-wide 1980-2020
  * Liu et al., 2022.
  * Jin Liu is now part of the VCMP team.

* Wave + Hydro (SCHISM + WWM3) PPB 1991-2016
  * Tran et al., 2021
  * UoM team now updating this model using VCMP Wave Buoy calibration, available by mid-2023

* **Data gap: No statewide hydrodynamic model**

How to access?

* Coastal nodes stats (across both models) are viewable in CoastKit
  * https://mapshare.vic.gov.au/coastkit/

* For access to coastal node data (mean statistics and t-series), contact VCMP@delwp.vic.gov.au

1980 – 2020 WW3 Hindcast
Liu et al., 2022

https://mapshare.vic.gov.au/coastkit/
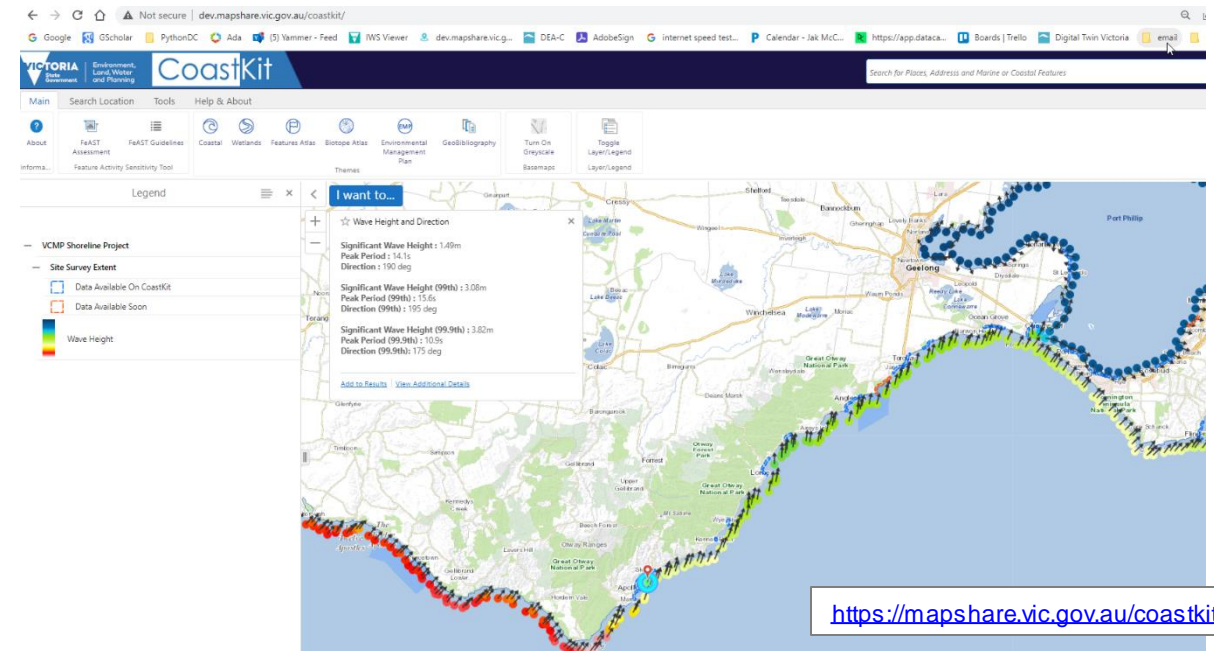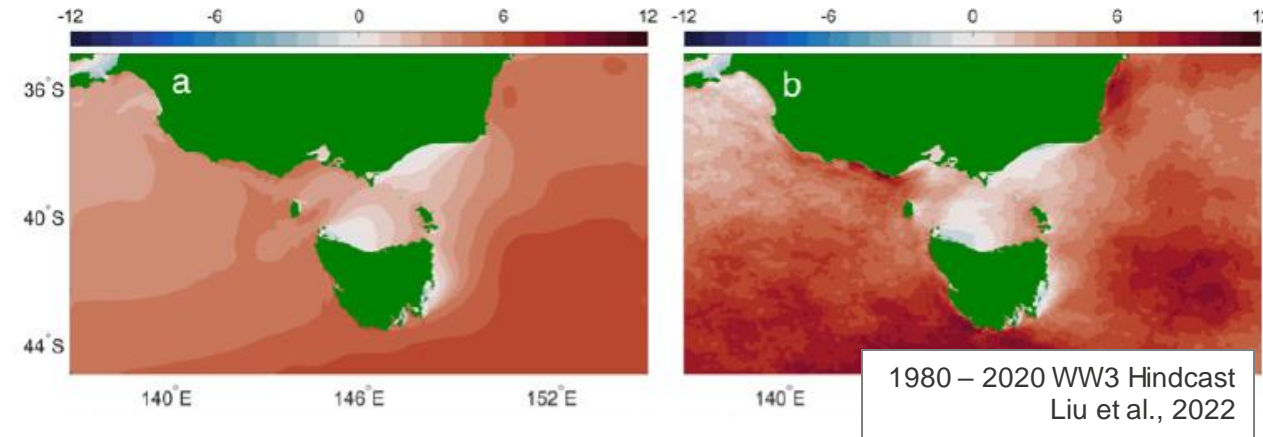
Liu, J., Meucci, A., Liu, Q., Babanin, A.V., Ierodiaconou, D. and Young, I.R., 2022. The wave climate of Bass Strait and south-east Australia. *Ocean Modelling*, *172*, p.101980.
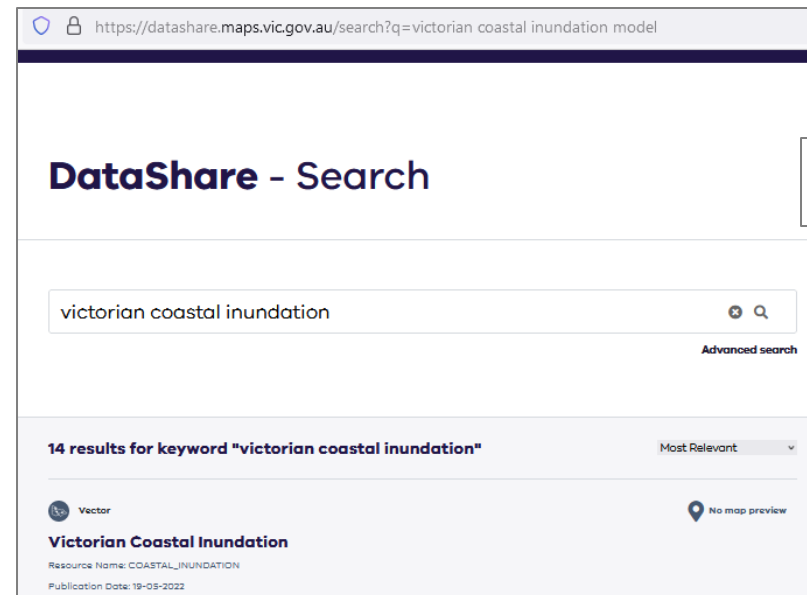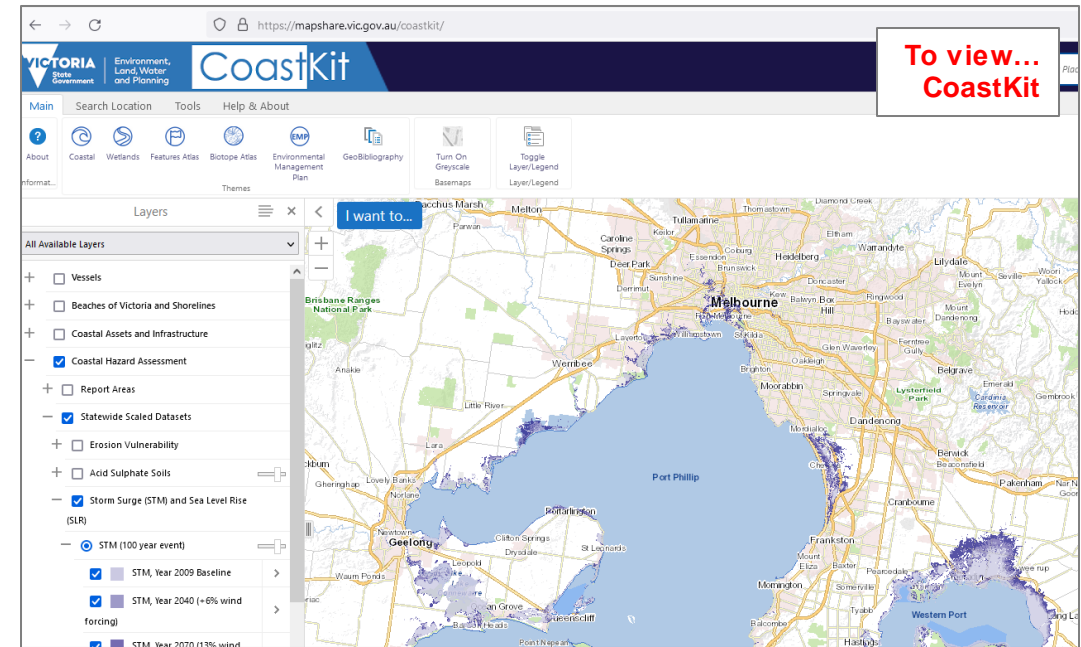Tran, H.Q., Provis, D. and Babanin, A.V., 2021. Hydrodynamic Climate of Port Phillip Bay. *Journal of Marine Science and Engineering*, *9*(8), p.898.

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- Most recent update available is 2012
- SLR up to 0.82 m by 2100
- With and without Storm Surge

How to access?
- View through CoastKit
  - https://mapshare.vic.gov.au/coastkit/

- Download through DELWP DataShare
  - https://datashare.maps.vic.gov.au
  - Search: Victorian Coastal Inundation

To view…
CoastKit

To download…
DataShare
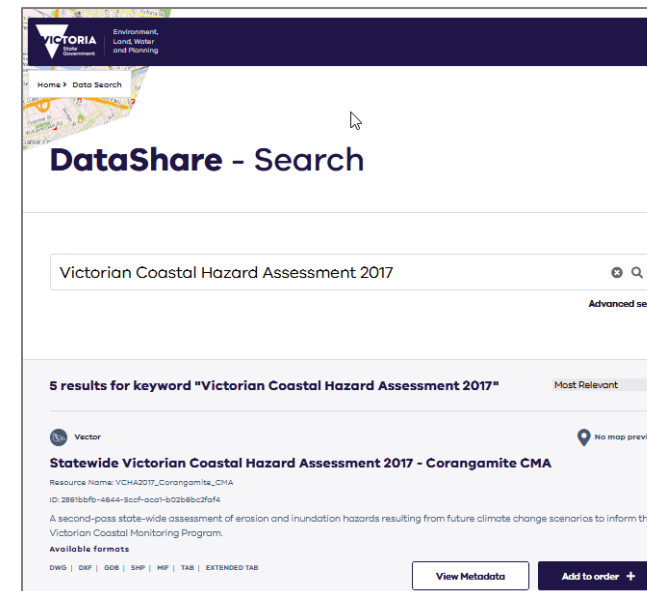
Victorian Coastal Hazard Assessment 2017

- Commissioned by the VCMP
- Statewide, qualitative erosion vulnerability index
- "Second-pass" level

How to access?

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  - Search: Victorian Coastal Hazard Assessment

To view…
CoastKit

To download…
DataShare

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Coastal Asset Management System (CAMS)

- Managed through DELWP Statewide Coastal Programs (Bill Sullivan, Polly Matthews)
- Line data for all coastal structures (assets) statewide

How to access?

- View through CoastKit
  - https://mapshare.vic.gov.au/coastkit/

- For the most recent version, contact:
  - VCMP@delwp.vic.gov.au

- Available on DataShare
  - Check version date when downloading, ensure recent / relevant structures
  - https://datashare.maps.vic.gov.au
  - Search: Coastal Protection Structures

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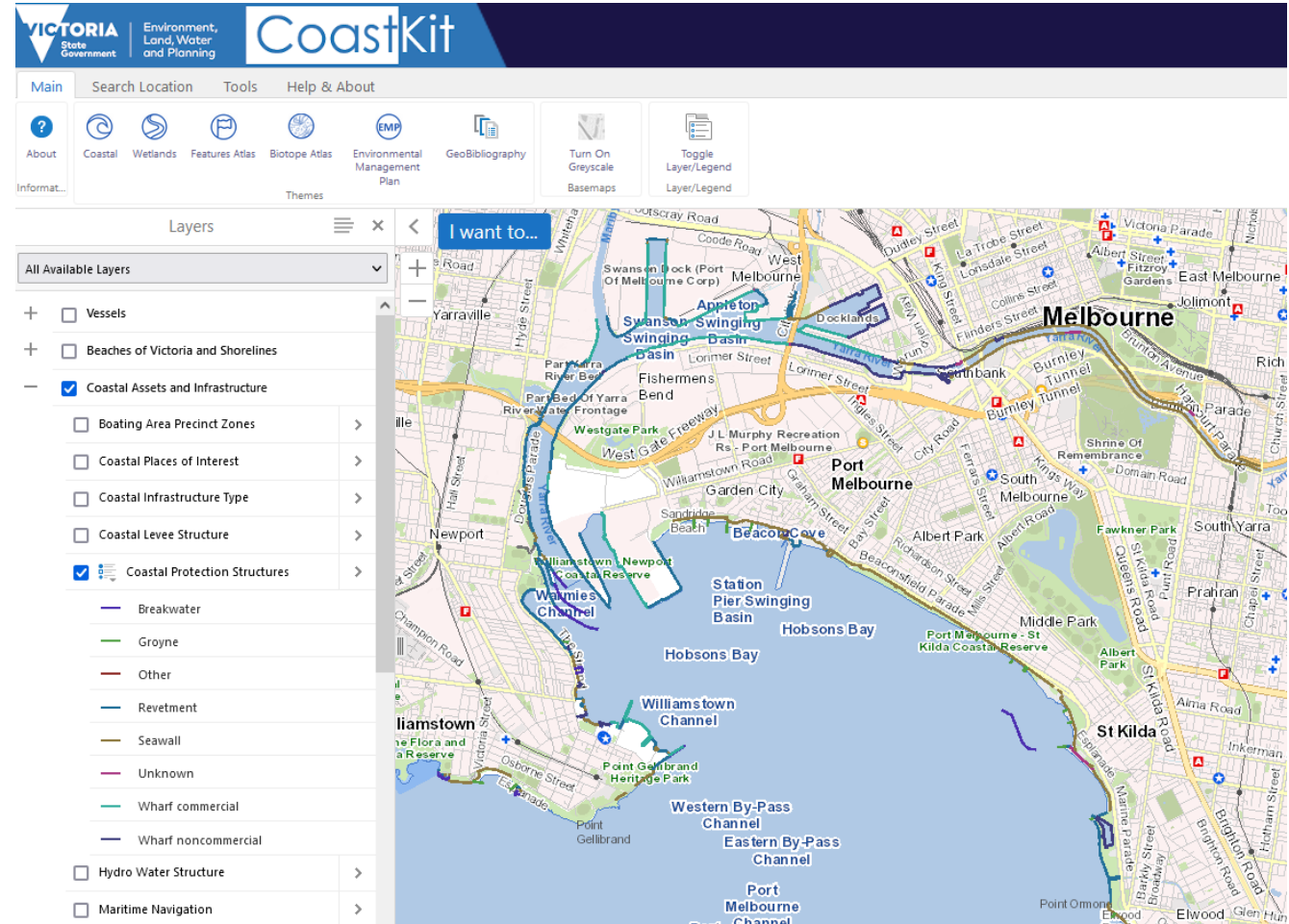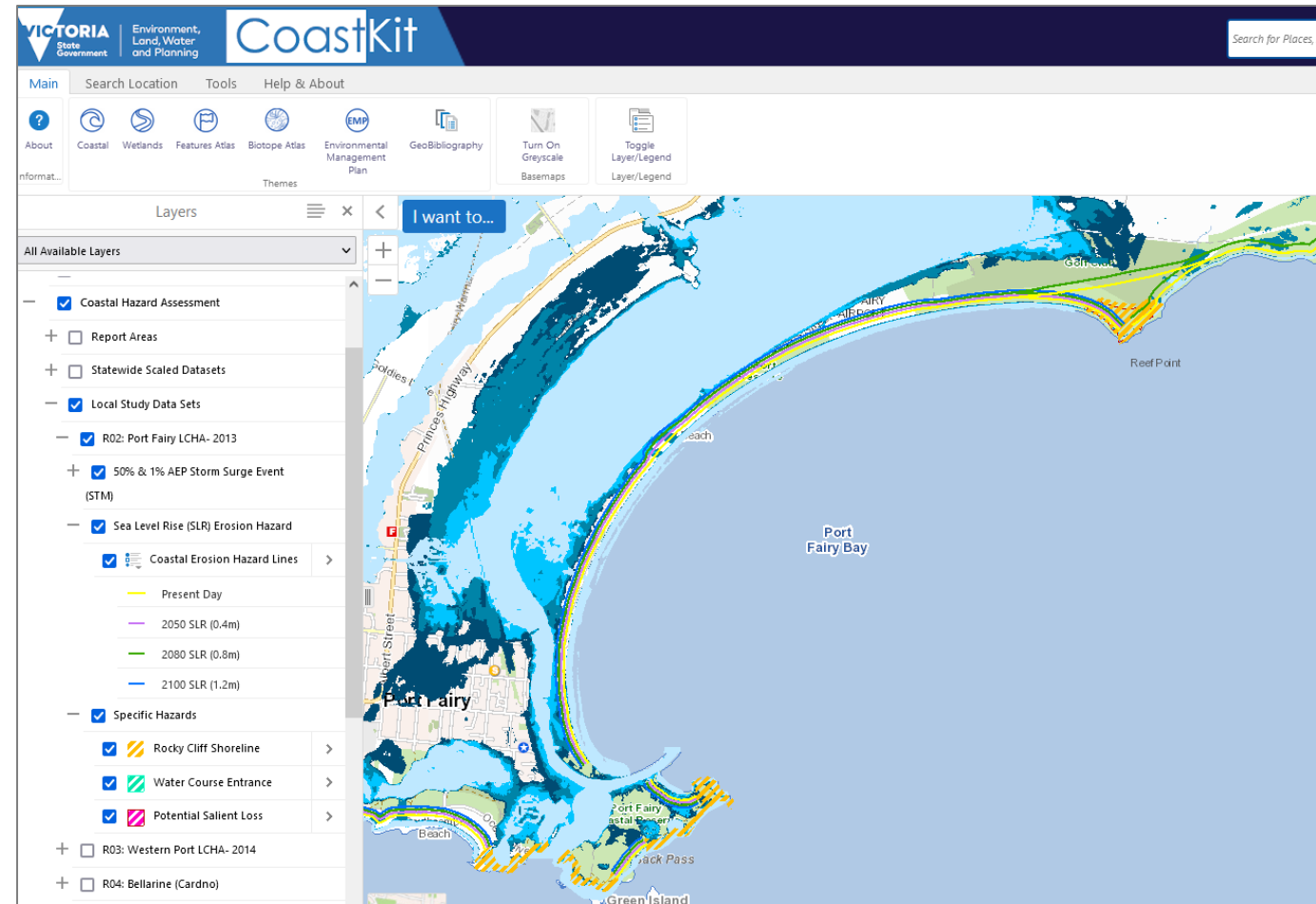
- A small selection of historical coastal hazard studies have been made available on CoastKit
- 6 studies available (as of Dec 2022)

How to access?
- View through CoastKit
  - https://mapshare.vic.gov.au/coastkit/

- Many historical studies exist for individual sites, consider contacting local authorities and project managers

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- Geoscience Australia (Bishop-Taylor et al., 2021)
- Australia-wide, 1988 – 2021
- Satellite-derived mean annual shorelines
- Trends and time series

How to access?
- Visualisation
  - https://maps.dea.ga.gov.au/#share=s-DEACoastlines&playStory=1

- Data download
  - https://www.dea.ga.gov.au/products/dea-coastlines
  - Python notebooks

Bishop-Taylor, R., Nanson, R., Sagar, S. and Lymburner, L., 2021. Mapping Australia's dynamic coastline at mean sea level using three decades of Landsat imagery. *Remote Sensing of Environment*, 267, p.112734.
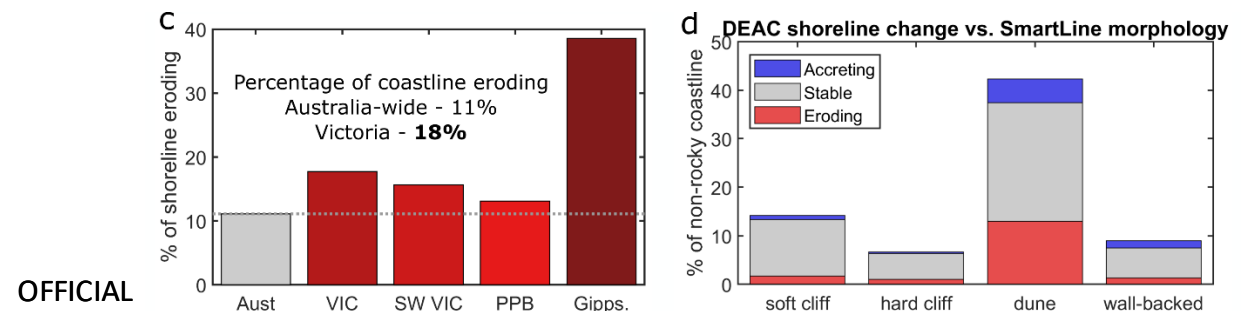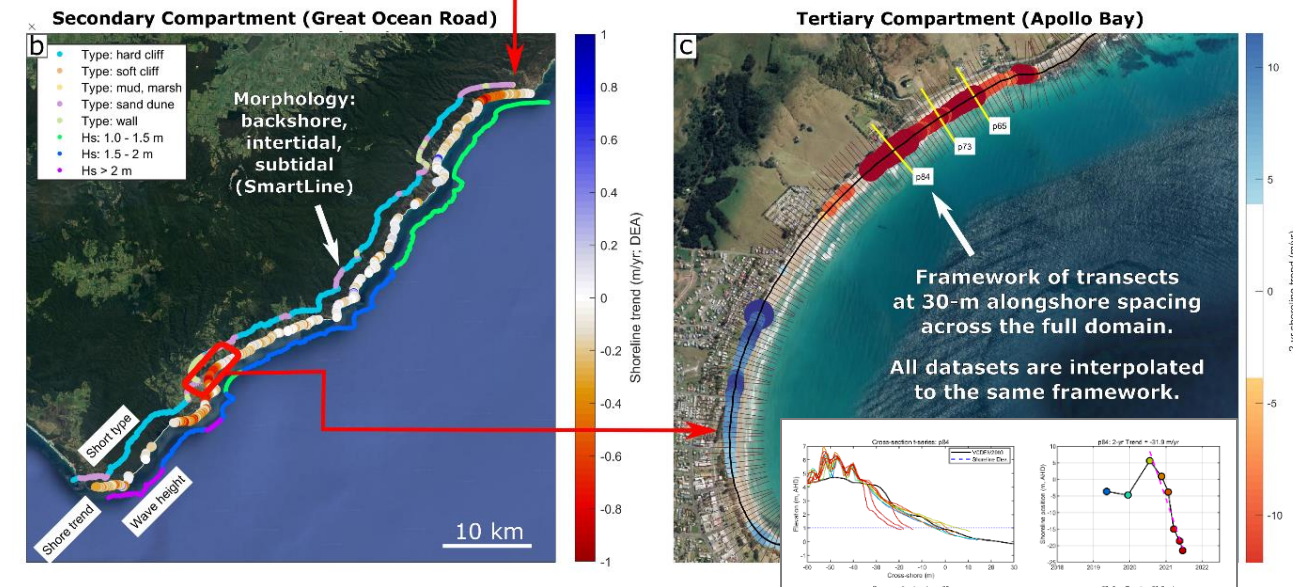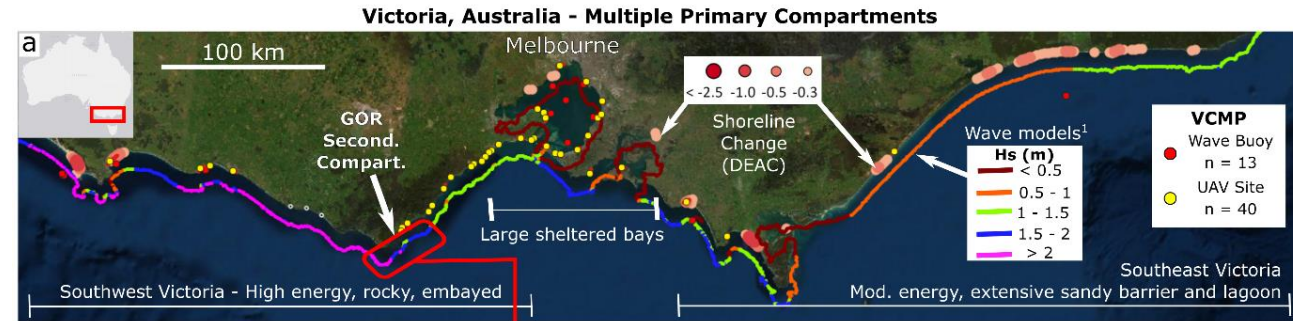

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- Multi-method data, interpolated to the same framework
- Transects spaced 30-m alongshore statewide (using DEAC, 2019)
- OmniLine ➜ full VIC Coastline
- OmniSites ➜ same framework, cropped to VCMP sites (viewable on CoastKit)
- Main datasets
  - Drone shorelines (VCMP)
  - Satellite shorelines (DEAC)
  - Aerial shorelines
  - Shoreline trends and time-series
  - Wave statistics (WW3 and SCHISM models)
  - Secondary compartments
  - Morphology (from "SmartLine")
  - Cross-sections (from VCDEM)

How to access?
- Visualisation: https://mapshare.vic.gov.au/coastkit/
  - Select "Victorian Coastal Monitoring Program" in left panel
  - Select "Shoreline Trends"
  - Zoom to a site a click on a transect

- For access, email: VCMP@delwp.vic.gov.au

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