

South Australia's Harmful Algal Bloom

Mike Steer, Executive Director

South Australian Research and Development Institute (SARDI)



Government of
South Australia





*** Algal bloom in South Australia**

Visiting the beach is safe

- Don't feed wildlife and keep your dog on a leash
- Don't litter
- Don't drink or eat anything that might be affected by the algal bloom
- Don't touch anything that might be affected by the algal bloom

For more information visit www.sa.gov.au

COASTLINE CRISIS



SAVE OUR SUMMER

SA'S ALGAL BLOOM CRISIS

EPISODE 1: THE BLOOM'S GRIP



ALGAL BLOOM



Karenia species (mixed)

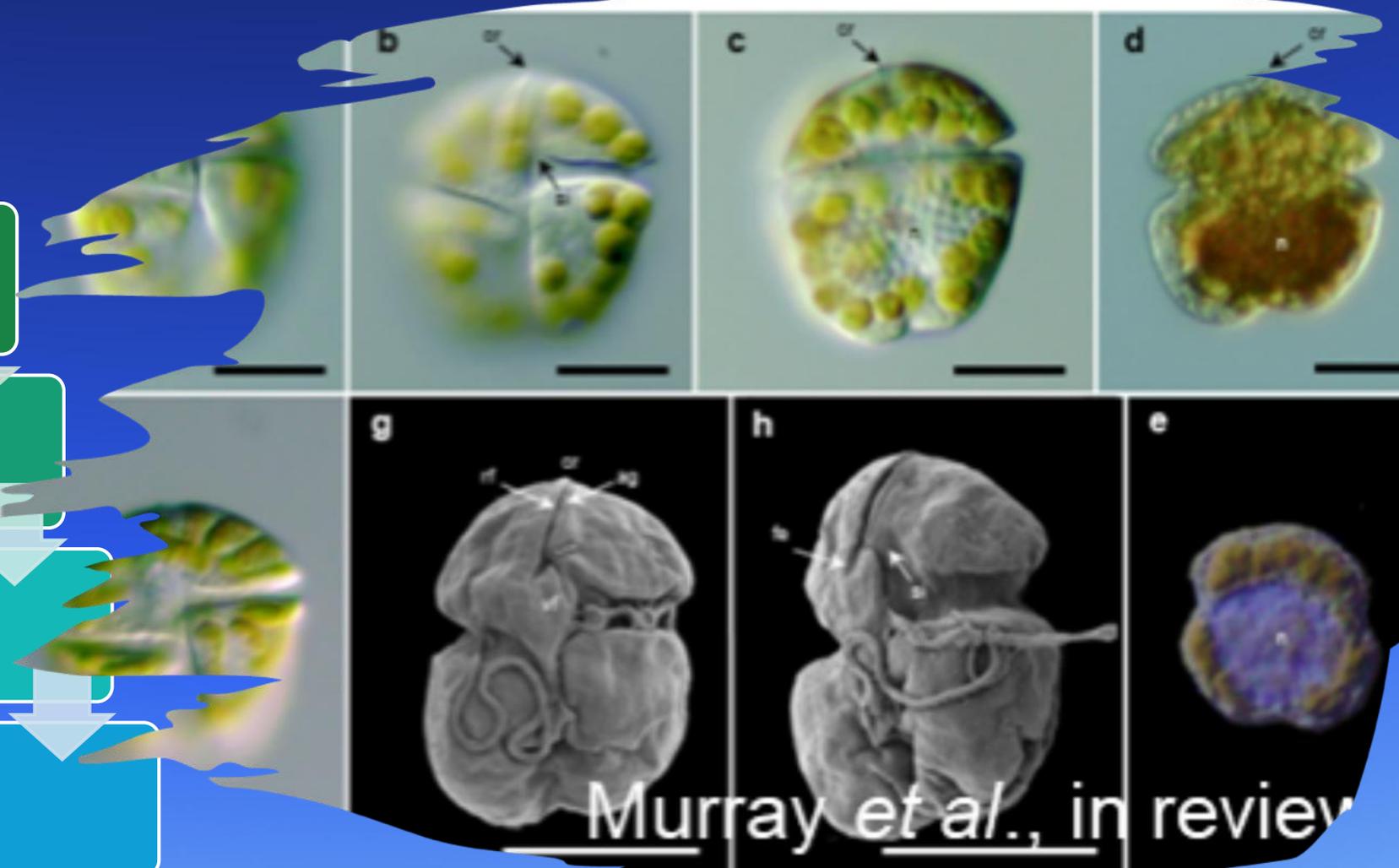
Mixotrophic
dinoflagellate

Produces Biotoxins

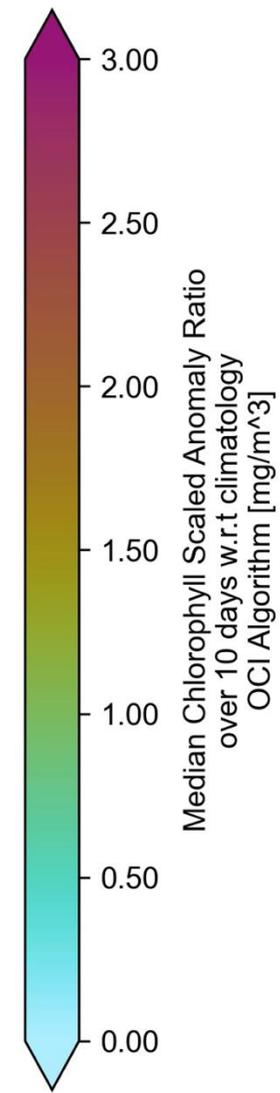
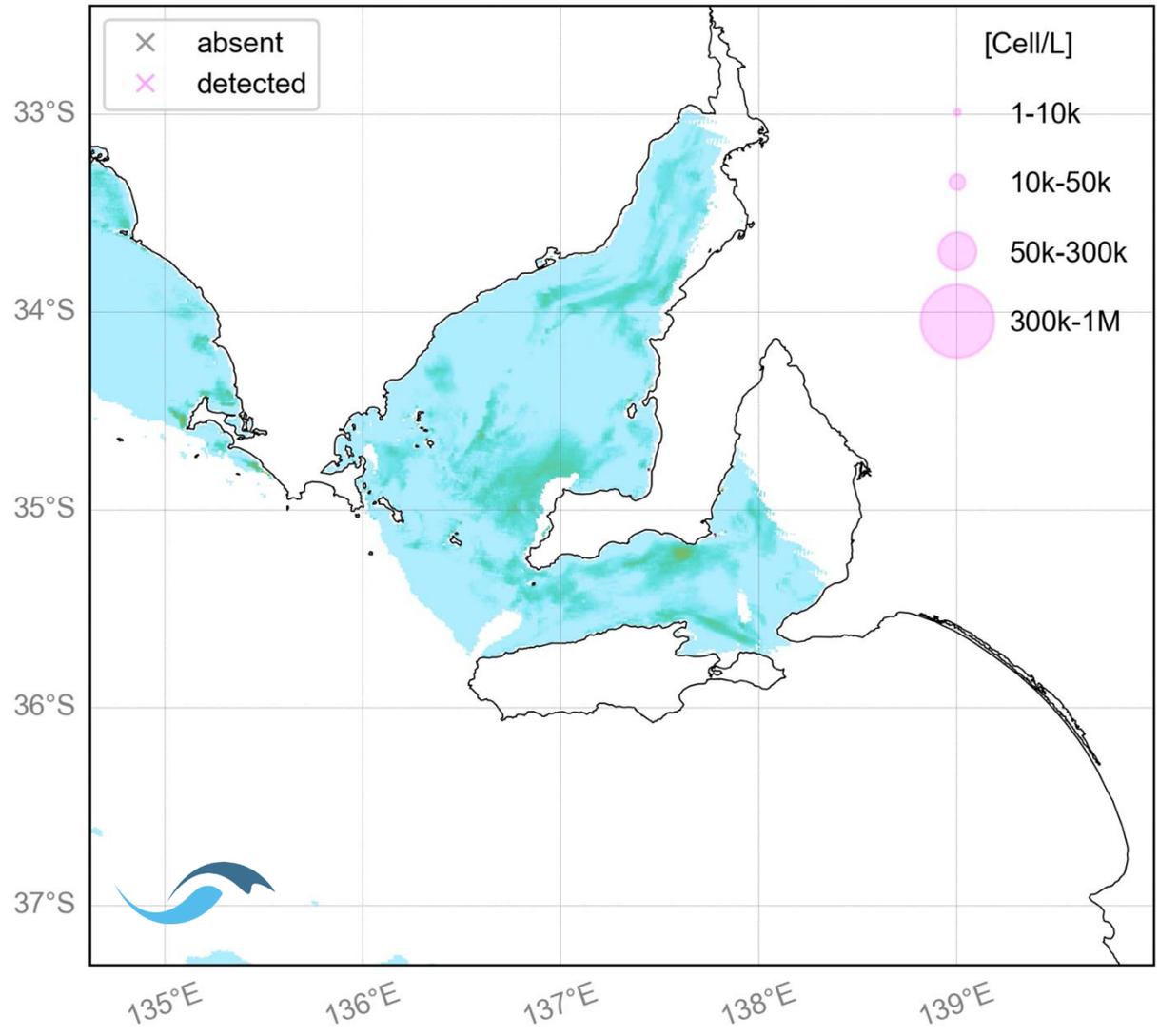
Fish Kills

Public Health

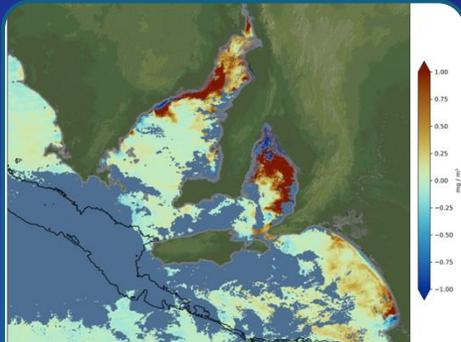
Significant Impact



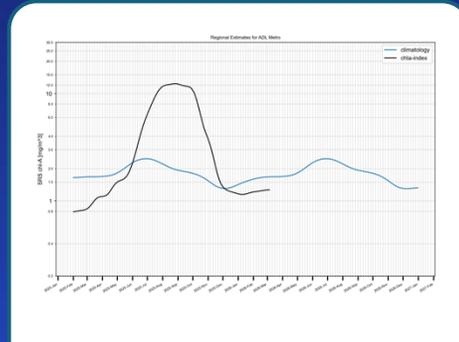
SARDI Chi-A scale anomaly index [NOAA+SNPP VIIRS] | *Karenia* spp. detection 🏠 2025-01-01



Rapid Response



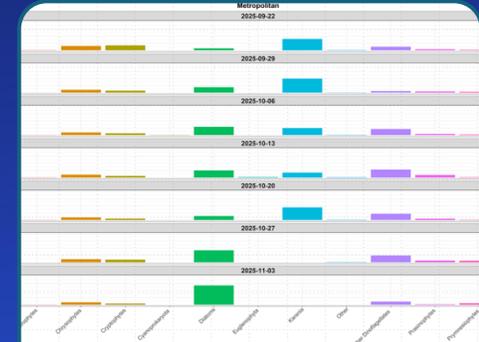
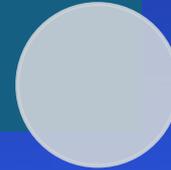
Daily Satellite Imagery



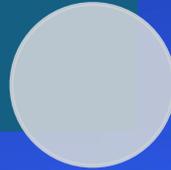
Chlorophyll changes



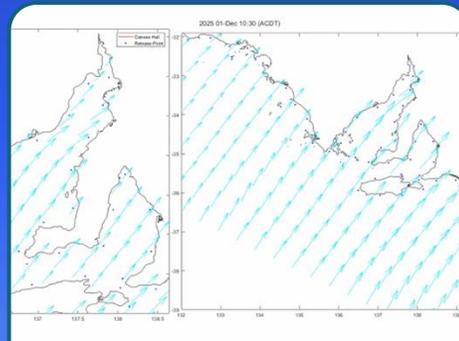
Water Sampling



Phytoplankton Identification



Shellfish BTX Testing



Oceanographic Forecasting



Fisk Kill Reporting



Communication



Our Summer Plan is now in action.

The South Australian and Federal Governments have released the Algal Bloom Summer Plan, a comprehensive suite of measures to protect South Australia's coast, back coastal communities and support our summer lifestyle.

Total
\$170
million



Helping you enjoy the beach
this summer.



Working to restore and protect
our environment.



Supporting affected
businesses and our coastal
communities.



Science Needs



What is it?



What caused it?



Can we fix it?



Can we forecast it?

Research and monitoring

\$17.3m

Water monitoring and forecasting

Investing in South Australia's capacity for real-time oceanographic water quality monitoring and forecasting through a collaboration with the CSIRO, including the acquisition of state-of-the-art monitoring buoys.



Office for Algal Bloom Research

Establishing an Office for Algal Bloom Research, based in South Australia, to undertake vital long-term research into the formation, spread and impact of algal bloom events.

Algal bloom mitigation

Researchers are also testing methods to manage algal blooms in controlled waterways such as the use of clay treatments.

Offshore water analysis

Targeting the deep waters of Gulf St Vincent, Spencer Gulf, and the southern Fleurieu Peninsula. This program will identify potential source locations of algae species in offshore areas.

AI Cytobots

Trialling state-of-the-art AI-powered portable live detection technology to support our improved understanding of phytoplankton communities over time.



What is it?

Morphology
(Murray
et.al) (Mar
25)

Brevetoxins
detected
(April 25)

Molecular
(Murray et
al. 2025)
(Oct 25)

IMOS
Biomolecular
Observing
(Mar 26)

Present
since 2016

Mystery solved: our tests reveal the tiny algae killing fish and harming surfers on SA beaches

Published: March 24, 2025 4:00pm AEDT

Anthony Rowland



Confronting images of [dead seadragons](#), fish and octopuses washed up on South Australian beaches – and [disturbing reports](#) of “[more than 100](#)” surfers and beachgoers suffering flu-like symptoms after swimming or merely breathing in sea spray – attracted [international concern](#) last week.

Speculation about the likely cause ranged from pollution and [algae](#) to unusual [bacterial infections](#) or viruses. Today we can reveal the culprit was a tiny – but harmful – type of planktonic algae called *Karenia mikimotoi*.

ABC NEWS

Oyster harvesting halted



Scientists hopeful they have found source of South Australia's algal bloom toxins



ABC NEWS

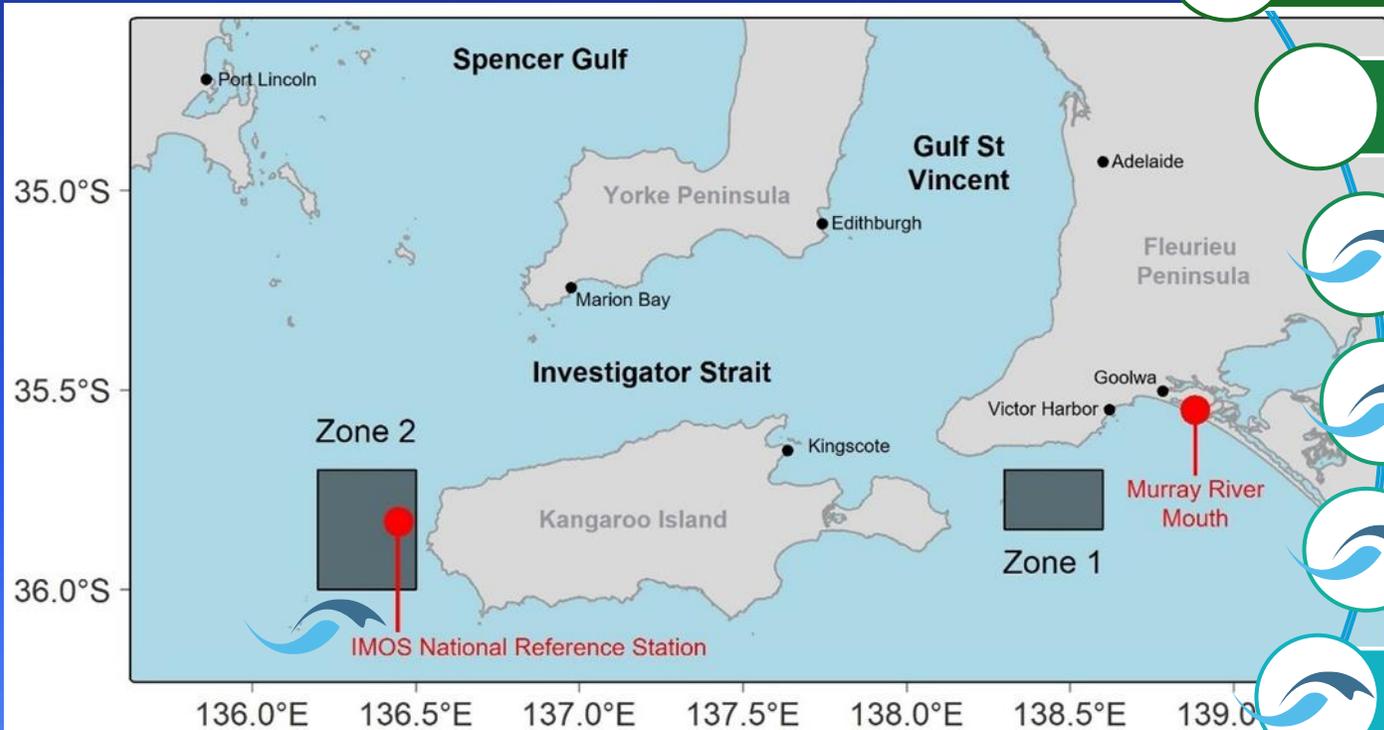


ABC.NET.AU

Algae behind SA bloom effects had been around a decade, research finds

Shauna Murray, Jodie van de Kamp, Justin Seymour, Mark Doubell (and others)

What caused it?



 Satellite data (Chlorophyll, Sea Surface Temp)

 Wind Speed and Anomalies

 Nutrient Data (Murray River/Kangaroo Island)

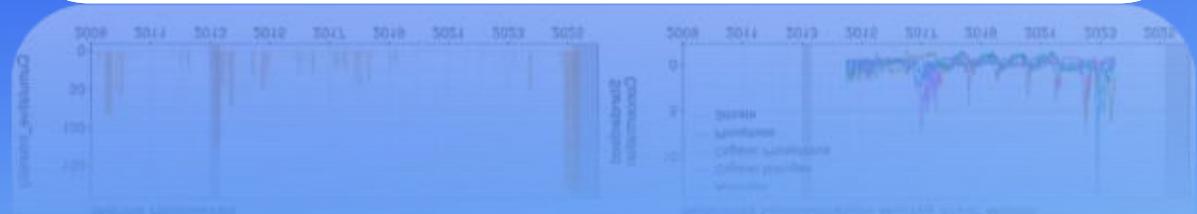
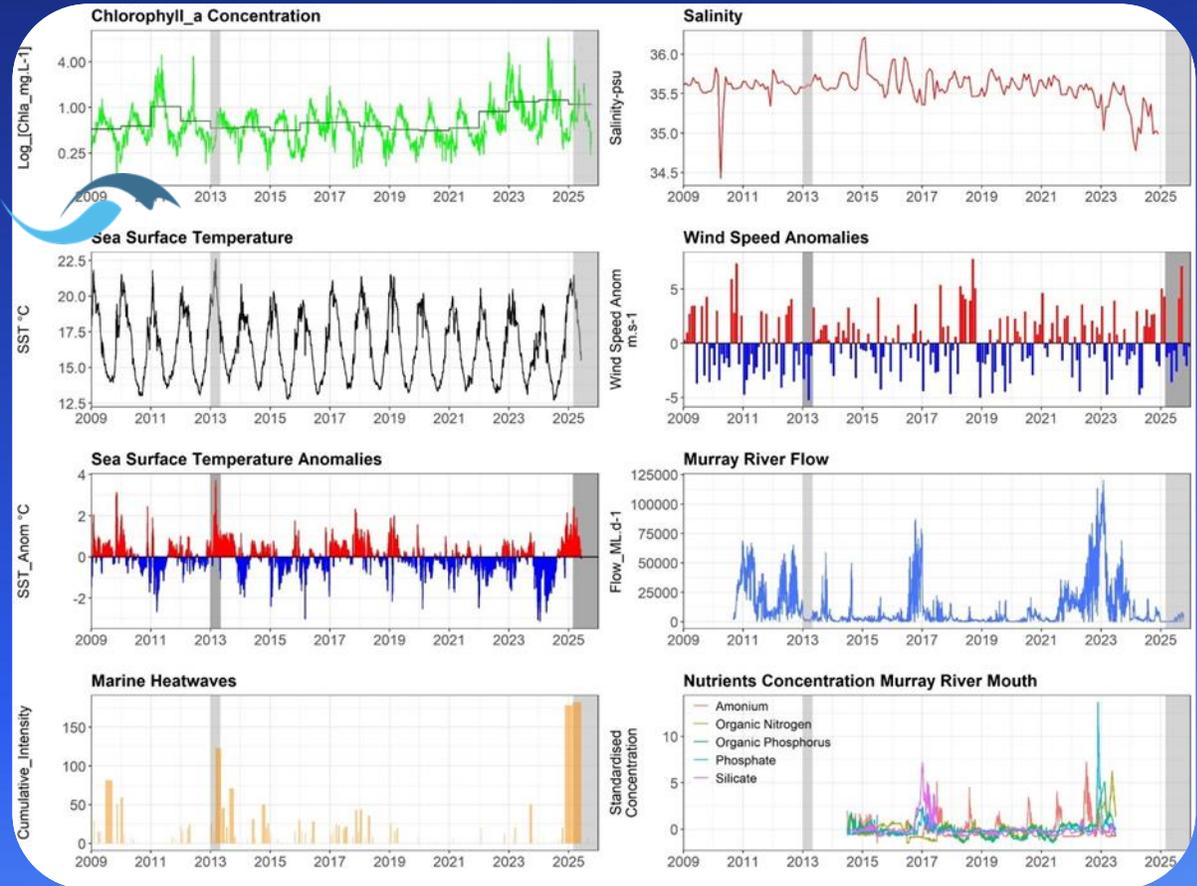
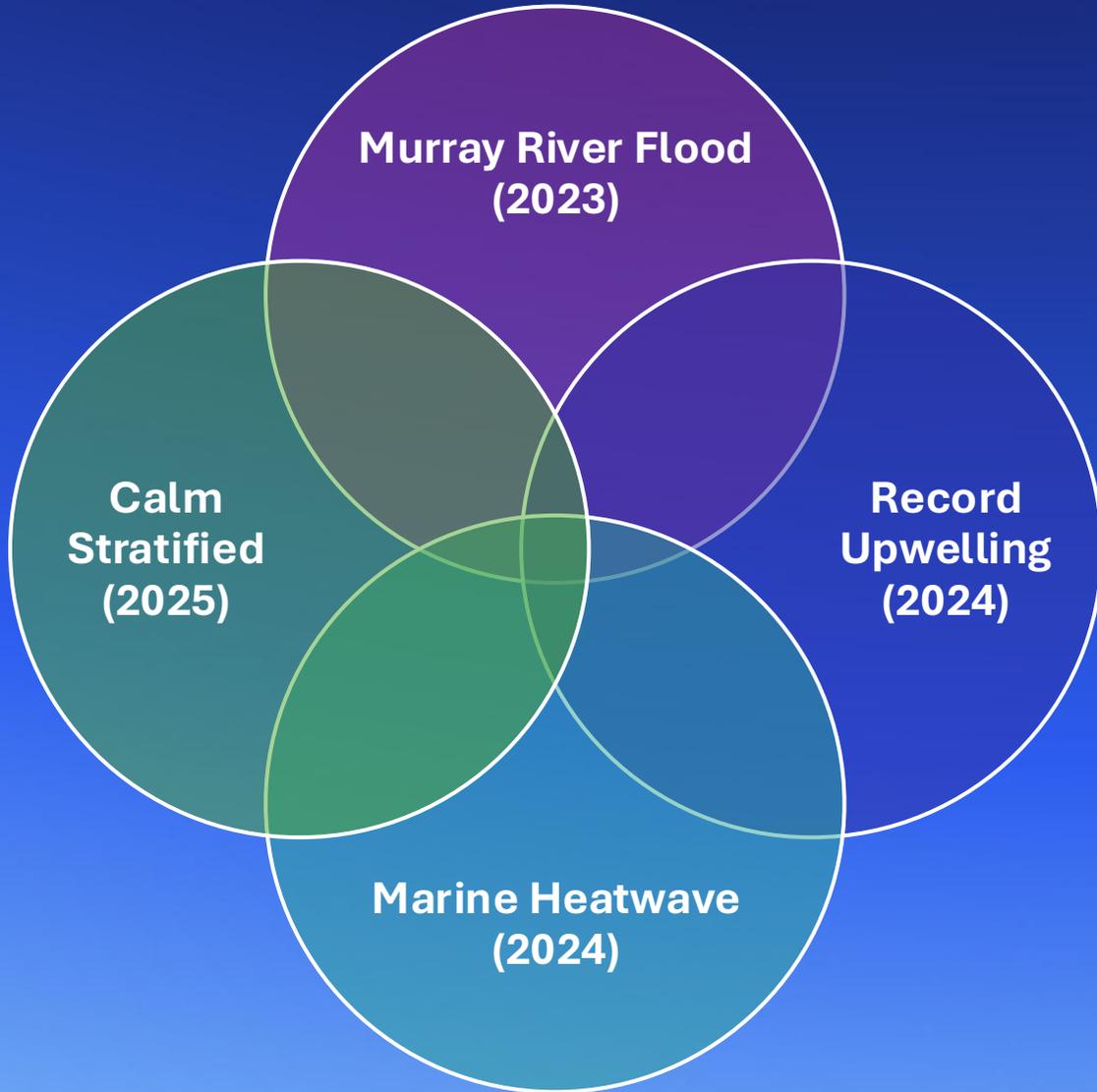
 Upwelling index

 Bottom temperature

 Salinity

 Climate: El Nino, Indian Ocean Dipole, Southern Annular Mode

What caused it?



What caused it?

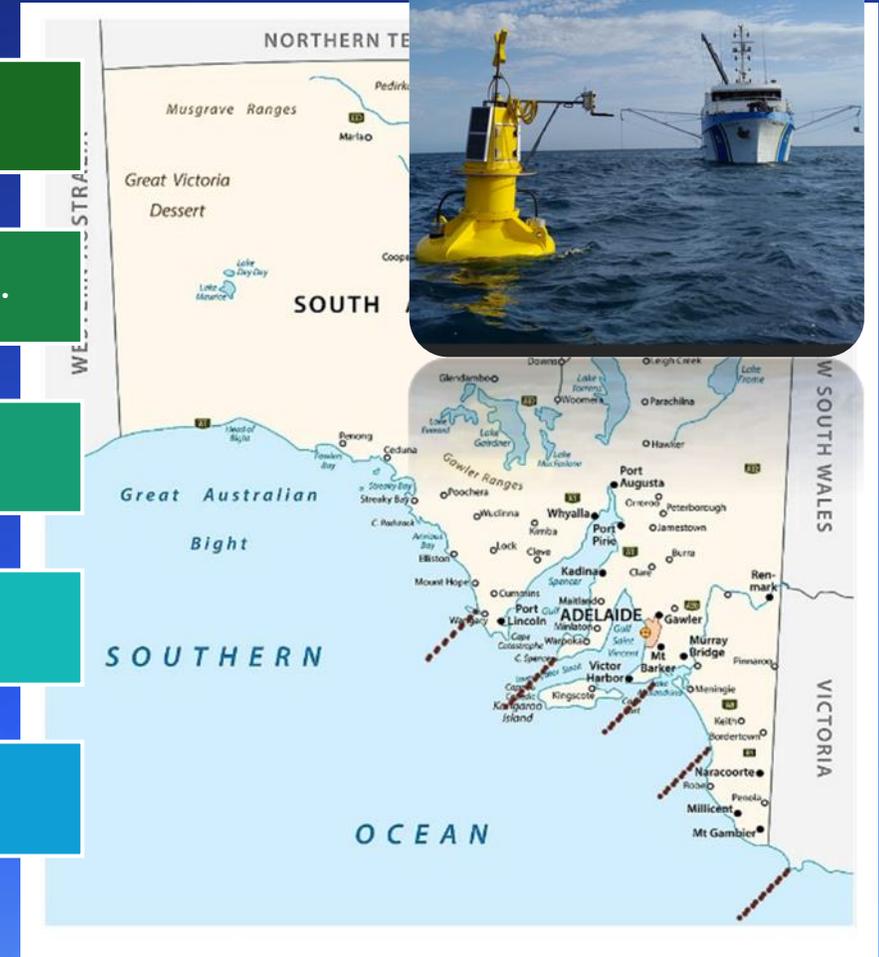
Four 14-day cruises (2026 & 2027) – Upwelling & Downwelling.

Salinity, Temperature, Chlorophyll Profile, Light, Dissolved Oxygen, pH.

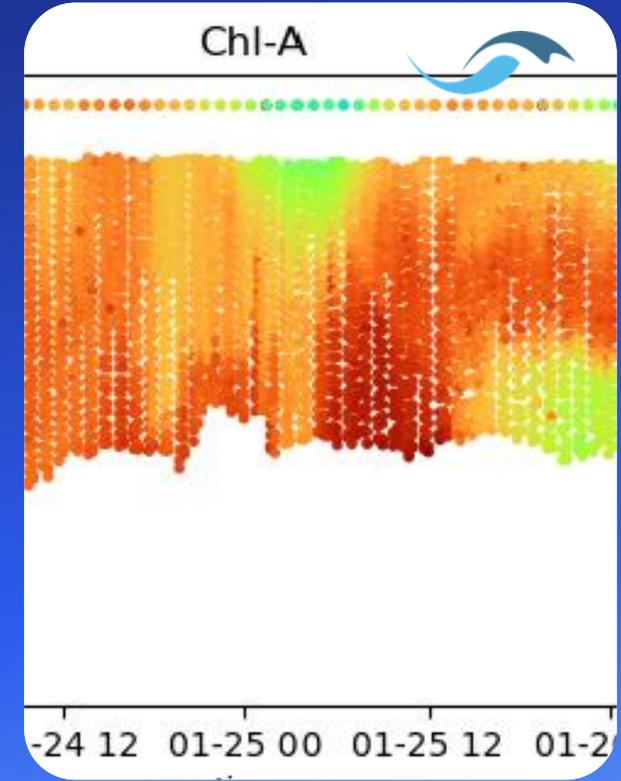
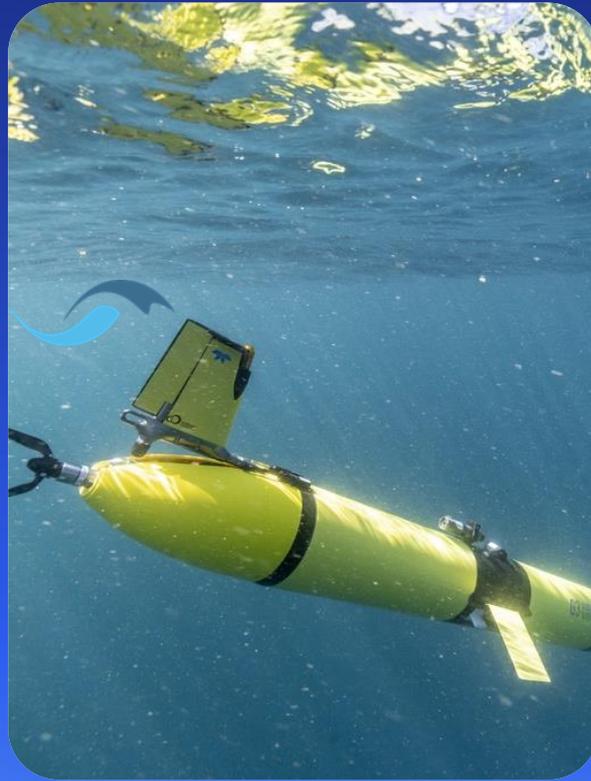
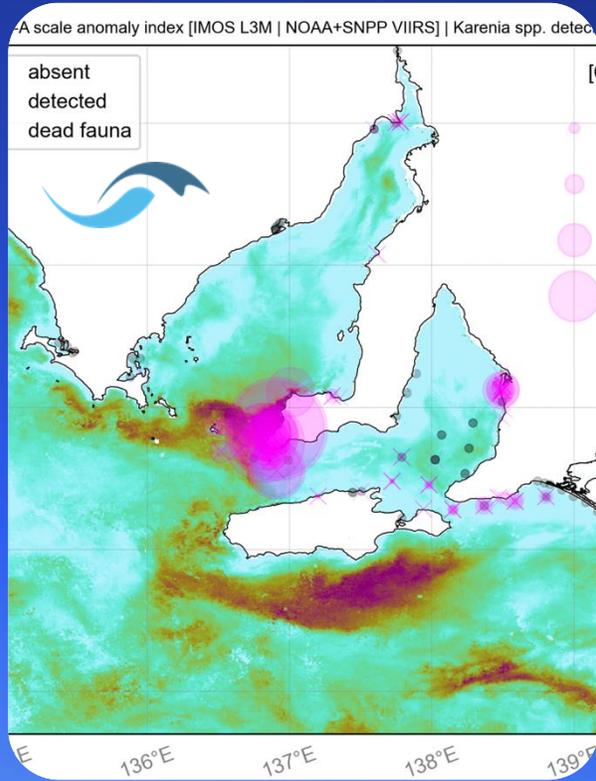
Algae Assemblage, BTX, Nutrient Ratios, Zooplankton Biomass, Molecular Analysis.

Sediment (HAB Cysts or Dormant Cells).

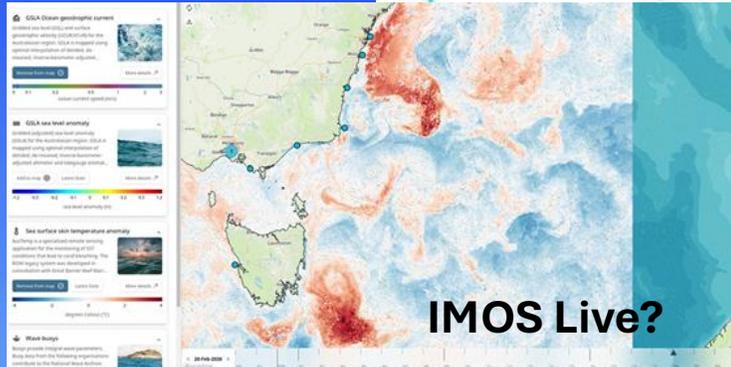
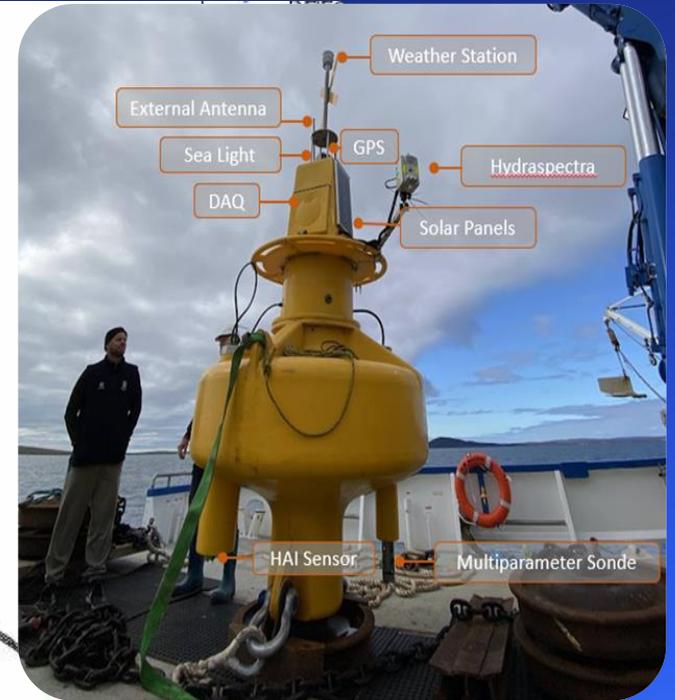
Image Flow Cytobot (Real time assessment and training).



Can we fix it?



Can we forecast it?



Office of Algal Bloom

- Biological Oceanographer
- Climate Change Modeller
- Image Analysis & Coding Technologist
- Oceanographic Modeller
- Phytoplankton Taxonomist
- Oceanographic Field Technician
- Molecular Technologist

Essential IMOS Products

