Algal Bloom Situational Update

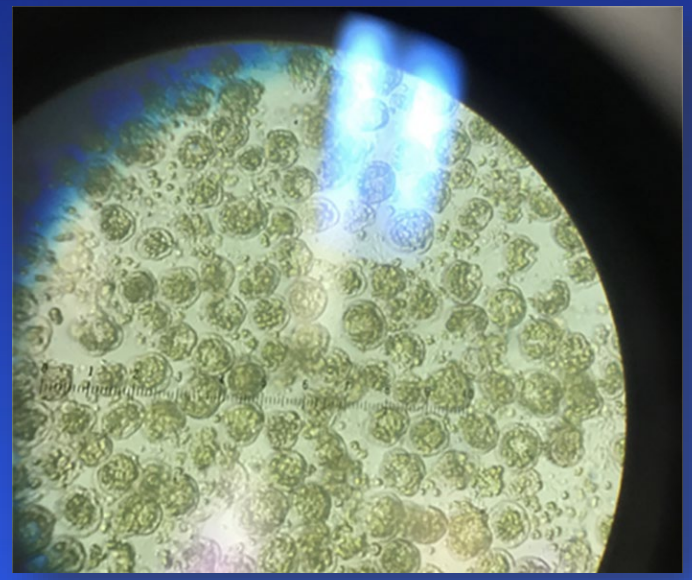
Professor Mike Steer, Executive Director

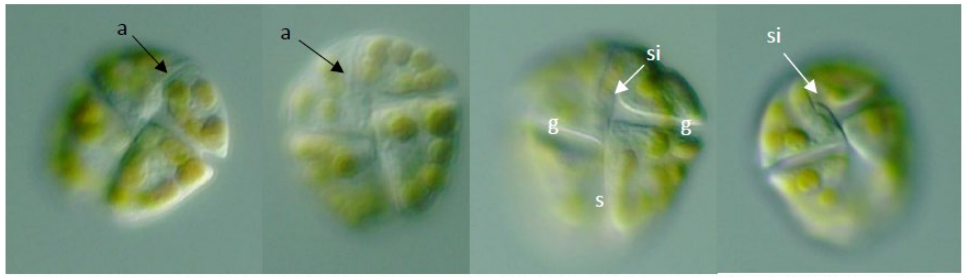
South Australian Research and Development Institute (SARDI)

Government of South Australia

Algal Bloom

- Microscopic algae (phytoplankton) are the foundation of the aquatic food web, providing energy & nutrients for all other organisms.
- Harmful Algal Bloom (HAB) species form part of naturally occurring algal communities.
- They typically exist in low numbers, in ecological balance, within the water column and sediment.
- When environmental conditions become favourable, background populations can rapidly multiply, leading to a bloom (HAB).
- Toxins produced by HABs can impact water quality, aquatic life and humans.
- The duration of a HAB event depends on multiple factors and is not possible to predict in advance.



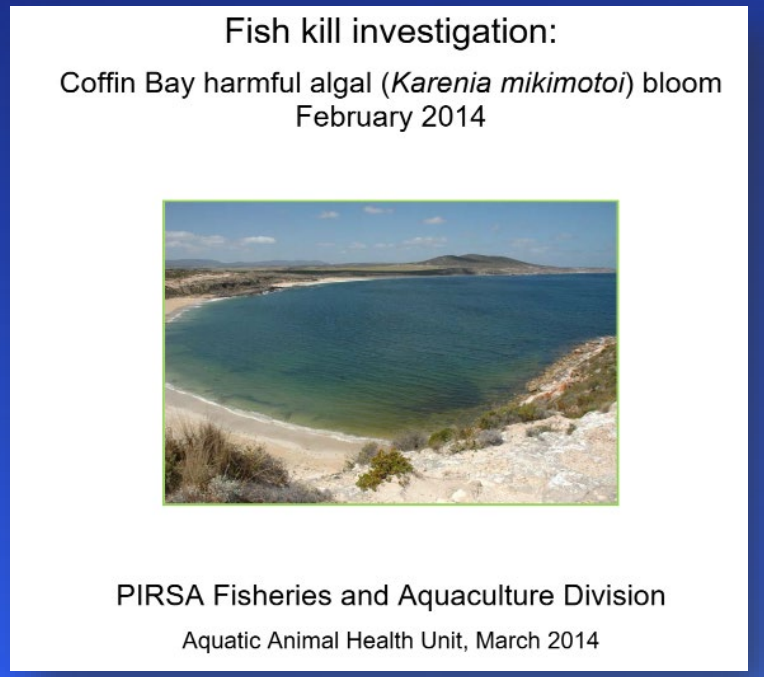


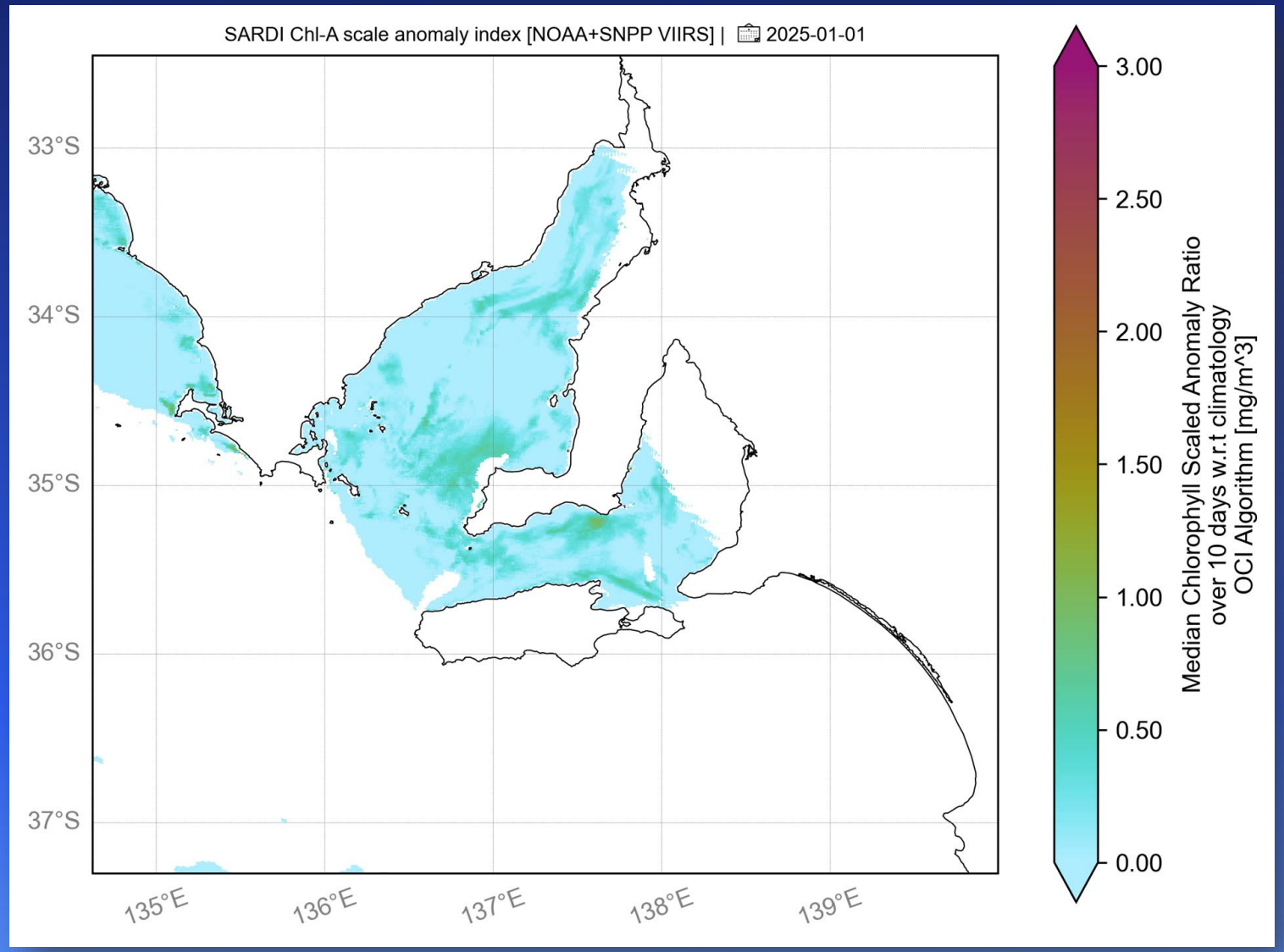
DIC images of live cells from Adelaide bloom showing apical groove (a) girdle (g) sulcus (s) and sulcal intrusion into epicone (si)

Algal Bloom

- Record-breaking HAB Bloom (size, duration, impact).
- Follows THREE record-breaking climatic events which have significantly influenced our marine ecosystems.

1. 2022/ 23 Murray floods discharge - largest nutrient input since 1956
2. 2023/ 24 Summer upwelling – largest nutrient input (coldest) in 25+ years
3. 2024/ 25 Marine Heatwave - largest event (warmest) in 40+years

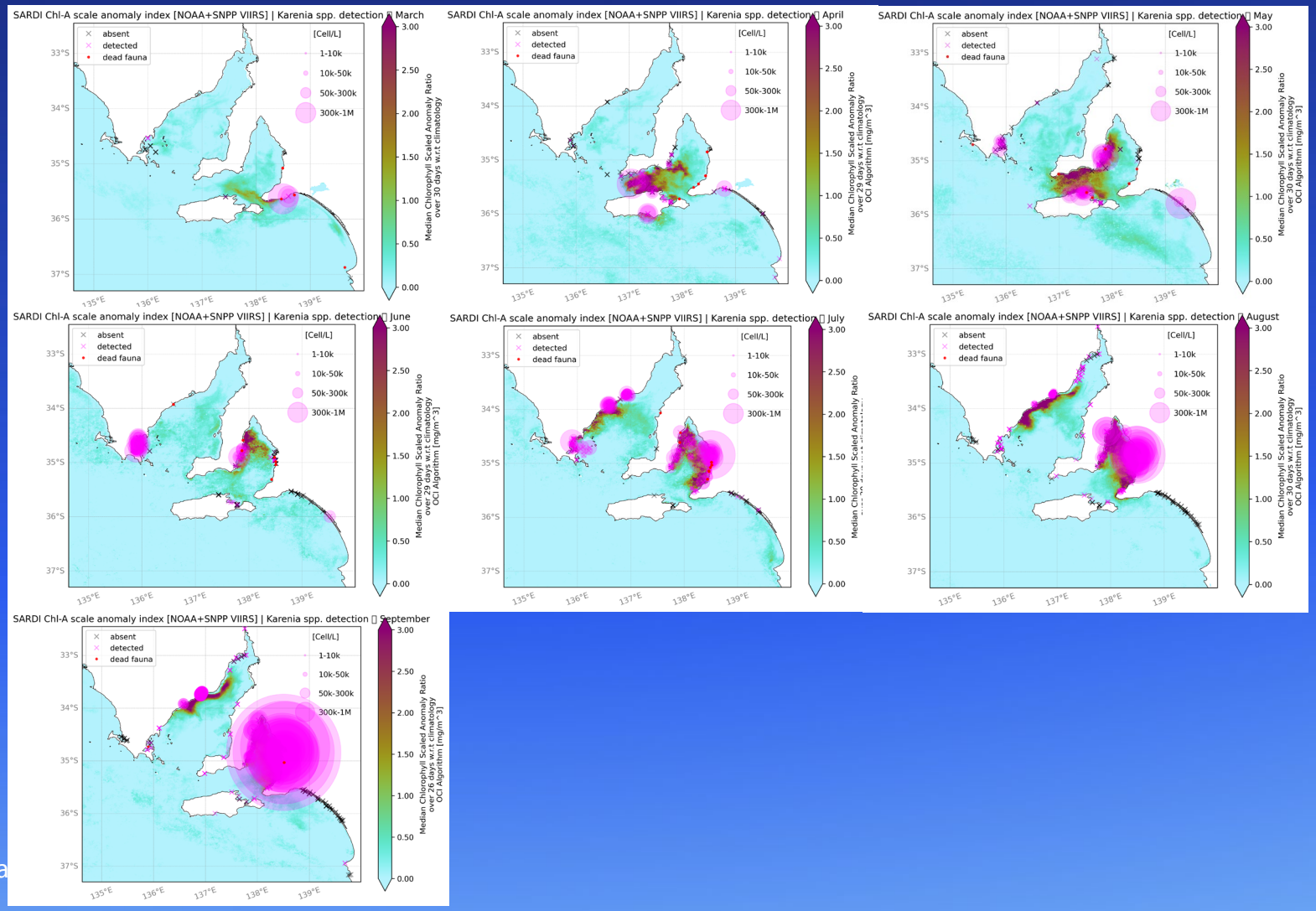



SARDI Chl-A scale anomaly index [NOAA+SNPP VIIRS] | 2025-01-01
33°S
34°S
35°S
36°S
37°S
135°E
136°E
137°E
138°E
139°E
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Median Chlorophyll Scaled Anomaly Ratio
over 10 days w.r.t climatology
OCI Algorithm [mg/m^3]

Detected Footprint of Impact - Monthly

Maps include:

- magnitude of monthly-averaged chla increases compared to the 21-year (2002-2023) median conditions
- all SA Gov. sampling for *Karenia sp.*
- reported fish kills (PIRSA FishWatch)

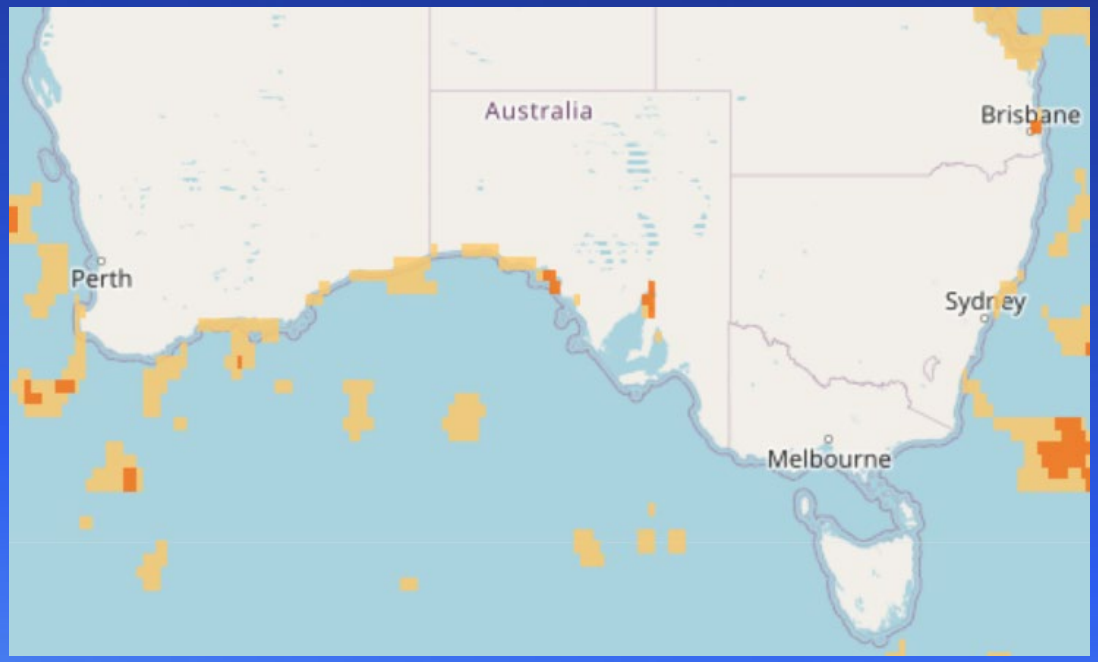


Government of South Australia

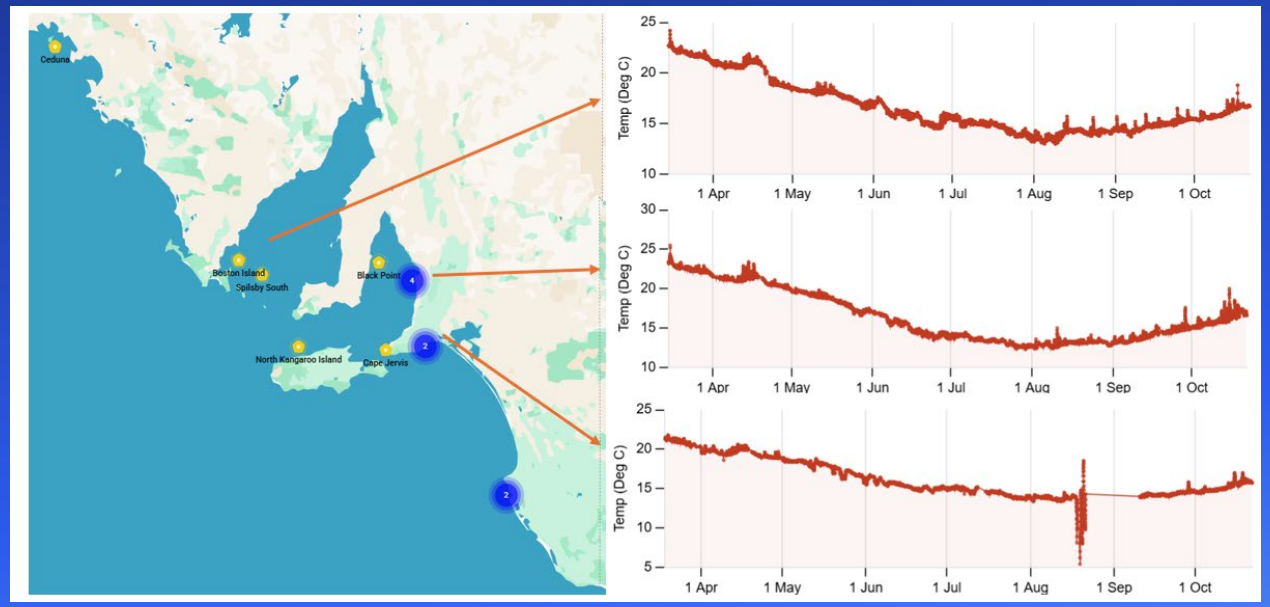
algalbloom.sa

Temperature Trends

Marine Heatwave Status 12-Oct



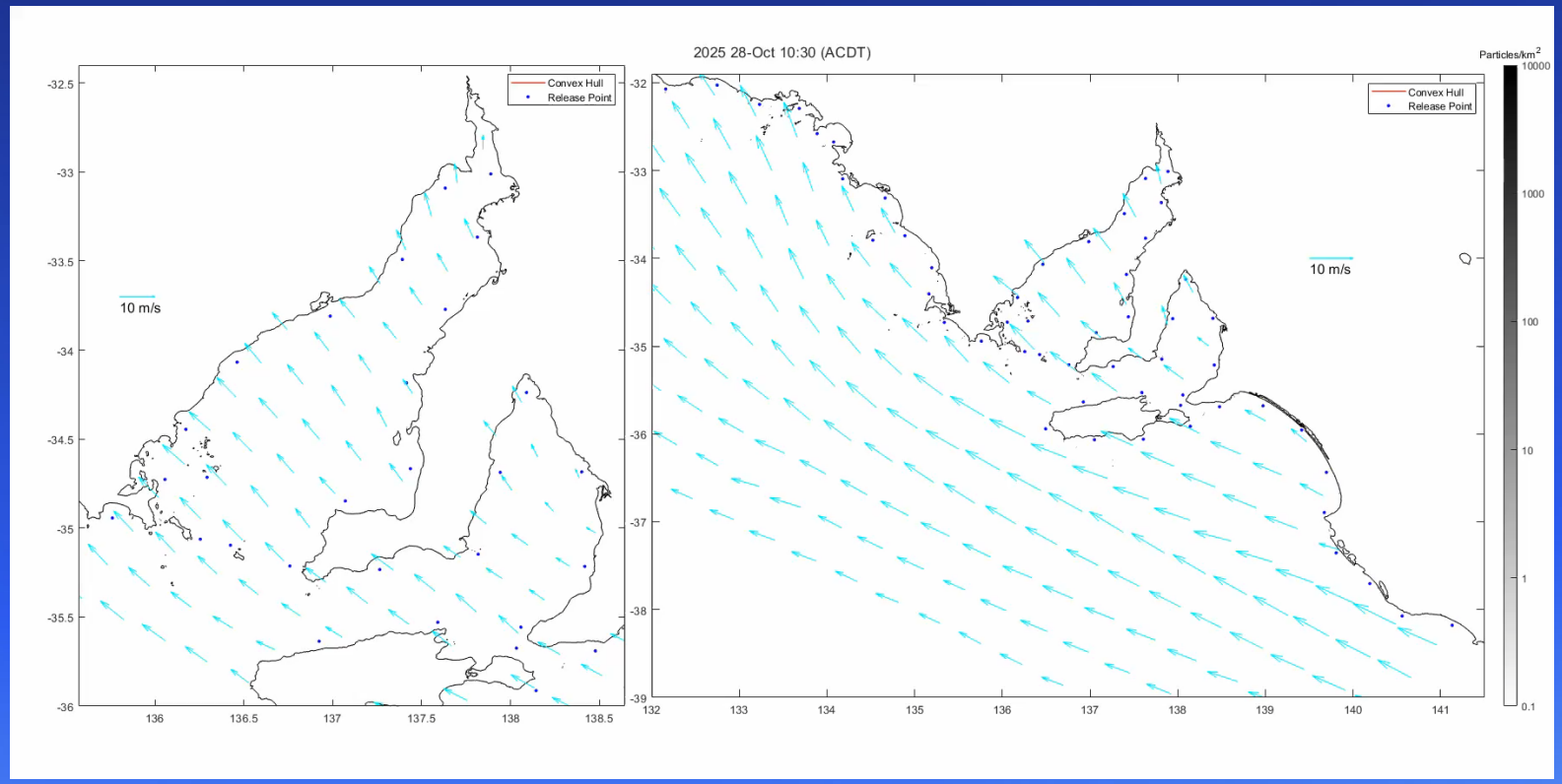
Coastal SST trend



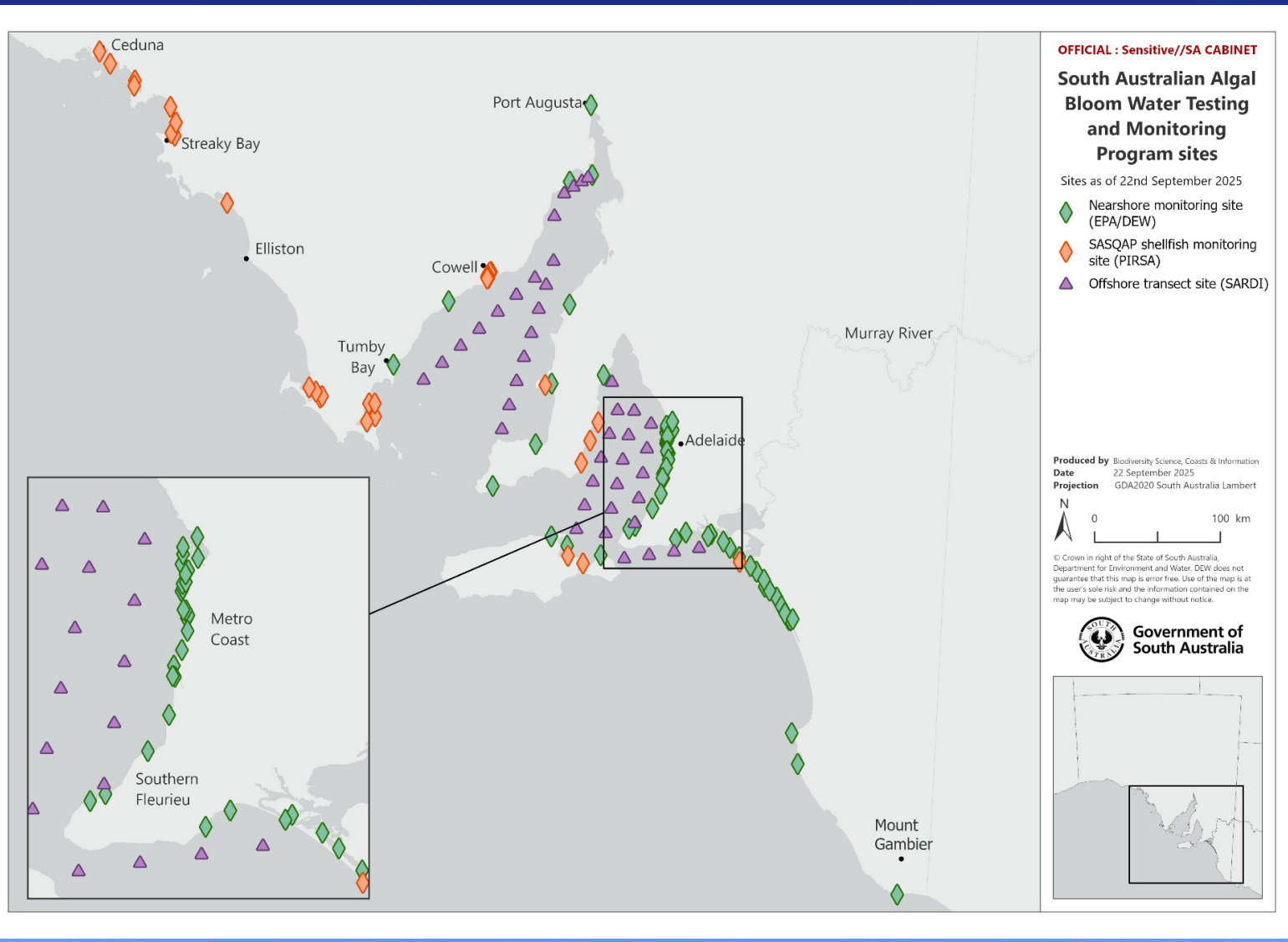
Ocean Forecast – as at 29 October 2025

Ocean forecast models:

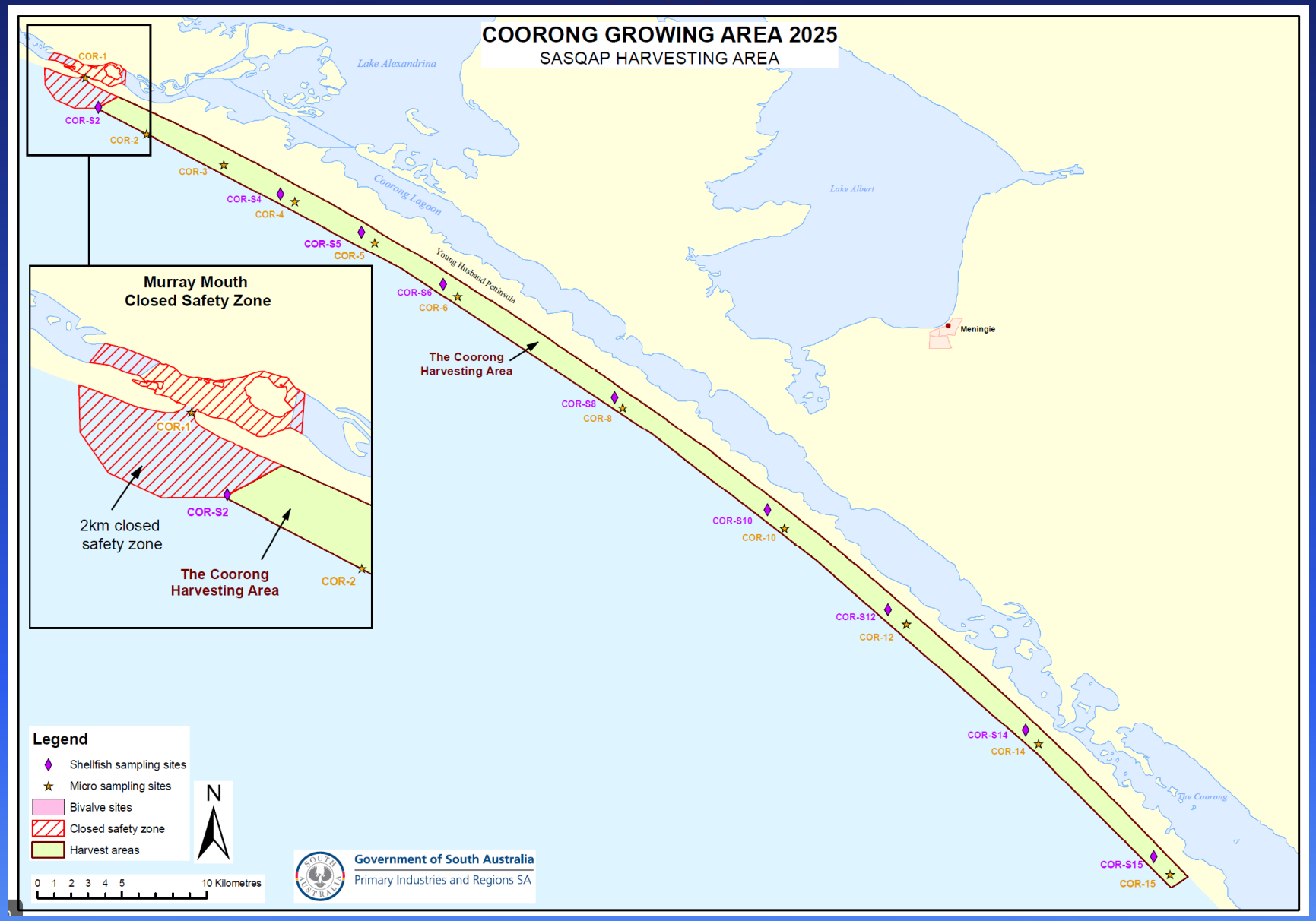
- Used to understand and predict the trajectory of the algae bloom
- Current forecast predicts the trajectory of water masses potentially containing the HAB over a period of 5 days.



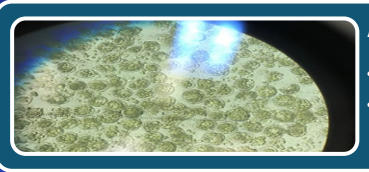
Water Sampling – as at 29 October 2025



Government of South Australia

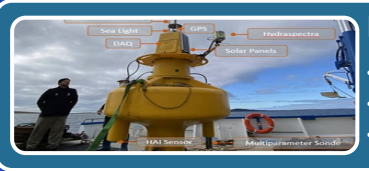

COORONG GROWING AREA 2025
SASQAP HARVESTING AREA
Lake Alexandrina
Coorong Lagoon
Lake Albert
Young Husband Peninsula
Meningie
The Coorong
COR-1
COR-S2
COR-2
COR-3
COR-S4
COR-4
COR-S5
COR-5
COR-S6
COR-6
COR-S8
COR-8
COR-S10
COR-10
COR-S12
COR-12
COR-S14
COR-14
COR-S15
COR-15
The Coorong Harvesting Area
Murray Mouth
Closed Safety Zone
2km closed safety zone
The Coorong Harvesting Area
Legend
Shellfish sampling sites
Micro sampling sites
Bivalve sites
Closed safety zone
Harvest areas
N
0 1 2 3 4 5 10 Kilometres
Government of South Australia
Primary Industries and Regions SA

Science Plan



Algae Identification

- Species identification
- National Testing Capability (brevetoxins)



Detection & Monitoring

- Real-time sensors, satellite imagery, oceanography
- Water testing and tracking (incl. wildlife)
- Image Flow Cytobots

Impact Assessment

- Rapid fisheries assessment
- Ecological modelling
- Citizen science data

Algal bloom mitigation

- Modified clay
- Nano bubles

Office for Algal Bloom Research

- Increase capability
- Oceanography, plankton taxonomy, climate change modelling, technicians