Climate and Oceanographic Summary, Great Australian Bight 2017 - 11

Kirsten Rough – 15th January 2017

Summary:

The Sea Surface Temperatures across the Great Australian Bight continue to warm progressively.

The sea floor temperatures south and west of Streaky Bay are continuing to increase over a wider area.

The upwelling continues to show as cold water at the sea surface along the Bonney coast of the South East of SA, the coastal fringe of lower and western Eyre Peninsula.

CSIRO Aerial Survey SBT sightings from 1st January 2016 to date (15th Jan) tonnage per longitude (note that not all transect lines have been flown at this early point in the survey season):

128°	129°	130°	131°	132°	133°	134°
0 tonnes	0 tonnes	35 tonnes	0 tonnes	442 tonnes		

A large seismic survey is scheduled to start on the 4th April 2017 and operate to the southwest of lower Eyre Peninsula between longitudes 133 and 135°E.

Sea Surface Temperature and SBT Habitat:

Habitat distribution for SBT in the GAB over the past week is shown in Figure 1. The areas with the highest preference values are west of longitude 134°E and around the Sanders Banks area.

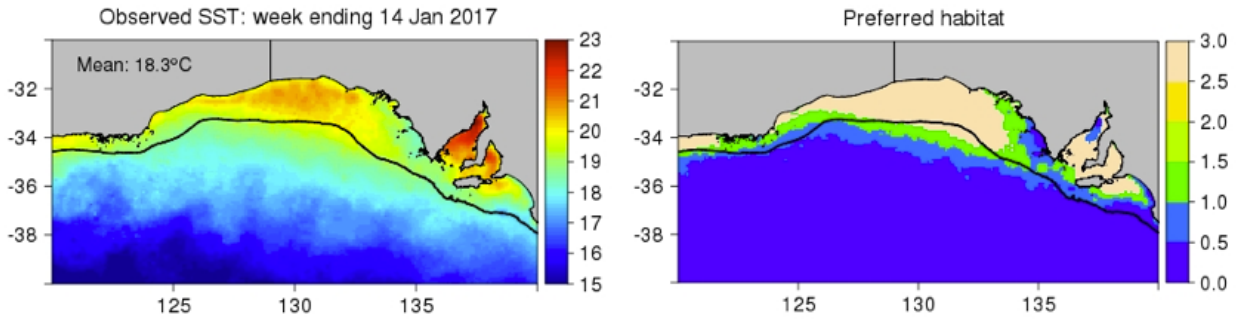

Figure 1: Sea Temperature and SBT Habitat distribution for the week ending 14th January 2017 (CSIRO 2017).

The broader GAB area continues to warm progressively with a small amount of warmer water feeding around the southwest corner of Western Australia (Figure 2); and a larger pool of warmer appearing on the shelf throughout the central Bight.

The Actual SST along the 200m-depth contour is shown Figure 3. Along the shelf-break the warmest area is between longitudes 130° and 133°E.

The "now-cast" images from the e-SA Marine Project are shown in Figure 4. These are indicating warming continuing in the western/central GAB and the Gulfs. The Sanders Banks area extending eastwards to Young Rocks has very favourable water temperatures for SBT. There is

now a band of suitably warm water extending to the Rocky Island area and south of the Cabbage Patch. Also evident is cold water at the surface through the Bonney upwelling area (SE SA) and along the coastal fringe of lower and western Eyre Peninsula, extending all the way to Ceduna.

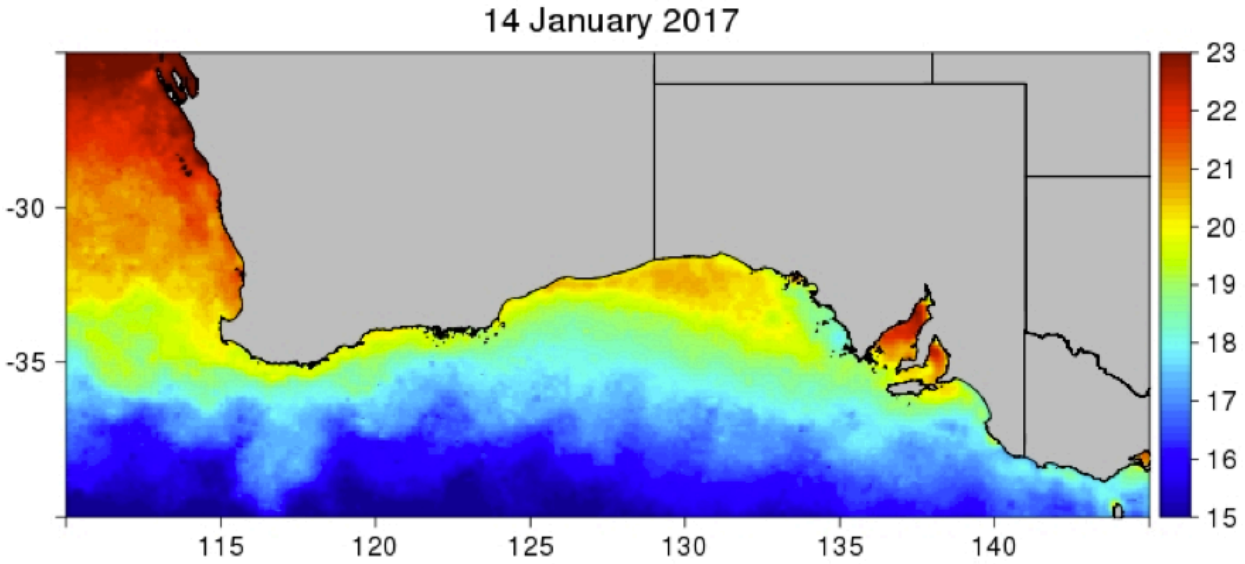

Figure 2: Sea Surface Temperature across southern Australia over the past week (CSIRO 2017).

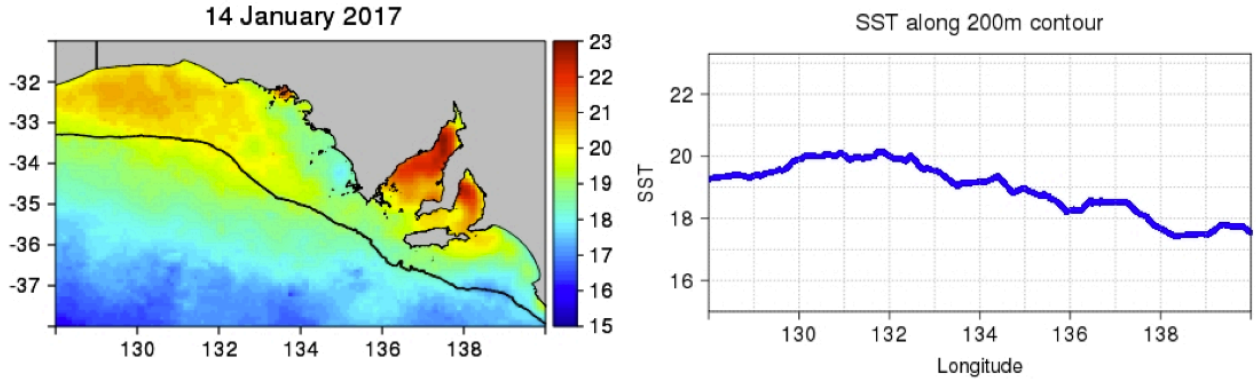

Figure 3: Most recent Sea Surface Temperature satellite image across the GAB between longitudes 128° to 140°E (left) and corresponding graph of SST along the 200m-depth contour, (right) (CSIRO 2017).

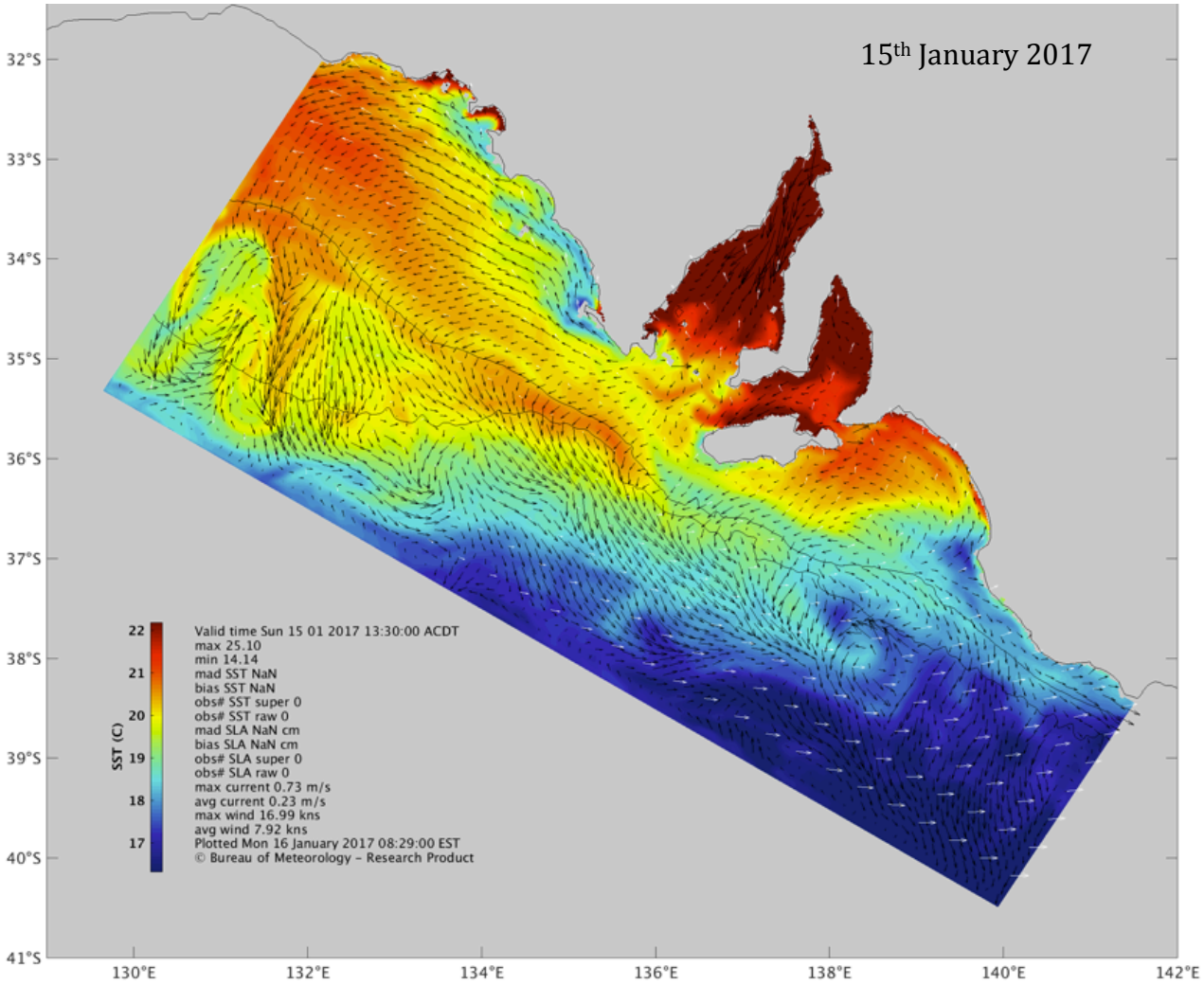

Figure 4: Snapshot of the actual Sea Surface Temperature (now-cast) on the 15th January 2017. Please note that the temperature scale for this map ranges from 16 to 22°C. Also shown: water currents (black arrows) wind direction (white arrows) and information on the average and maximum water current and wind speeds for the sea area outlined (SARDI-BoM 2017).

The most recent plot of sea-floor temperature is shown in Figure 5. The warmest areas continue to be the shallow Gulfs and Sanders Banks area. The inshore and shelf regions to the south and west of Streaky Bay continue to progressively warm over a wider area.

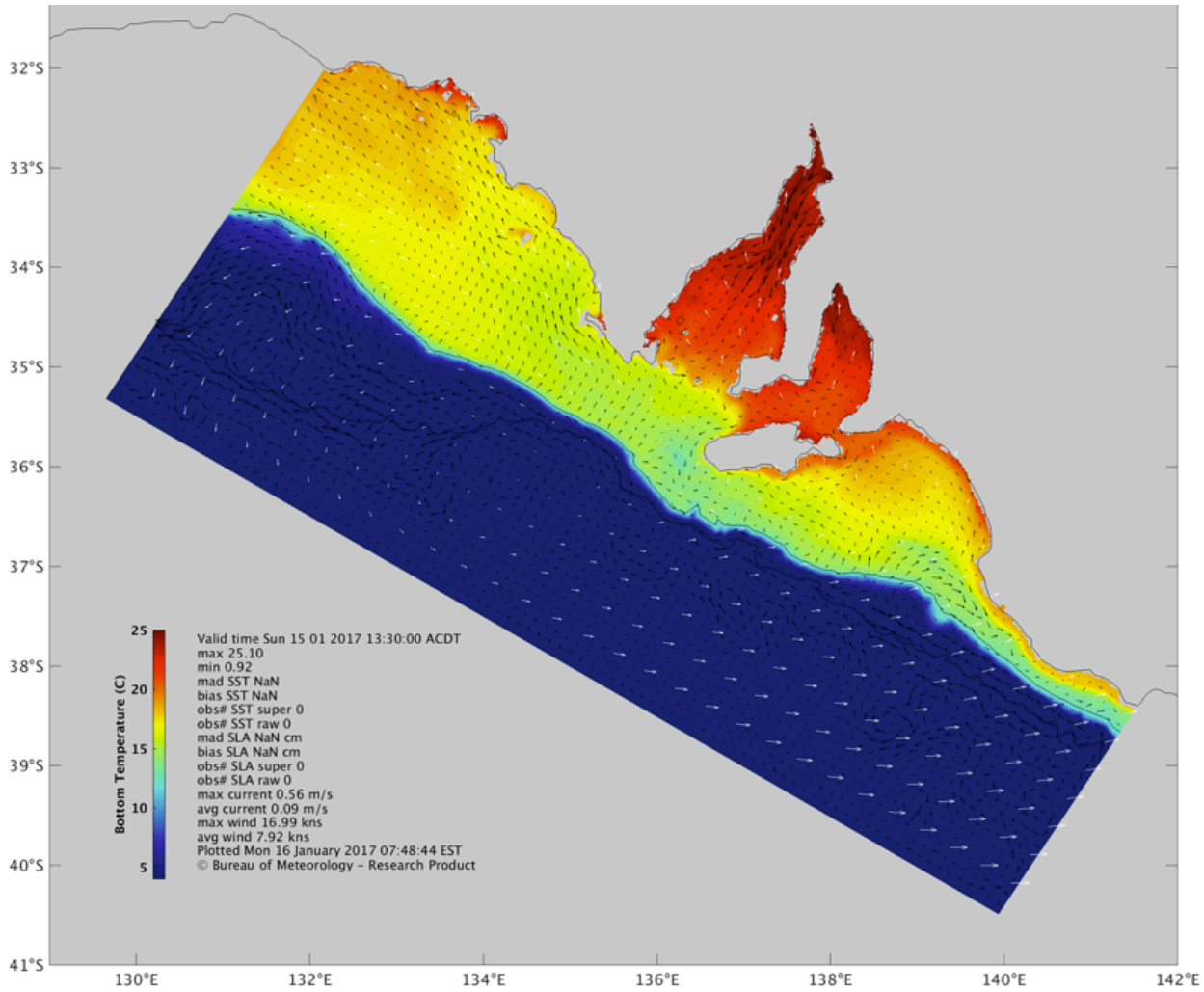

Figure 5: Temperature at the Sea Floor on 15th January 2017 taken from the draft e-SA Marine Project. Also shown: surface water currents (black arrows) surface wind direction (white arrows) and information on the average and maximum water current and wind speeds for the sea area outlined (SARDI-BoM 2017).

SST Western Australia and East Coast:

The recent sea surface temperatures of regions adjacent to Western Australia and the East Coast of Australia are shown in Figure 6. The warm waters of WA continue to be positioned northwards of Shark Bay with limited advancement towards Cape Leeuwin. Warm water continues to push southwards along the east coast of Australia with strong southward currents and eddies out from southern NSW.

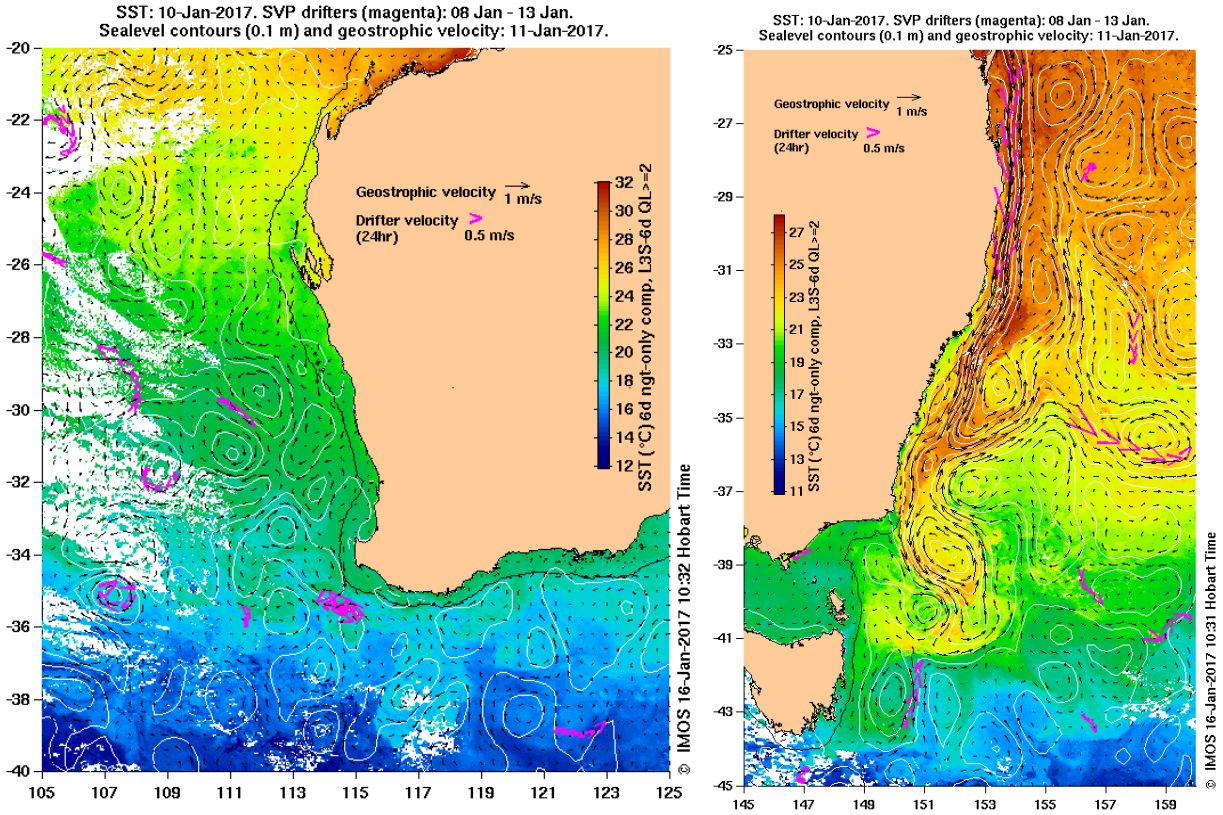

Figure 6: Sea Surface Temperatures adjacent to the west coast (left) and the east coast (right) of Australia over the past week (IMOS 2017). Please note that the temperature scales differ between the two images; the WA image ranges from 12 to 32°C and the NSW/Tas image ranges from 11 to 27°C.

Chlorophyl/productivity levels:

A single snapshot from an individual satellite pass is shown in Figure 7. Chlorophyll levels are starting to increase in areas experiencing upwelling, across Encounter Bay and specifically near the outflow of the River Murray.

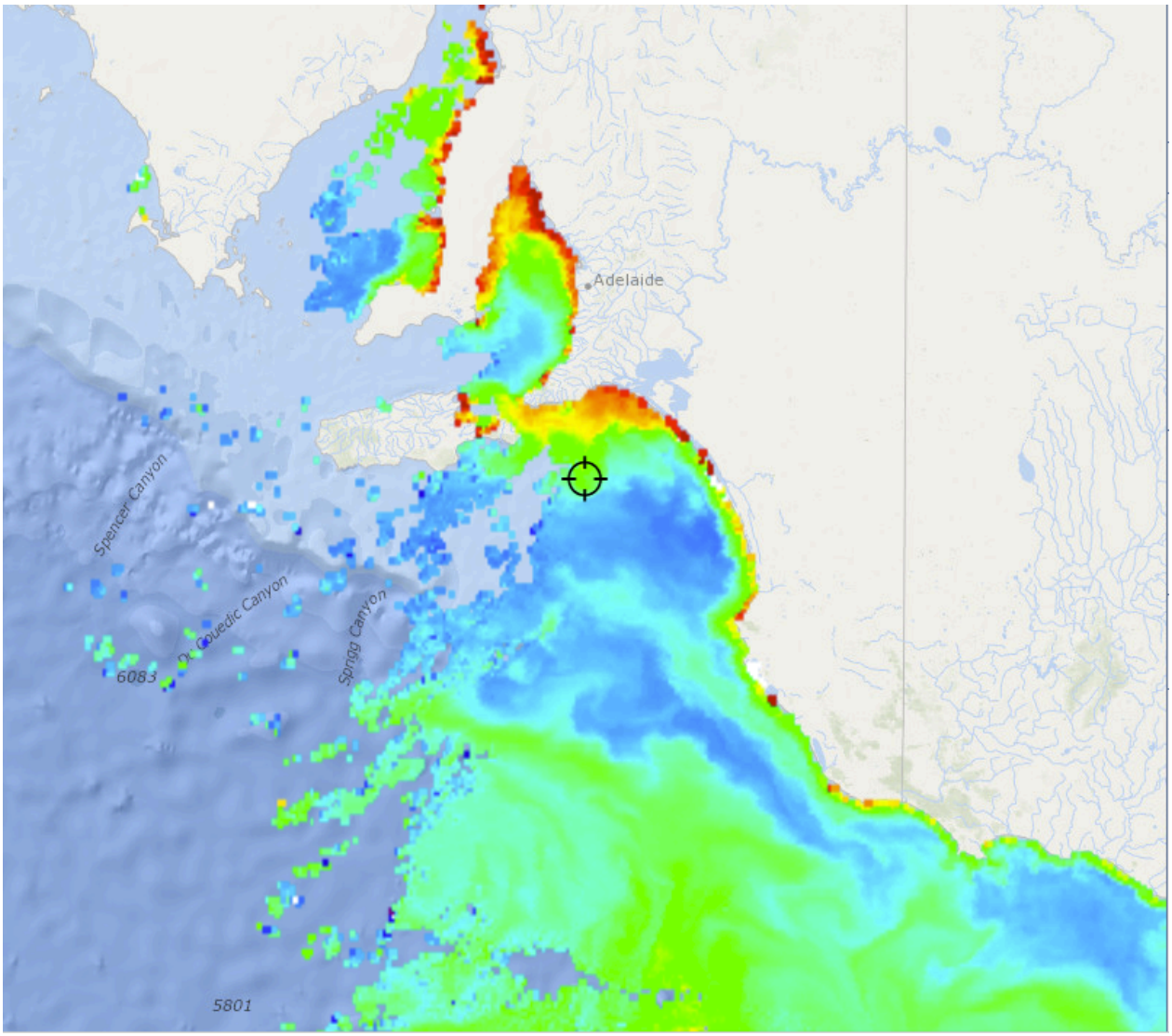

Figure 7: Chlorophyll plot from the 12th January 2017, the grey areas are due to cloud cover (FishTrack 2017).

Petroleum Industry Update:

There will be a 2D Marine Seismic Survey occurring in the Eastern GAB area starting on or after the 4th of April 2017. The area covers the outer shelf and adjacent offshore area to the southwest of lower Eyre Peninsula between longitudes 133 and 135°E (see Figure 8).

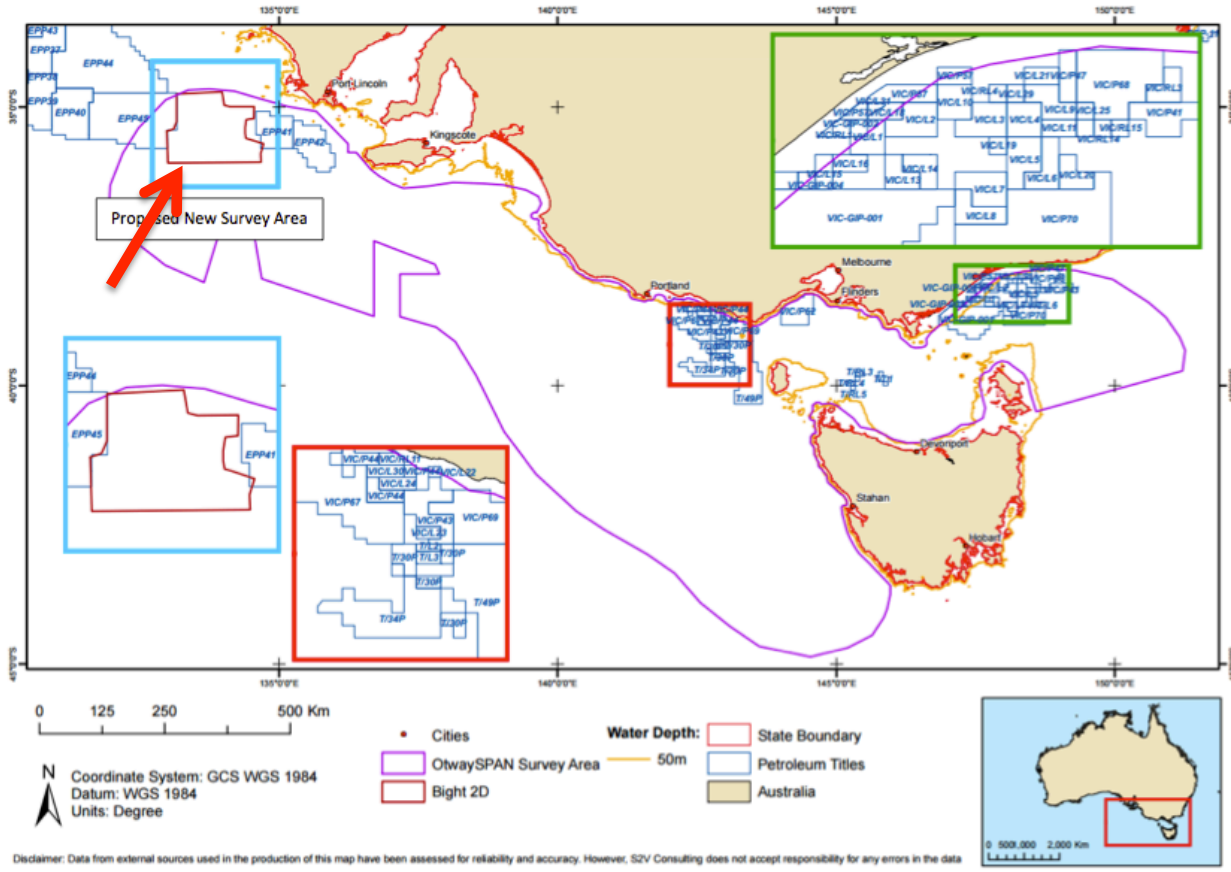

Figure 8: Seismic Survey commencing in the area outlined in light blue (red arrow)

Further Information:

Useful Websites:	**Contact:**
http://www.cmar.csiro.au/gab-forcasts/index.html http://godae.bom.gov.au/oceanmaps_analysis/files/sarom_rt_sst_nowcast.gif http://oceancurrent.imos.org.au/index.php http://www.bom.gov.au	Kirsten Rough ASBTIA – Research Office 0429 833 697 kirstenrough@bigpond.com