Climate and Oceanographic Summary, Great Australian Bight 2017 - 5

Kirsten Rough – 29th November 2016

Summary:

The Sea Surface Temperature situation in the Great Australian Bight remains cool.

Longer-term GAB forecasts are suggesting cooler conditions persisting through December, but improving considerably in January including areas closer to Port Lincoln.

The first indications of upwelling occurred in the South East of SA this week.

Productivity levels along the shelf break are starting to resemble conditions more favourable for SBT.

Forecast Sea Surface Temperature and SBT Habitat:

Updated **longer-term forecasts** of conditions in the GAB coming into the 2017-fishing season can be seen in Figure 1. In these images the plot on the left shows forecasted sea surface temperature and the plot on the right shows the areas that have conditions suitable for ranch-sized Southern Bluefin Tuna. Preferred habitat includes areas with a value of one or more (i.e. green to bone colour). These are indicating that conditions will continue to warm slowly with some of the inshore areas likely to have early entry SBT in the latter half of December. But more importantly, through January the conditions will be suitable for the majority of SBT over a wide area including below Eyre Peninsula.

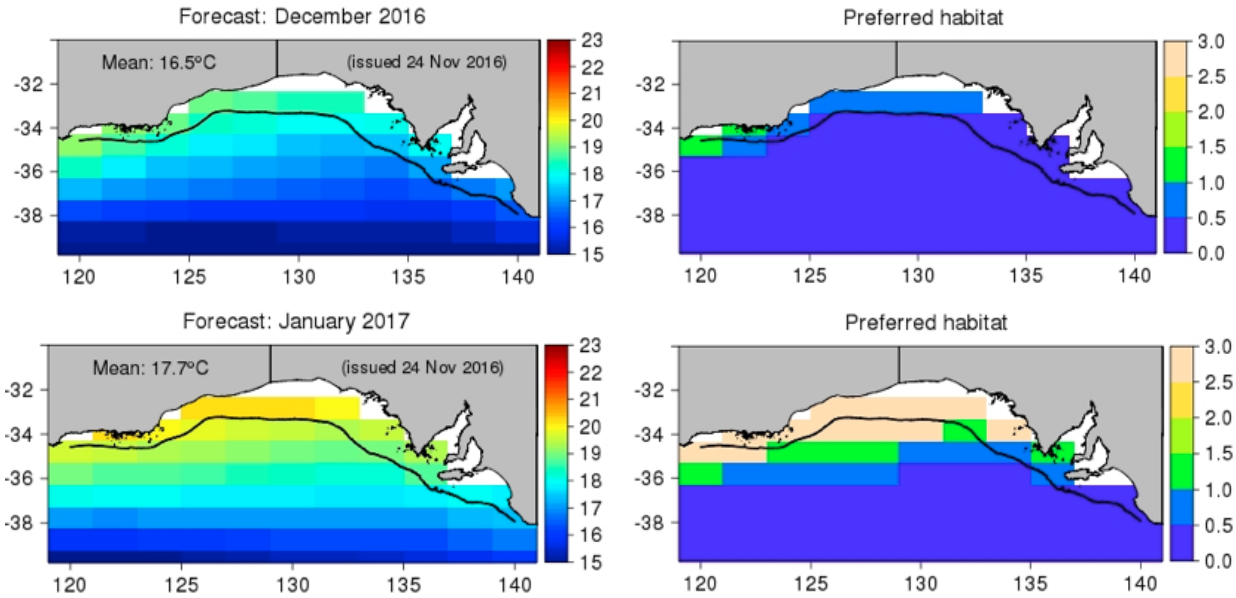

Figure 1: Sea Temperature and SBT Habitat forecasts issued on the 24th of November 2016 coming into the 2017-fishing season. Top image shows second half of December; and bottom image shows conditions through January (CSIRO 2016)

Short-term forecasts (1 to 5days) of GAB and Gulf Actual Sea Surface Temperatures and Anomalies from the SARDI-BoM-ASBTIA project are shown in Figure 2 and Figure 3. What is evident by the 'anomaly' plot (Figure 2) is the first pulse of cold upwelling in the South East of SA, this is a good sign for the general productivity of the region and upcoming fishing season.

What is also interesting is that the Sanders Banks and northern Kangaroo Island area seem to be quite responsive to warming surface waters with favourable warm weather conditions. The 'actual' SST (Figure 3) of these locations are only in the range of 16.5 – 17.5°C; equivalent to those of the greater GAB area the difference being that this temperature is cooler than what it is usually at this time of the year in the GAB and warmer than what it is usually at this time of year in the Sanders and lower St Vincent gulf area.

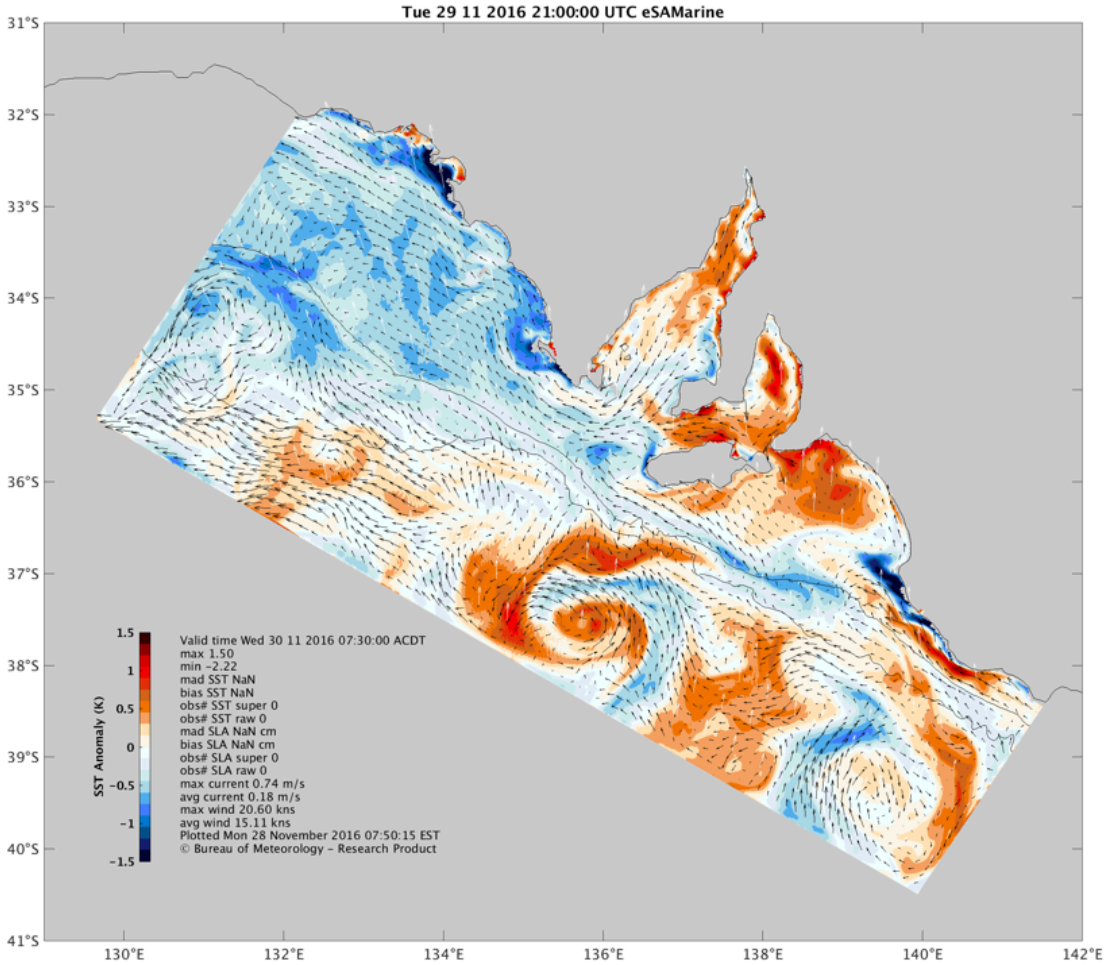

Figure 2: Snapshot of the Sea Surface Temperature anomaly on the 29th November 2016 taken from the draft e-SA Marine Project (this is how the situation now compares to average situation from a similar point in time over the previous 5 years). Also shown are water currents (black arrows) wind direction (white arrows) and information on the average and maximum water current and wind speeds for the sea area outlined (SARDI-BoM 2016).

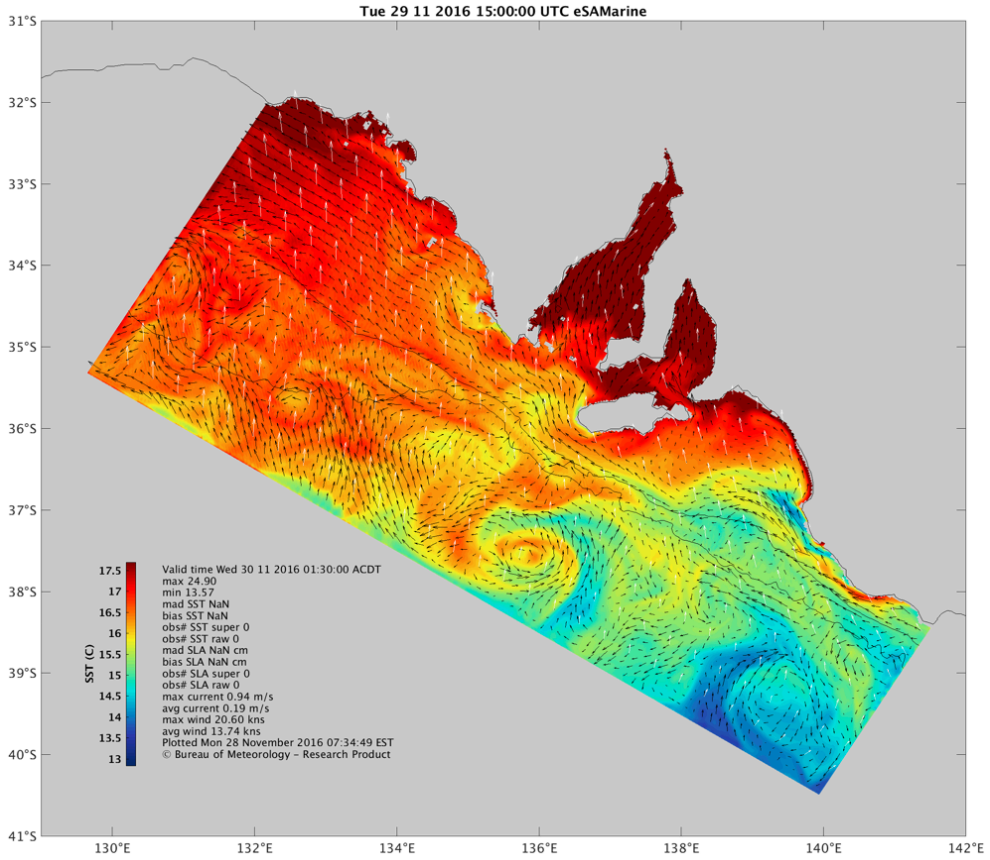

Figure 3: Snapshot of the actual Sea Surface Temperature on the 29th November 2016 taken from the draft e-SA Marine Project. Please note that the temperature scale for this map ranges from 13 to 17.5°C. Also shown are water currents (black arrows) wind direction (white arrows) and information on the average and maximum water current and wind speeds for the sea area outlined (SARDI-BoM 2016).

GAB Sea Surface Temperature (SST):

The broader GAB area remains cool and there is a small amount of warmer water feeding around the southwest corner of Western Australia (Figure 4). Actual SST along the 200m-depth contour is shown in Figure 5.

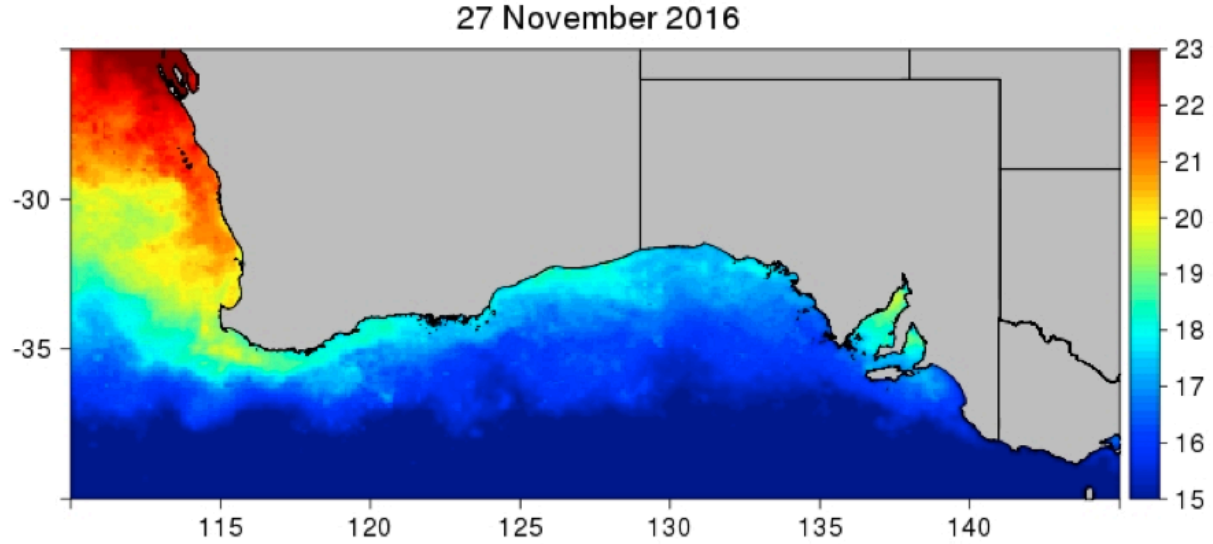

Figure 4: Sea Surface Temperature across southern Australia over the past week (CSIRO 2016).

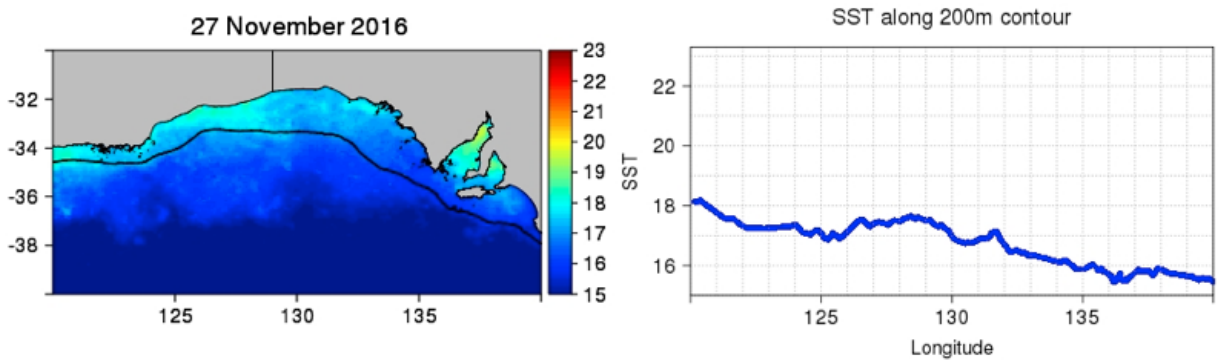

Figure 5: Most recent satellite image of Sea Surface Temperatures across the GAB between longitudes 120° to 140°E (left) and corresponding graph of SST along the 200m-depth contour, (right) (CSIRO 2016).

Other items of interest:

How the sea temperature situation on a global scale compares to the long-term pattern can be seen in Figure 6. The large areas off Southern Africa, southern Australia and across the central Pacific are all cooler than the 30-year average (1960-1990) for this time of year. There is a large slightly warmer patch adjacent to California, which may have implications for imported feed supplies. There is also a patch of warmer water to the north of Australia but it is not anticipated that this will have any implications for GAB fishing this season.

The recent sea surface temperatures of regions adjacent to Western Australia and the East Coast of Australia are shown in Figure 7.

And productivity levels across the GAB are shown in Figure 8. In these images the aqua to yellow are within the preferred range of conditions for SBT (CSIRO archival tag studies).

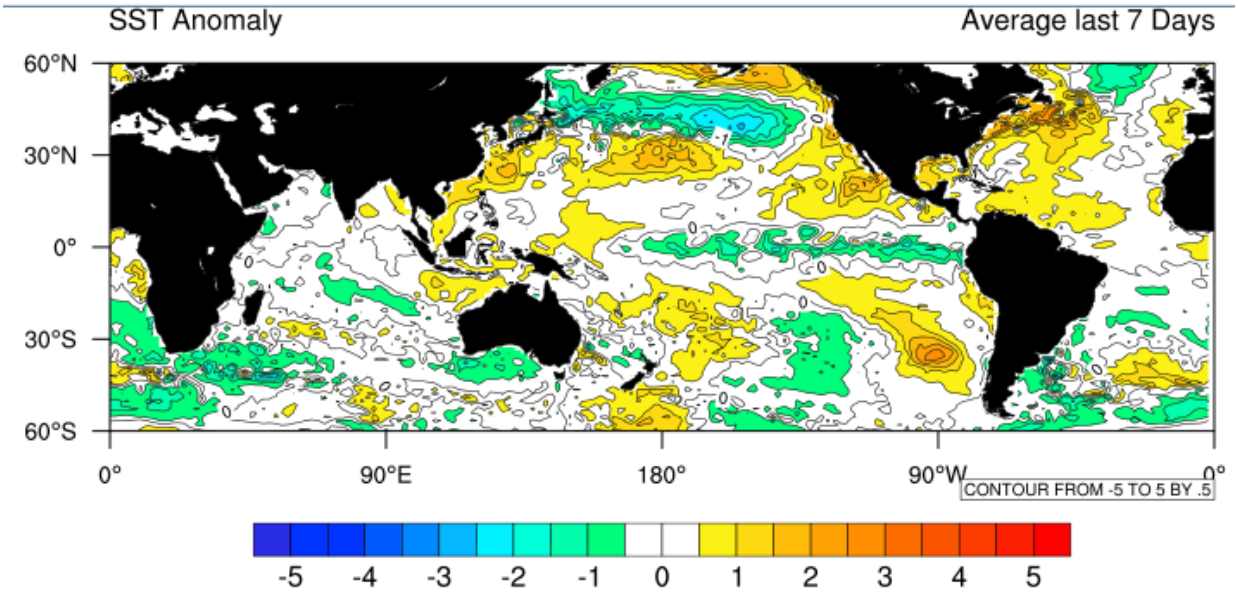

Figure 6: Global Sea Surface Temperature anomalies over the past week (Bureau of Meteorology 2016).

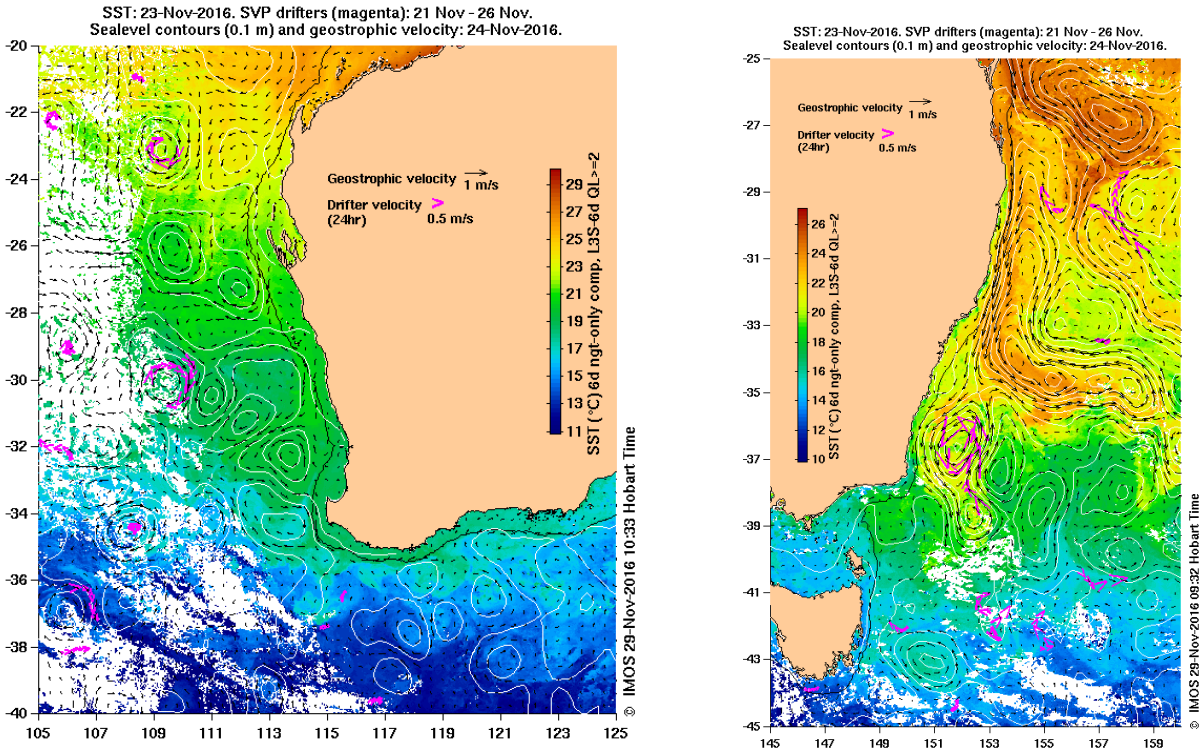

Figure 7: Sea Surface Temperatures adjacent to the west coast (left) and the east coast (right) of Australia over the past week (IMOS 2016). Please note that the temperature scales differ between the two images; the WA ranges from 11 to 29°C and the NSW/Tas image ranges from 10 to 26°C.

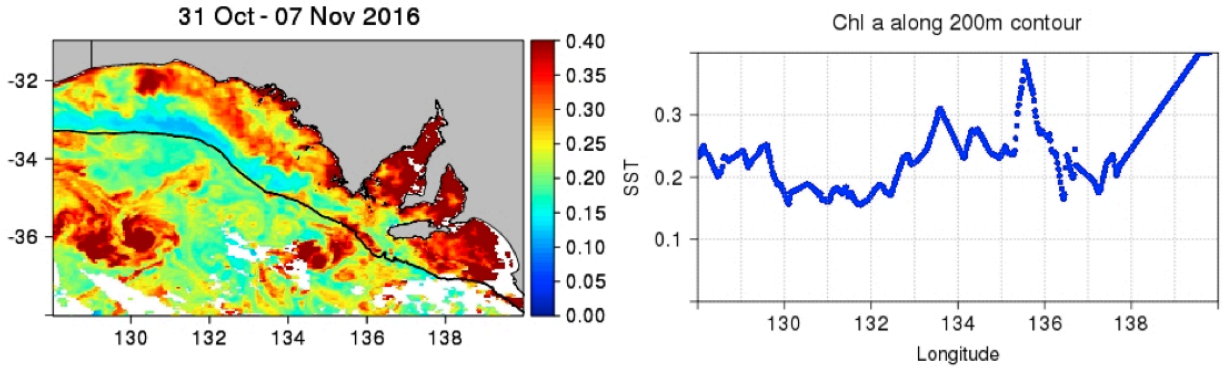

Figure 8: Productivity levels across the Great Australian Bight, plot from most recent block of clear satellite images (left) and chlorophyll levels along the 200m-depth contour (right) (CSIRO 2016).

Useful Websites:	**Further details contact:**
http://www.bom.gov.au	Kirsten Rough 0429 833 697
http://www.csiro.au	ASBTIA – Research Office
http://www.cmar.csiro.au/gab-forecasts/index.html	Port Lincoln SA 5606
http://www.oceancurrent.imos.org.au	Email: kirstenrough@bigpond.com
http://godae.bom.gov.au/oceanmaps_analysis/files/sarom_rt_sst_nowcast.gif	