

Climate and Oceanographic Summary, Great Australian Bight 2019 - 4

Kirsten Rough – 22nd December 2018

Please find below the latest update for recent and expected conditions for the 2018-fishing season. Please don't hesitate to call or email if there are any questions, contact details and links to the various websites used are listed at the end.

Summary:

The situation continues to look like an-historically typical season, although the very few warm days so far are leading to a slower rate of warming of the surface water layers particularly in the central Bight area.

The seasonal outlooks are slowly improving; the broader climate systems continue to indicate a season with an abundance of strong winds, but the first of the heat spikes has finally started.

The upwelling which began mid October, continues to have regular strong pulses of cold water that are particularly obvious in the sea floor regions of lower and western Eyre Peninsula. These nutrient rich waters are now stimulating algal blooms in the upwelling area of the South East and along the coastal fringe of lower and western Eyre Peninsula.

GAB Sea Surface Temperature (SST):

The situation across the broader area of the GAB over the past week is shown in Figure 1. The strength and persistence of the upwelling in the east remains a significant feature of the GAB over this past week. The Leeuwin Current continues to have minimal input of warmth from the west, and weather conditions have not been favourable for heating the surface layers through the central GAB area. Therefore the SST situation along the shelf-break remains the same as last week where temperatures are at or exceed 18°C only to longitude 133°E (Figure 2).

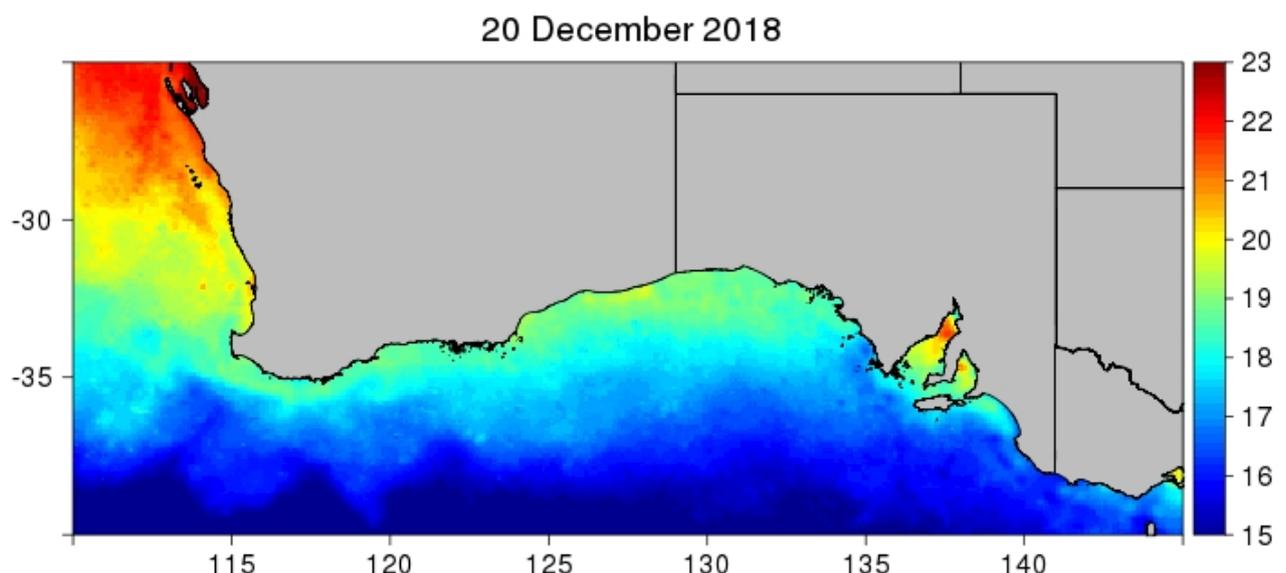


Figure 1: GAB Sea Surface Temperatures for the 3-day period centered around the 20th December 2018; the upwelling and minimal influence of the Leeuwin Current are the most significant features. In these images aqua is on the lower end of the temperature range preferred by SBT (CSIRO 2018).

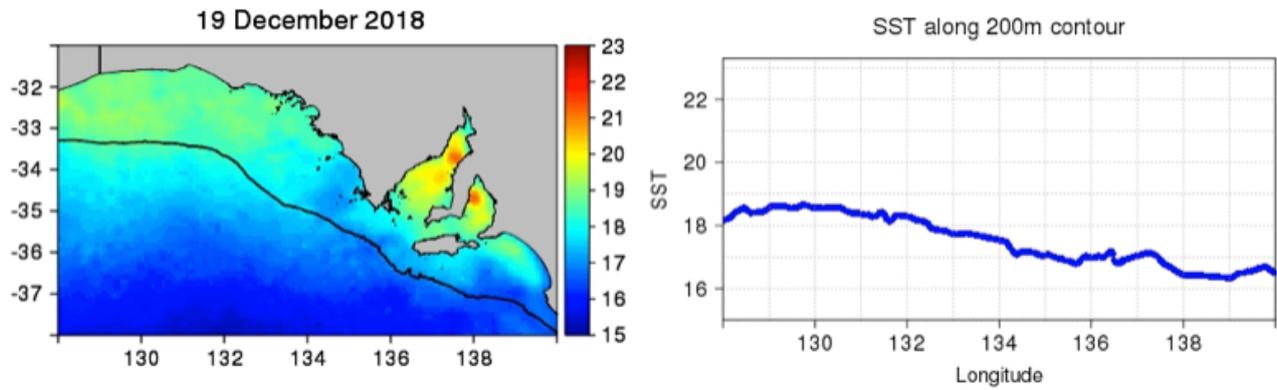


Figure 2: The most recent SST satellite image between longitudes 128° to 140°E (left) and corresponding graph of SST along the shelf break (right) (CSIRO 2018 - GAB Forecasting Website).

The most recent fine-scale Sea Surface and Sea Floor Temperatures are shown in Figure 3 and Figure 4. These are clearly showing that the cold upwelling is continuing to have a major influence on water temperatures over a broad area. The St Vincents Gulf in particular is warming and starting to feed warmer surface waters along the southern side of Kangaroo Island – this should help to draw SBT to the surface.

Water temperature profile snapshots of the situation down through the water column (sea surface to sea floor) are continuing to show strong layering of the water column particularly in the deeper sites (Figure 5). The four locations across the GAB; west to east are: Outer Shelf area at longitude approximating 132°E; 134°E south west of Rocky Island; 135°E near the Cabbage Patch and 138°E in the vicinity of Sanders Banks.

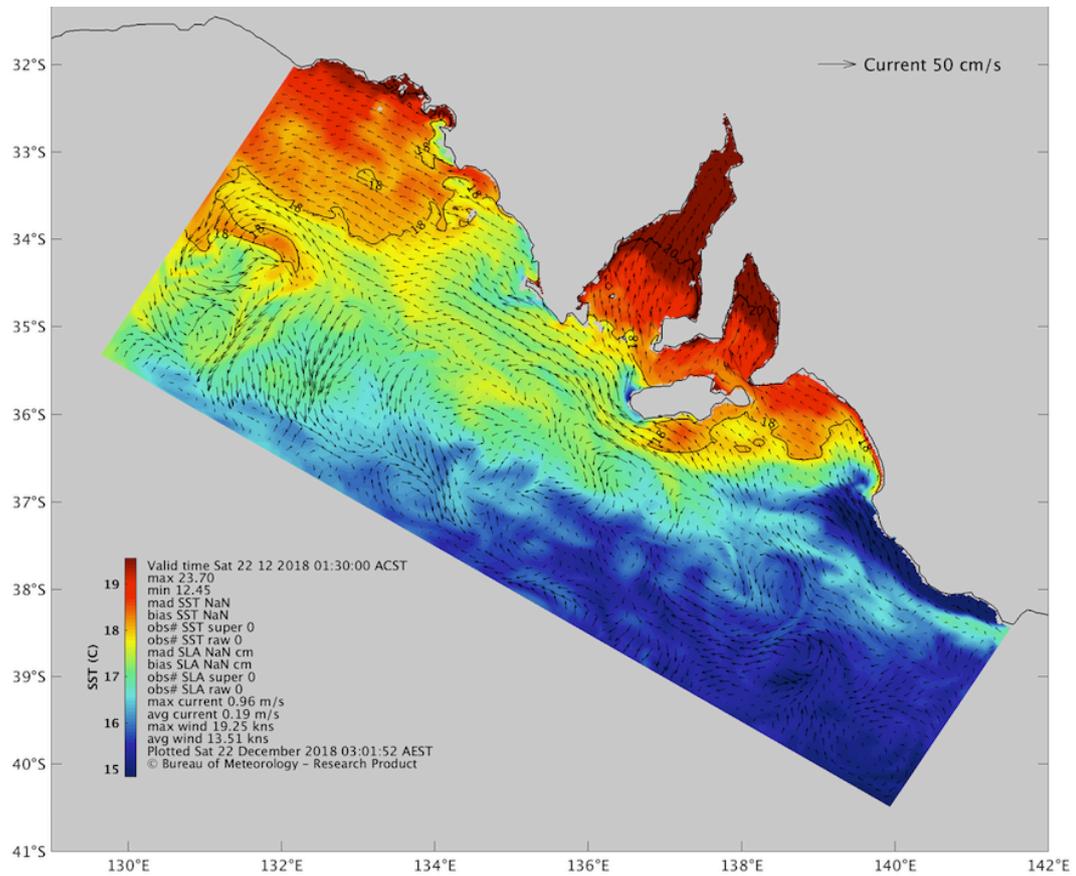


Figure 3: Fine scale SEA SURFACE Temperature and local currents on the 22nd December 2018 with the 18°C and the 20°C temperature contours marked; please check the colour scale for ACTUAL temperatures (SARDI-BoM 2018)

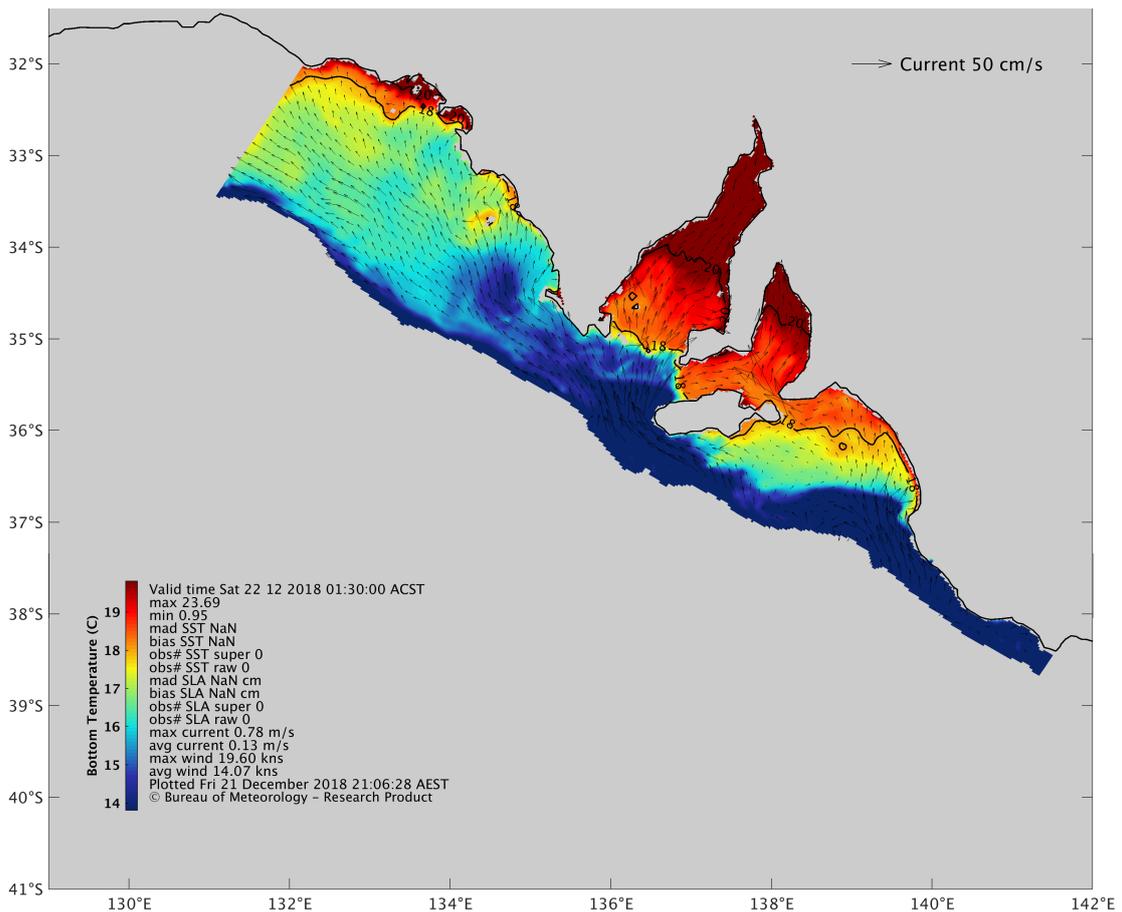


Figure 4: Fine scale SEA FLOOR Temperature and local currents on the 22nd December 2018 with the 18°C temperature contour marked; please check the colour scale for ACTUAL temperatures (SARDI-BoM 2018)

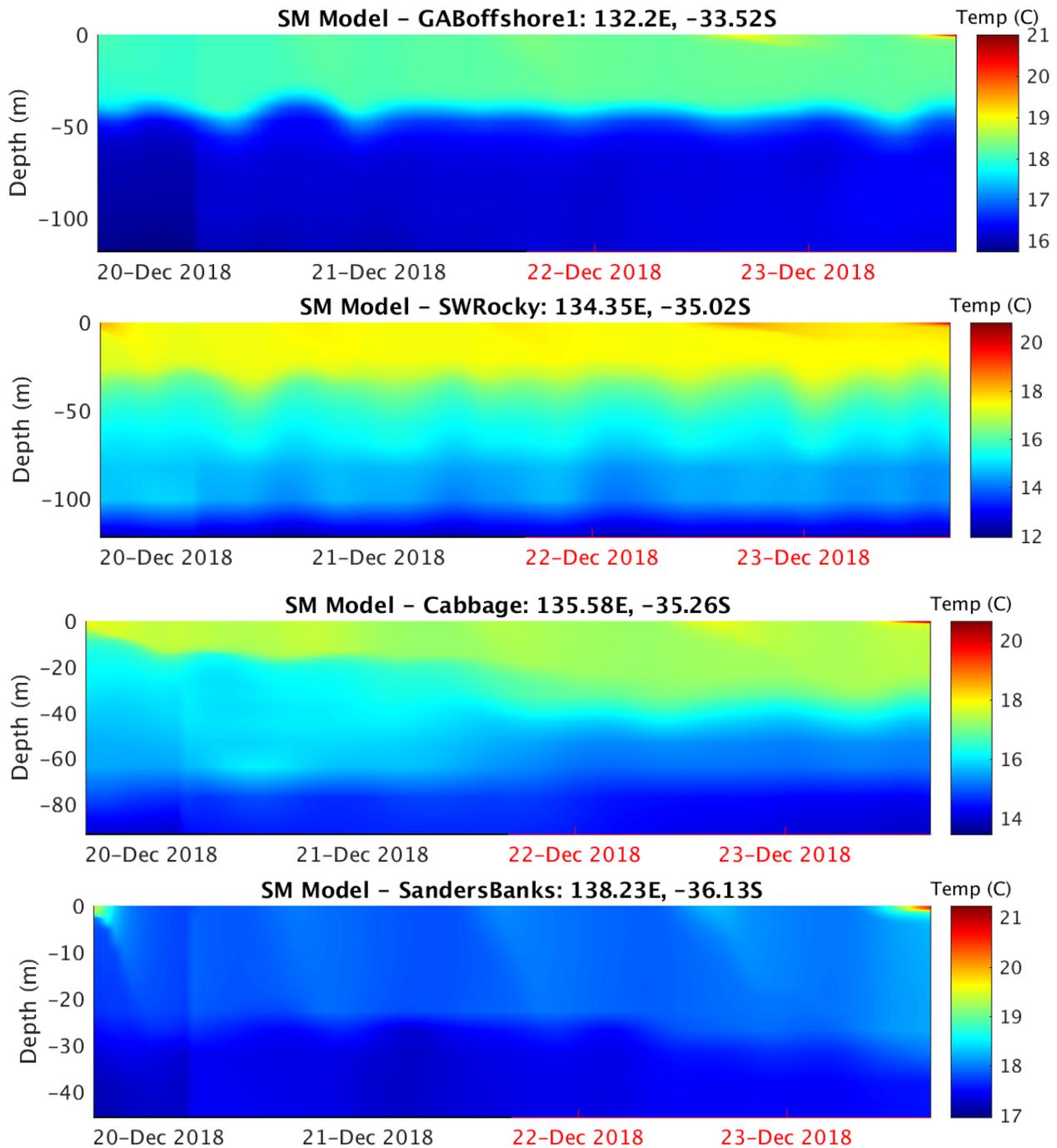


Figure 5: Sea temperature through the water profile from sea surface to sea floor at 4 historic and recent fishing locations; from top to bottom - near shelf edge central GAB, Southwest of Rocky Island, near the Cabbage Patch and near Sanders Banks (SARDI-BoM 2018).

Chlorophyll/ Productivity levels:

Clearer skies today mean better satellite images of water quality across the GAB Figure 6. From this it looks like reasonable water in a band along the southern side of Kangaroo Island, a small patch near the Cabbage Patch and another to the south of this, 35°38'S 135°16'E. There is also a small area around 34°10'S 134°03'E and a larger area to the north west of this, around 33°30'S 133°08'E.

The upwelling is leading to a dense algal bloom in the South East, and lighter algal blooms around the western end of Kangaroo Island and along the coastal fringe of the west coast of the entire Eyre Peninsula.

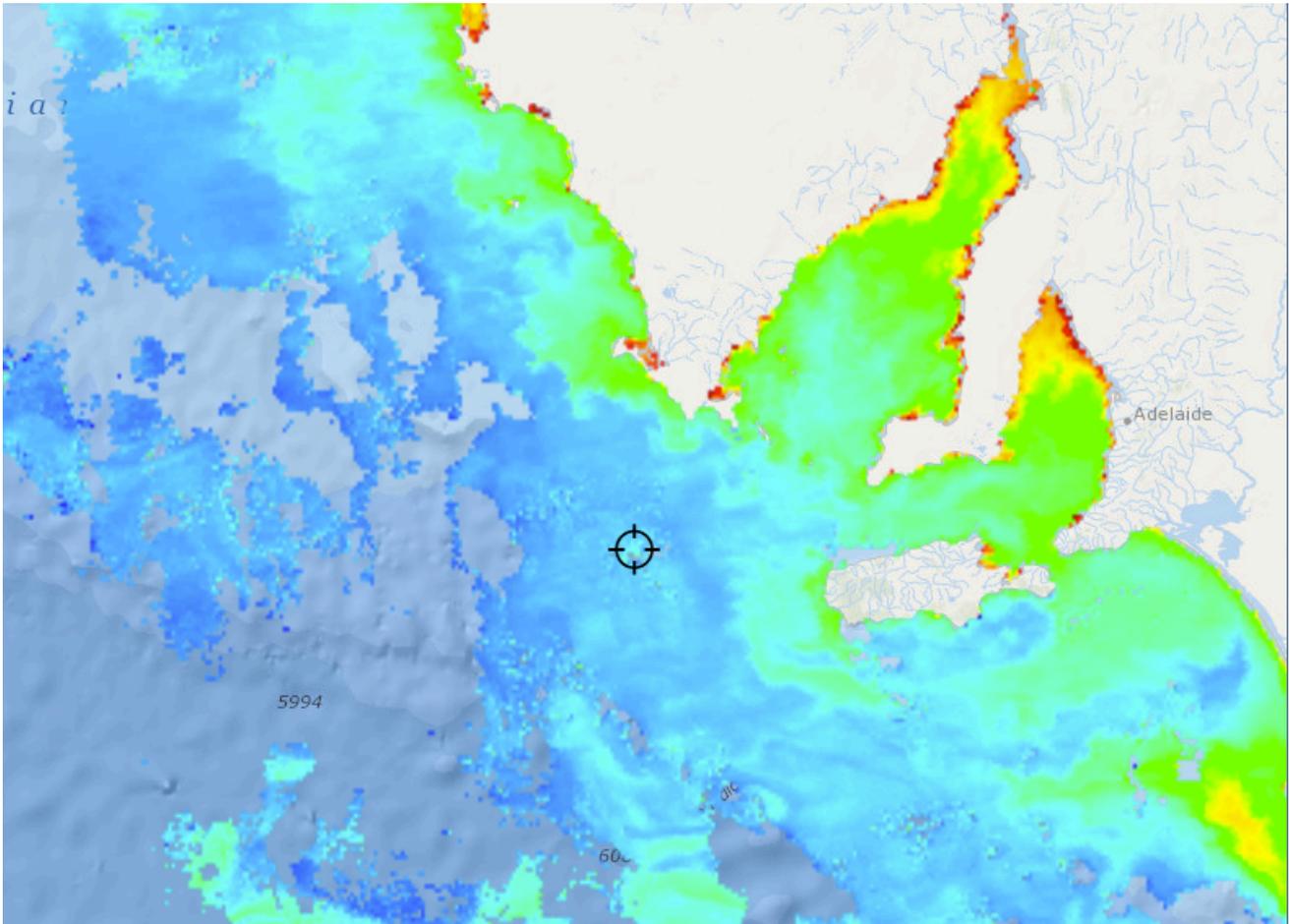


Figure 6: Chlorophyll image 22nd of December 2018; yellow and red indicate dense algal blooms, green is a lighter algal bloom but usually still too dirty for SBT which prefer the aqua and pale blue – if the water temperature is suitable (FishTrack 2018).

Any questions on any items in this update – please don't hesitate to call or email; contact details and links to relevant websites are listed here:

GAB SBT Habitat Forecasts (CSIRO): <http://www.cmar.csiro.au/gab-forecasts/env-observed.html>

eSA Marine (SARDI BoM): http://pir.sa.gov.au/research/esa_marine/sarom

Bureau of Meteorology: <http://www.bom.gov.au>

NOPSEMA: <https://www.nopsema.gov.au>

Commonwealth Marine Parks: <https://parksaustralia.gov.au/marine/parks/>

State Marine Parks: <https://www.environment.sa.gov.au/marineparks/maps-and-coordinates>

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