

# Climate and Oceanographic Summary, Great Australian Bight 2019 - 7

Kirsten Rough – 13<sup>th</sup> January 2019

Please find below the latest update for recent and expected conditions for the 2019-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:**

Recent weather has sped up warming over a broader area of the GAB sea surface. The situation now is very similar to January of 2014, 2016 and 2018.

The outlook remains that there are no indications that fish will leave the area at an unusually early point in time.

The upwelling continues to be a significant feature of sea temperature images with regular large pulses of cold water that are particularly obvious in the sea floor regions of lower and western Eyre Peninsula. There continues to be large temperature differences of 3-5°C between the sea surface and the sea floor at most historic and recent fishing locations.

The upwelling and ocean circulation so far this season is leading to a very wide distribution of productive areas that should be highly suited to SBT.

This issue has a summary of the whale sightings and a reminder of the information about critical Marine Park areas, included at the end of this update.

Fishing and Towing skippers, please keep note of any jellyfish contacting tuna in purse shots or passing through tow nets.

## **GAB Sea Surface Temperature (SST):**

The situation across the GAB for the month of January 2018 and January for the previous 5 years is shown in Figure 1. Through this past week the average temperature across the same area of GAB as these images was 18.6°C, so we are currently on track for a similar situation to at least 2014, 2016 and 2018; all of these were reasonable seasons. Of these, the shortest fishing season and the largest input fish size occurred in 2014; catching was entirely completed by mid February but fish continued to be sighted by the CSIRO Aerial Survey until the end of March. There is nothing to indicate rapid broad scale warming as occurred in 2013.

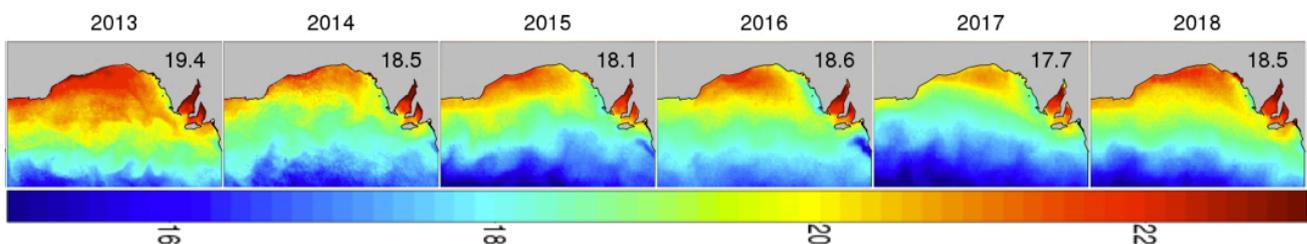


Figure 1: GAB sea surface temperatures for the area from longitude 120 to 140°E, through the month of January for 2018 and the previous 5 years (CSIRO 2019).

The situation across the broader area of the GAB over the past week is shown in Figure 2. This year continues to have less input from the Leeuwin Current rounding the southwest corner of WA. There continues to be a very broad area of upper layer or surface warmth across the area including crossing the border into Bass Strait.

The most recent fine-scale Sea Surface and Sea Floor Temperatures are shown by the images in Figure 3. These images are clearly showing that the cold upwelling is continuing to have a major influence on water temperatures, showing as cool regions at the sea surface along the coast of western and lower Eyre Peninsula, western Kangaroo Island and down the South East of SA. Cold water upwelled from the deep Southern Ocean basin is also sitting along the sea floor of a large area of the shelf, leading to very distinct layering through the water profile at a number of areas historically and recently important for fishing (Figure 4).

The area of suitable surface temperatures, i.e. inside the 18 and 20°C contour lines, is very widespread.

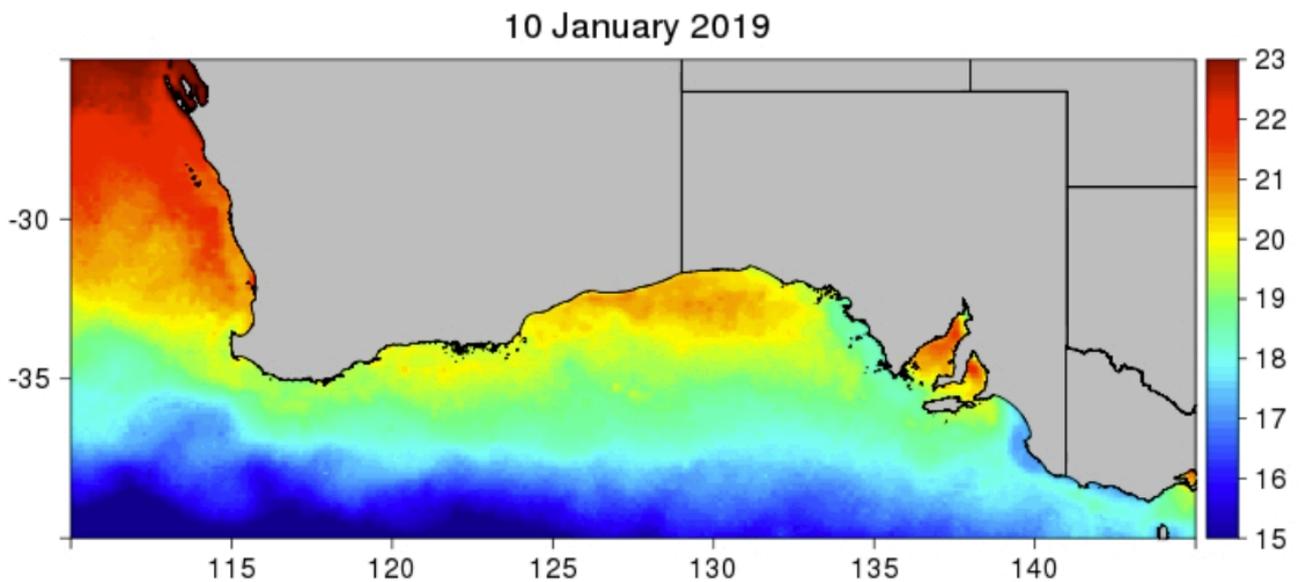


Figure 2: GAB Sea Surface Temperatures for the 3-day period centered around the 10<sup>th</sup> January 2019, in these images aqua to orange are highly suited to SBT (CSIRO 2019 - GAB Forecasting Website).

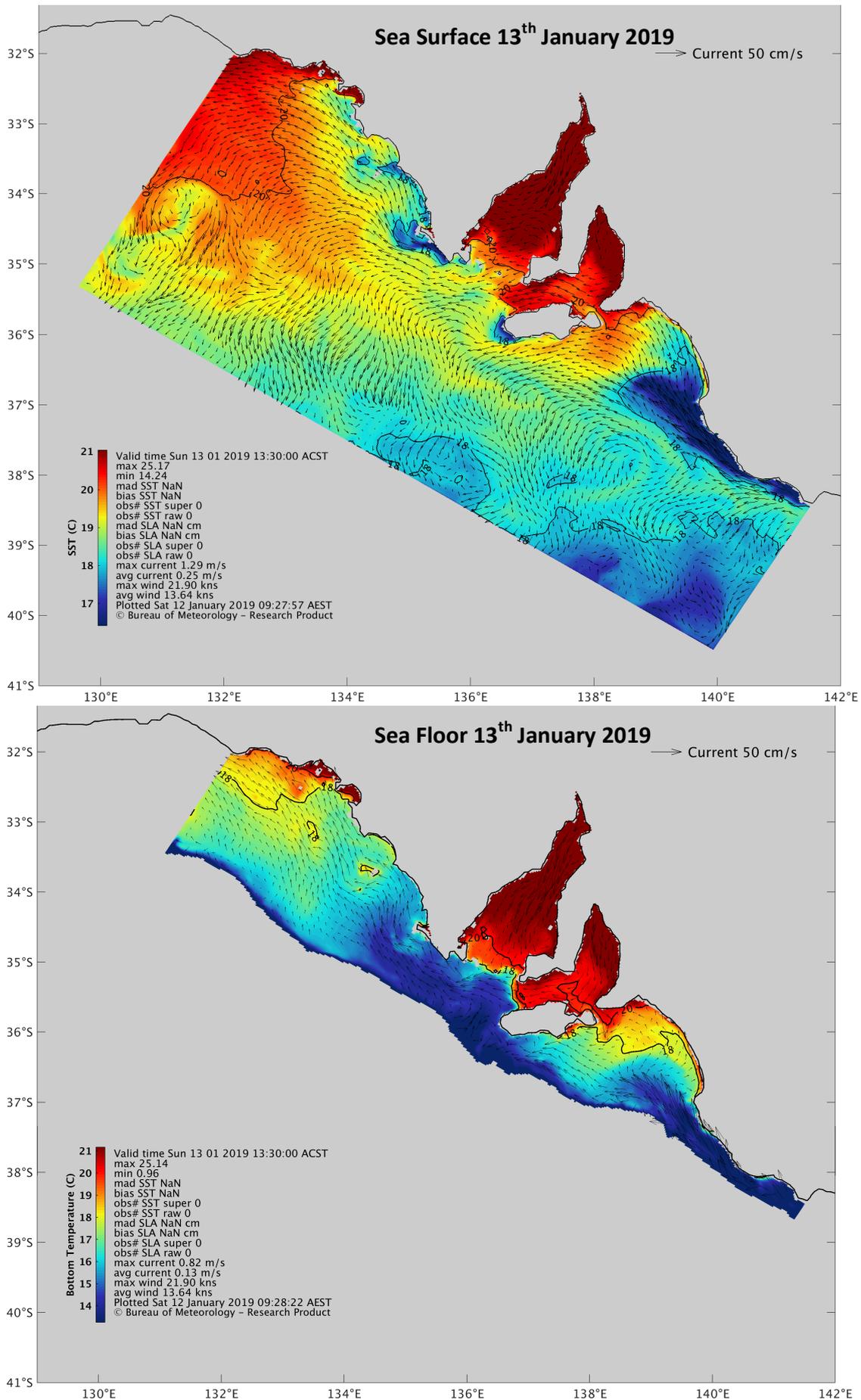


Figure 3: Fine scale SEA SURFACE (top) and SEA FLOOR (bottom) Temperature and local currents on the 13<sup>th</sup> January 2019. The 18°C and the 20°C temperature contours are marked; please check the colour scale on each image for the ACTUAL temperatures that various colours represent (SARDI-BoM 2019)

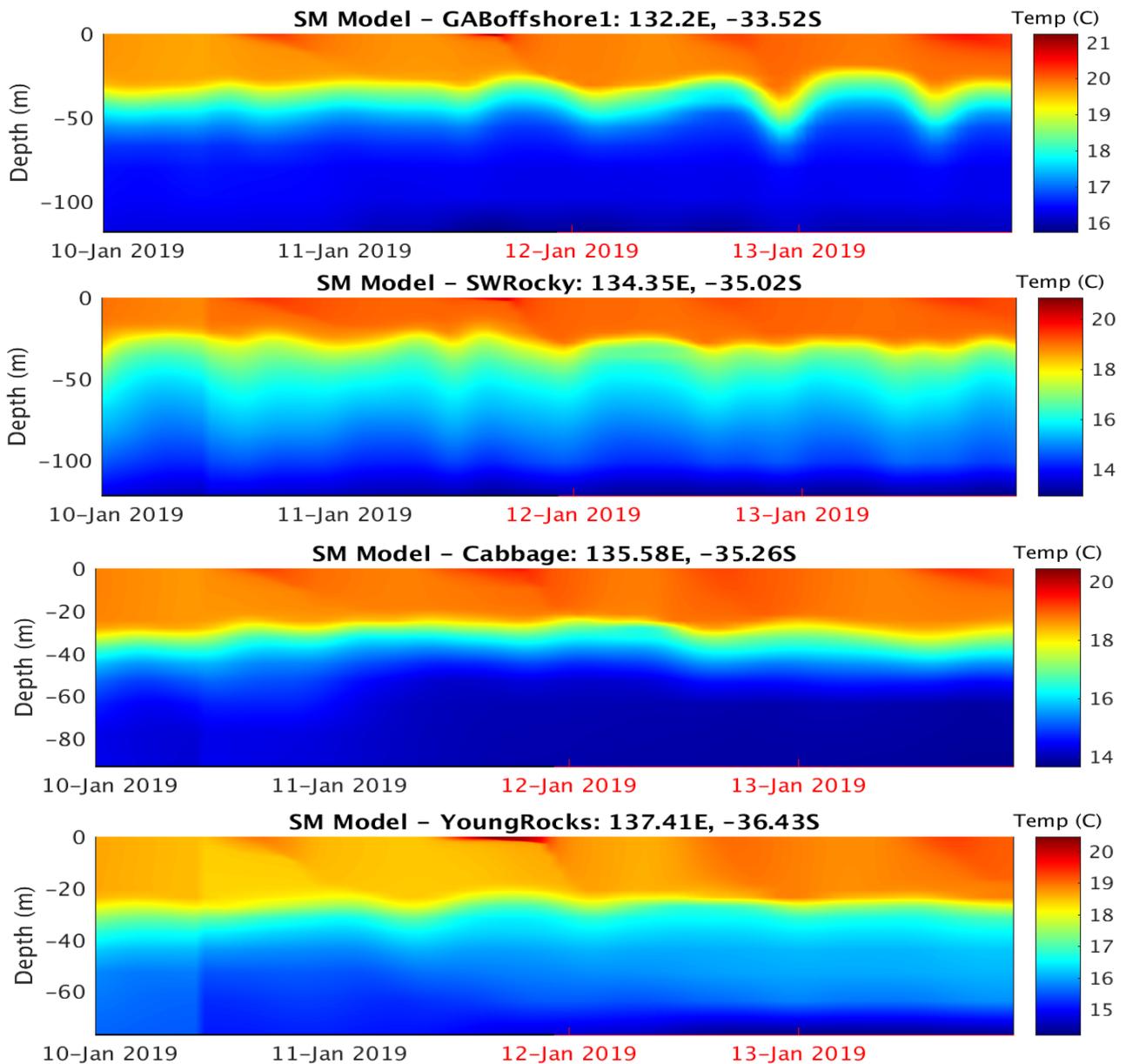


Figure 4: Water temperature profile from sea surface (0) to sea floor (-xx) for 4 locations across the GAB from 132°12'E in the west (top) to 137°28'E in the east (bottom). (SARDI-BoM 2019)

### Chlorophyll/ Productivity levels:

Saturday had good satellite coverage of water quality across the broader GAB area (Figure 5). Coastal inshore areas along western Eyre Peninsula and through the Bonney upwelling zone in the South East continue to have high productivity levels that would appear discoloured or 'dirty' by eye. The larger area of the shelf and beyond the shelf-break has productivity levels perfect for tuna. Further south of this, over the deep waters (5,000+m) of the Southern Ocean Basin, levels in the surface waters become very elevated again.

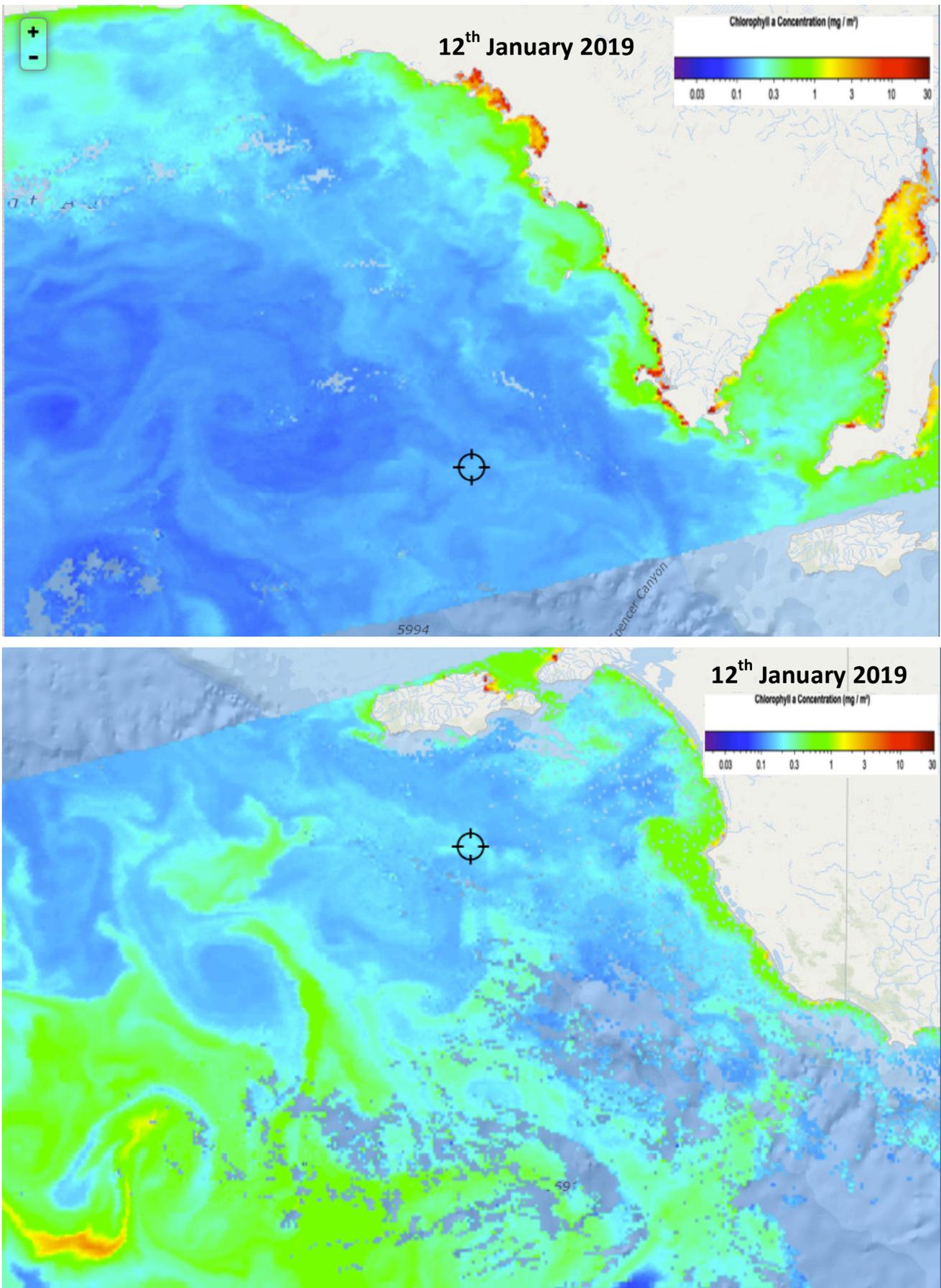


Figure 5: Chlorophyll plot from west of the Head of the Bight to the north of Kangaroo Island (TOP); and Kangaroo Island to the South East (BOTTOM) both taken on the **12<sup>th</sup> January 2019**. Pale blue-grey areas have no readings due to cloud cover. Top image the cursor is located at 35°13.68'S 133°34.32'E; Bottom image the cursor is located at 36°54.36'S 137°27.66'E (FishTrack 2019)

## Whales:

A number of different species of whales have been a feature of the GAB this season to date. The graphs of Figure 6 show how many individuals of each type have been reported so far. Obvious duplications of sightings on any particular day were not included in the data graphed, but there may be situations where the same individuals (or groups) are sighted on different days. I will endeavor to plot the distribution at the end of the fishing season.

The number of sightings particularly for blue whales (especially the larger aggregations) this season is unusually high. Researchers studying Blue Whales and their calls have suggested that the normal few 'scouts' that visit the area have probably put out a specific song to let others know that there is abundant food in the region. These whale calls are within the hearing frequency range of tunas, so it will be interesting to see if there is a flush of the larger deep water fish into the GAB this year.

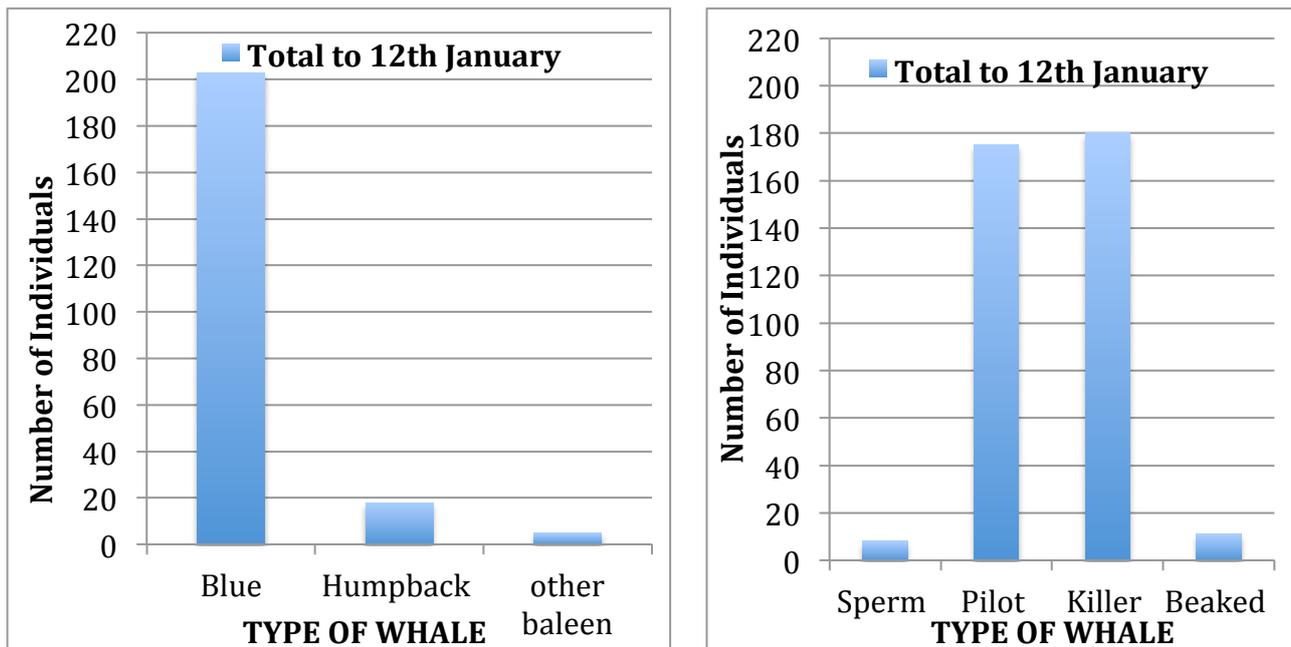


Figure 6: Whale sightings for 2019 - season so far. Graph on LEFT is whales that mainly eat plankton (and small schooling fish). Graph on RIGHT is whales that eat squid or medium to larger fish or seals, baby whales etc.

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](http://pir.sa.gov.au/research/esa_marine/sarom)

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

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

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

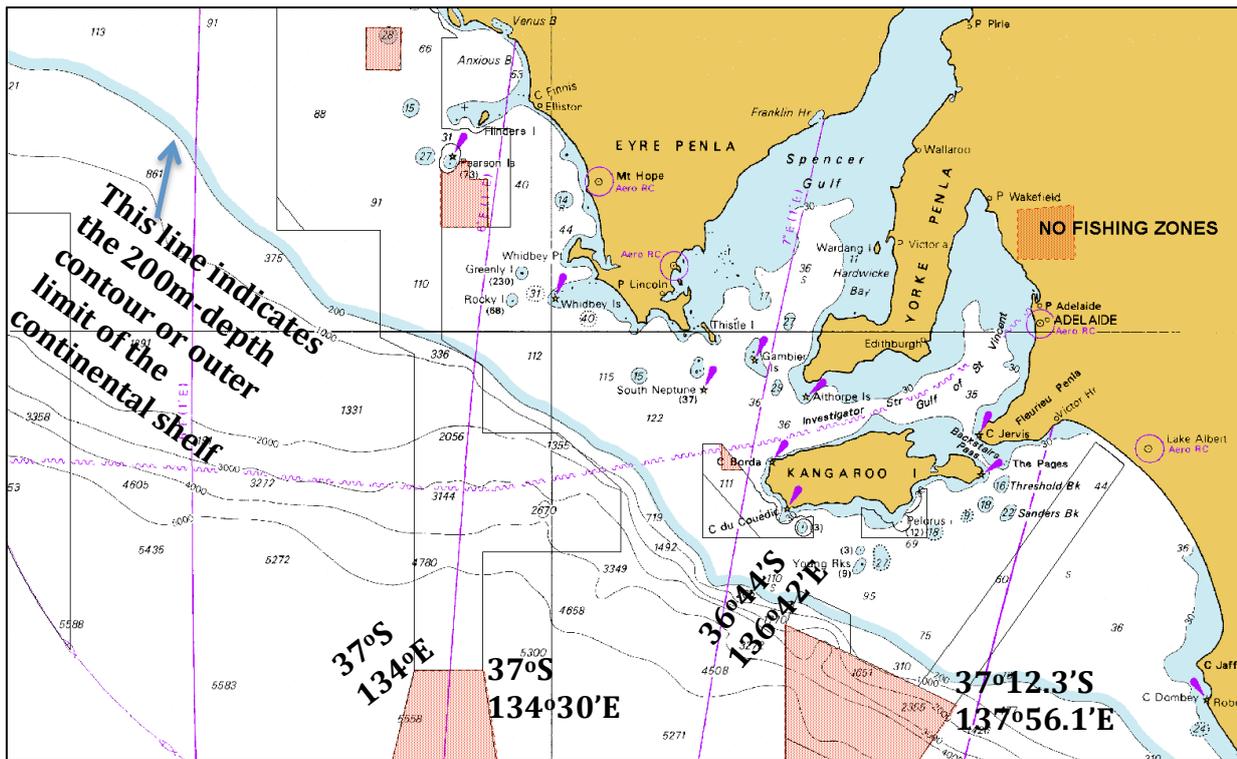
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The next 2 pages are a brief reminder of the Marine Park NO FISHING areas of the Central and Eastern GAB. Co-ordinates for the areas covering Yatala Reef and near Pearsons Island are included in the larger information pack distributed to all companies before the fishing season.

**NO FISHING AREAS of Eastern GAB Commonwealth Marine Parks -**



**NO FISHING** areas south of Latitude 33° for the area from Longitude 131° to 140°E.

The Corner Points on the Northern Boundary of the 2 larger areas are noted on the map; this includes the Green Zone of the Western Eyre, and the Special Purpose and Green Penia Zone of the Murray Australian Marine Parks

The corner points for **no-fishing** areas of the Commonwealth and SA State Marine Parks around Kangaroo Island are included in the 4 maps below.

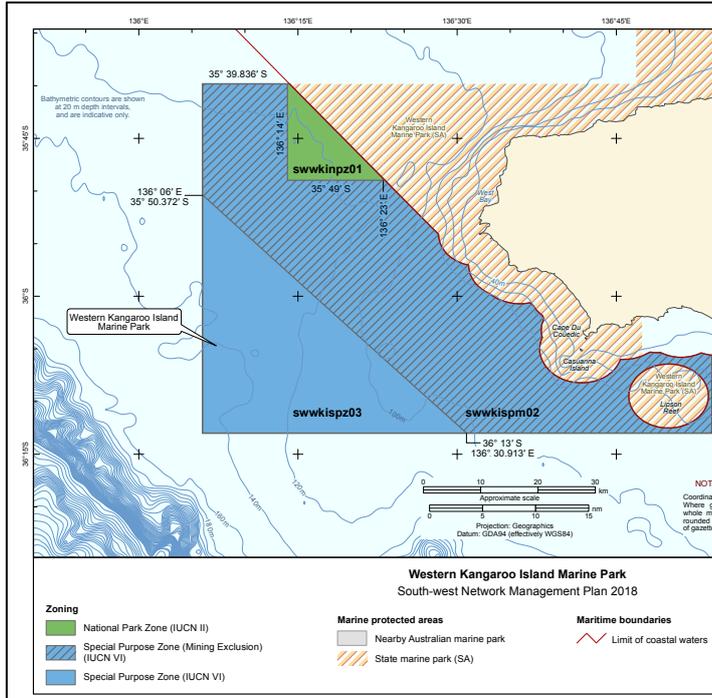
**Fishing or Towing SKIPPERS –**

**IF** it is looking like you will be entering ANY of these areas of **red shading** and **likely** to be travelling at a speed **LESS THAN 5 knots ==>** send a text message to 0419 293 465 and the relevant person from your company

**SPOTTERS –**

Record the position of SBT sightings in these areas, monitor movements of schools **BUT PLEASE DO NOT** direct fishing vessels to them until **AFTER** they have crossed the line

## NO FISHING AREAS (green zones) around Kangaroo Island –



Corner co-ordinates for **green triangle zone** are:

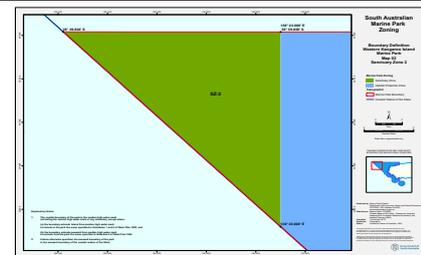
- Northern (top):  
35°39.836'S x 136°14'E
- South west (bottom left):  
35°49'S x 136°14'E
- South east (bottom right):  
35°49'S x 136°23'E

**Fishing or Towing SKIPPERS – IF it is looking like you will be entering this GREEN ZONE and likely to be travelling at a speed LESS THAN 5 knots ==> send a text message to 0419 293 465 and the relevant person from your company**

There is no need to notify anyone to tow through these next 3 Marine Park areas

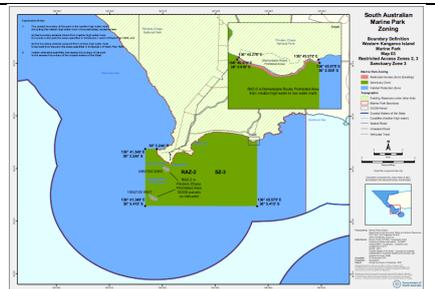
State Corner co-ordinates for **green triangle zone** are:

- Western (top left): 35°39.836'S x 136°14.206'E
- Eastern (top right): 35°39.836S x 136°23.000'E
- Southern (bottom): 35°48.795'S x 136°23.000'E



Corner co-ordinates for **South West KI zone** are:

- North West (top left): 36°03.244'S x 136°41.348'E
- South West (bottom left): 36°05.415'S x 136°41.348'E
- North East (top right): 36°02.930S x 136°45.575'E
- South East (bottom right): 36°05.415'S x 136°45.575'E



Corner co-ordinates for **Northern KI zone** are:

- North West (top left): 35°41.107'S x 136°34.855'E
- South West (bottom left): 35°45.407'S x 136°34.855'E
- North East (top right): 35°41.107S x 136°43.242'E
- South East (bottom right): 35°43.213'S x 136°43.242'E

