

Status of Bleaching Heat Stress on the Great Barrier Reef, Australia – 2020

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NOAA Coral Reef Watch's (CRW) near real-time satellite monitoring indicates that widespread coral bleaching should now be visible along the entire length of the Great Barrier Reef (GBR) in Australia. In most areas, mortality should be quite low.

The most severe accumulated heat stress is in the far north (including the western Torres Strait Islands), on some outer reefs near Lizard Island, in parts of NW Swains Island (including Perkins, Elusive and other surrounding reefs), and in parts of the Capricorn and Bunker Group. Within the Capricorn and Bunker Group, Polmaise, Mast Head, Erskine, and North West Island Reefs are likely to be the worst off. Wistari, Heron, Sykes, and One Tree Island Reefs should be slightly better off, but still with significant, widespread bleaching and some mortality. Lady Elliot Island also may be in a better condition, but is probably similar to Heron Island in its extent of bleaching. The group of reefs between Lady Elliot and Heron Islands have avoided most of the region's heat stress; so while they may have significant, widespread coral bleaching, it is likely to be far less than other reefs in this region.

NOAA CRW's current [daily global 5km satellite Coral Bleaching HotSpot](#), when combined with the [daily global 5km 7-Day Sea Surface Temperature \(SST\) Trend](#) product (Figure 1), indicates that as of March 9, 2020, the entire GBR continued to accumulate heat stress, with most of the Reef either maintaining or increasing its current level of stress.

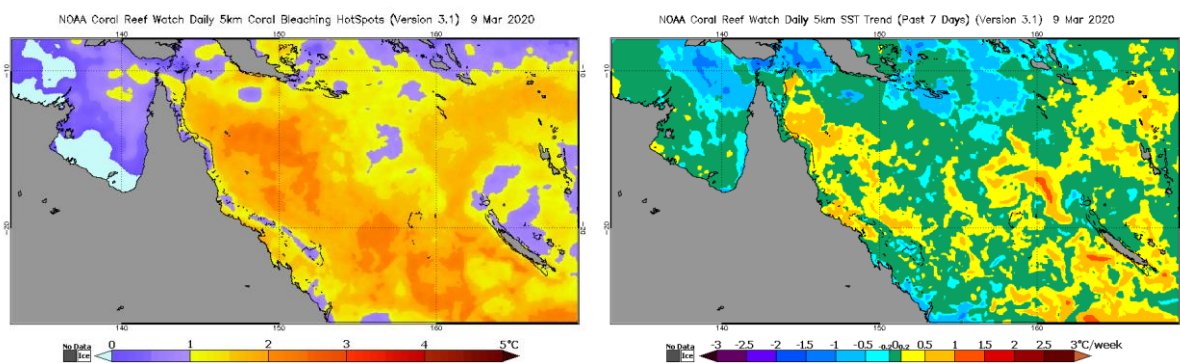


Figure 1. CRW's [daily global 5km satellite Coral Bleaching HotSpot](#) product (left) and [daily global 5km 7-Day SST Trend](#) product (right) for the GBR. The Coral Bleaching HotSpot indicates most of the GBR is still accumulating heat stress capable of causing coral bleaching. The SST Trend product shows that virtually all of the GBR is either warming or maintaining its current level of heat stress accumulation.

CRW's [daily global 5km satellite coral bleaching Degree Heating Week \(DHW\)](#) product (Figure 2) suggests that very few reefs along the GBR will have small amounts of bleaching, due to the high levels of accumulated heat stress. Most notably, the outer reefs in the northern section of the Torres Strait, mid-shelf reefs near Cook Town, and reefs near NW Swains Island

(i.e., in the vicinity of Mullers Cay) are the only reefs that likely have escaped significant coral bleaching.

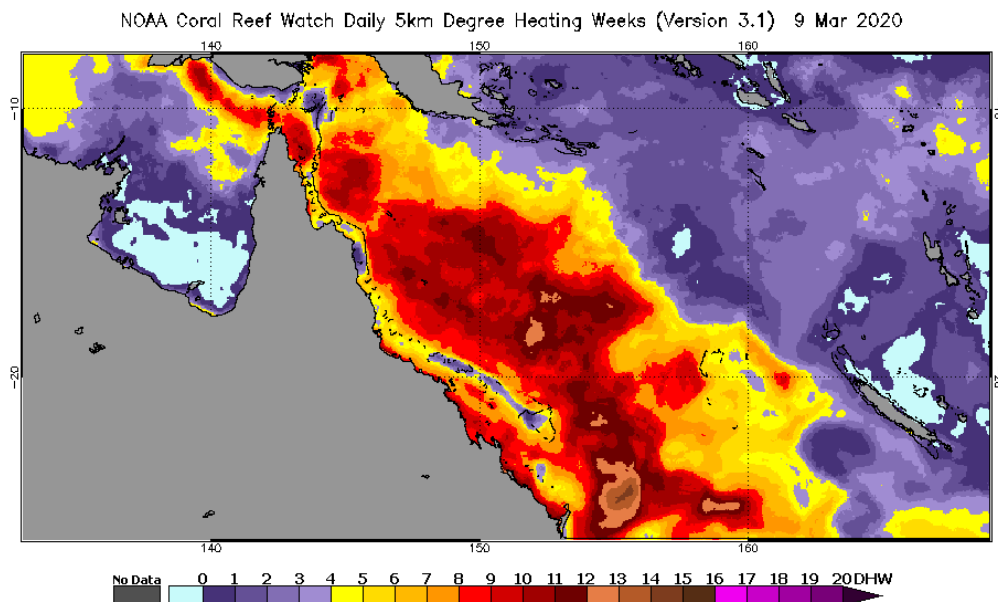


Figure 2. CRW's [daily global 5km satellite coral bleaching DHW](#) product for the GBR. Experience, combined with information coming from the field, suggests that a $DHW \geq 3$ is a relatively conservative threshold for mapping significant coral bleaching along the GBR.

Note that heat stress is not the only factor that leads to mortality in a mass coral bleaching event, although it is a main contributor. Most reefs along the GBR have not accumulated sufficient heat stress for us to expect widespread mortality. There will no doubt be some mortality, verified by in-water surveys. CRW looks forward to receiving these data from local Australian partners to better gauge the actual damage from this mass bleaching event.

However, there is good news on the horizon. NOAA CRW's [Four-Month Coral Bleaching Outlook](#) (Figure 3) is predicting little increase in accumulated heat stress after the end of this week, and that the accumulated stress will dissipate quickly thereafter. In addition, the latest satellite image (Figure 4) from the Australian Bureau of Meteorology (BoM) indicates scattered cloud can be found along the GBR. This should be affecting the rate of oceanic heating. Cloud cover is expected to increase over the next few days, as a cyclone develops in the northern Coral Sea, close to Australia. Currently this low can be seen as a thick blob of cloud over Cape York. So even now, this system is providing much needed relief to the far northern GBR. As this low deepens and becomes a cyclone, it may provide similar conditions as Tropical Cyclone Esther, in that most of the GBR would then be covered in cloud, rain, and significant amounts of wind. Should this situation occur, we could see an end to the current, major heat stress and widespread coral bleaching event.

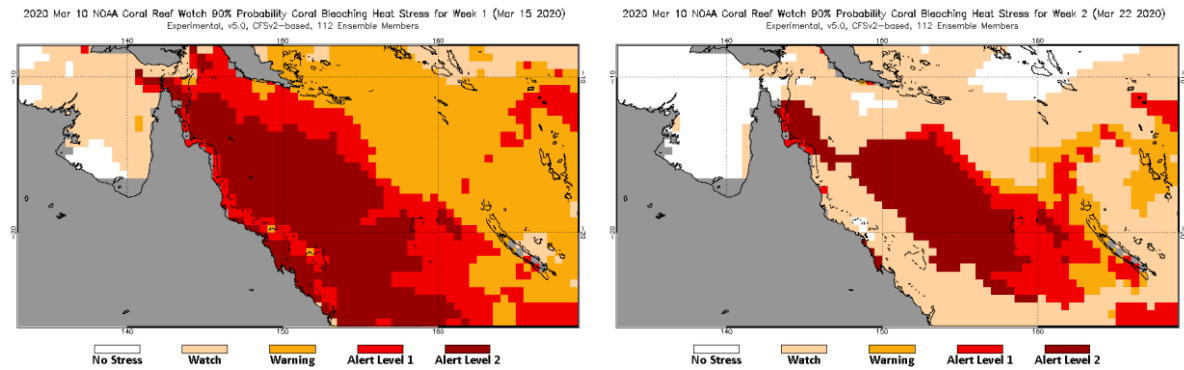


Figure 3. NOAA CRW's [Four Month Coral Bleaching Outlook](#), issued March 10, 2020, for the weeks beginning March 15 (left) and March 22 (right). The Outlook is predicting little increase in accumulated heat stress after the end of this week. In addition, accumulated heat stress is expected to dissipate quickly (note the lack of heat stress over the GBR in the week starting March 22).

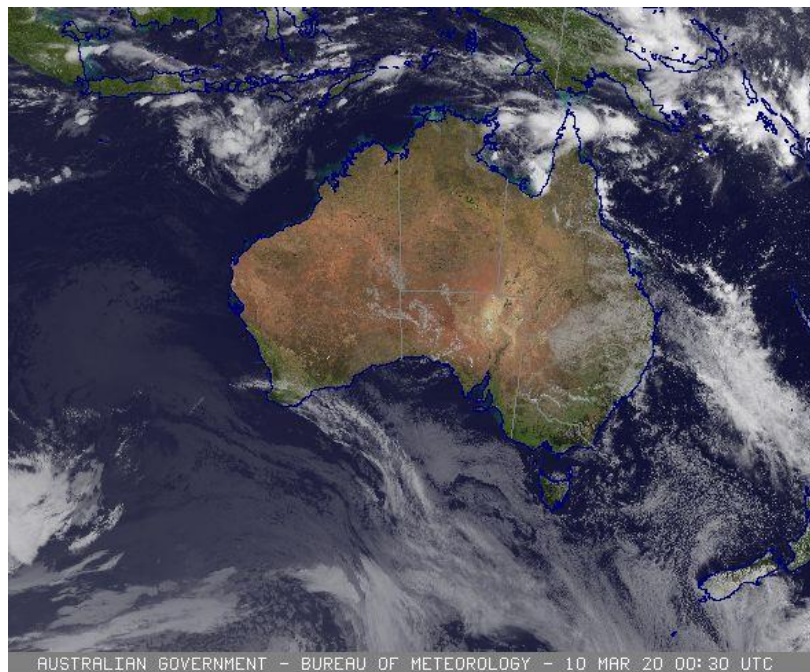


Figure 4. [Himawari-8 visible image](#) taken at 10:30am local time on March 10, 2020. Image courtesy of the Australian Bureau of Meteorology (BoM).