Mote Marine Laboratory / Florida Keys National Marine Sanctuary

Coral Bleaching Early Warning Network

Current Conditions Report #20140828

Updated August 28, 2014

Summary: Based on climate predictions, current conditions, and field observations, the threat for mass coral bleaching within the FKNMS is currently **HIGH**.

Current Environmental Conditions

Remote sensing analysis by NOAA's Coral Reef Watch (CRW) program indicates that most of the Florida Keys region is experiencing significant thermal stress. NOAA's recent experimental 5 km Coral Bleaching HotSpot Map (Fig.1), which illustrates current sea surface temperatures compared to the average temperature for the warmest month, shows elevated temperatures for the Florida Keys over the last 2 weeks. Similarly, NOAA's latest experimental 5 km Degree Heating Weeks (DHW) map, which indicates how much heat stress has built up over the past 12 weeks (Fig.2), shows accumulated temperature stress continuing to build in the Florida Keys region. Finally, NOAA's Integrated Coral Observing Network (ICON) monitoring stations confirms that sea temperatures throughout the Florida Keys, at least along the outer reef tract, remain above 30°C (Fig.3), likely due in part to predominantly calm conditions observed during most of the past 2 weeks (Fig 4). *In-situ* sea temperature data is currently not available for Dry Tortugas, Sand Key or Sombrero Reef.

According to the latest NOAA CRW experimental 5 kilometer (km) Satellite Coral Bleaching Alert Area, most of the Florida Keys National Sanctuary is under a Bleaching Warning or Alert Level 1, indicating that bleaching is likely with the potential for more bleaching alerts if sea temperatures continue to increase (Fig. 5). Mote Marine Laboratory will continue to monitor the NOAA HotSpot maps, DHW maps, and ICON sea temperature data from NOAA monitoring stations on a weekly basis for the remainder of the bleaching season.

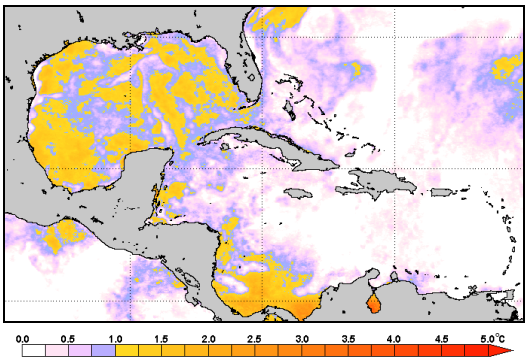

Figure 1. NOAA's Experimental 5km Coral Bleaching HotSpot Map for August 27, 2014.
http://coralreefwatch.noaa.gov/satellite/bleaching5km

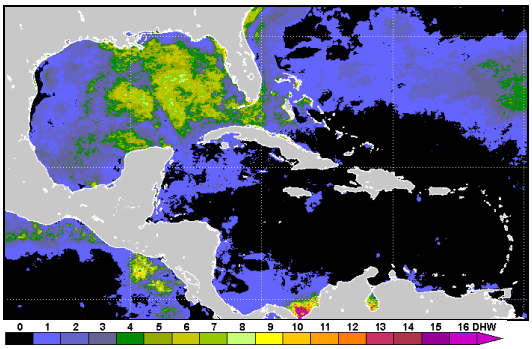

Figure 2. NOAA's Experimental 5km Degree Heating Weeks Map for August 27, 2014.
http://coralreefwatch.noaa.gov/satellite/bleaching5km

NOAA Coral Reef Watch Coral Bleaching Alert Area
August 27, 2014 (experimental)

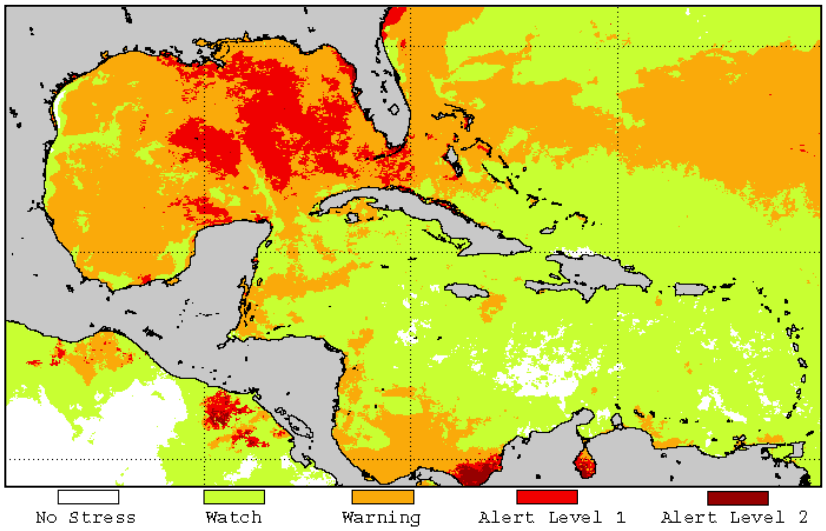

Figure 5. . NOAA's 5 km Experimental Coral Bleaching Alert Areas for August 27, 2014.
http://coralreefwatch.noaa.gov/satellite/bleaching5km

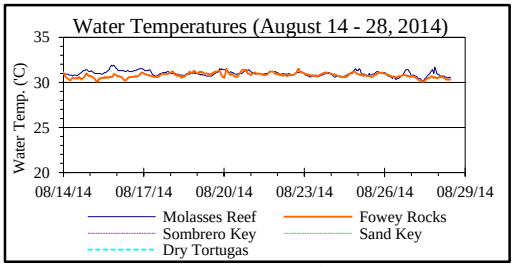

Figure 3. *in-situ* sea temperature from NOAA/ICON monitoring stations (August 14-28, 2014).

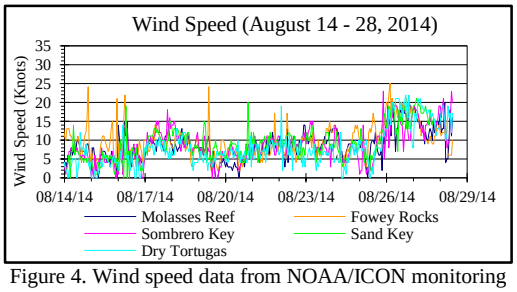

Figure 4. Wind speed data from NOAA/ICON monitoring stations (August 14-28, 2014).

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Current Coral Conditions

A total of 56 BleachWatch Observer reports were received during the last two weeks (Fig. 6), with 34 reports describing paling or partial bleaching and an additional 19 reports indicating significant bleaching (Fig. 7). At those sites where paling or bleached corals were observed, the overall percentage of corals affected ranged from 31- 75%, with some inshore sites as high as 76-100%. However, most reports from the Dry Tortugas show only 1-10% of corals exhibiting signs of significant thermal stress, and reports from three deeper reefs (>60') off the Lower and Middle Keys noted no significant signs of coral bleaching.

Figure 8. Healthy *Mycetophyllia sp*. near Looe Key on 8/26/14.

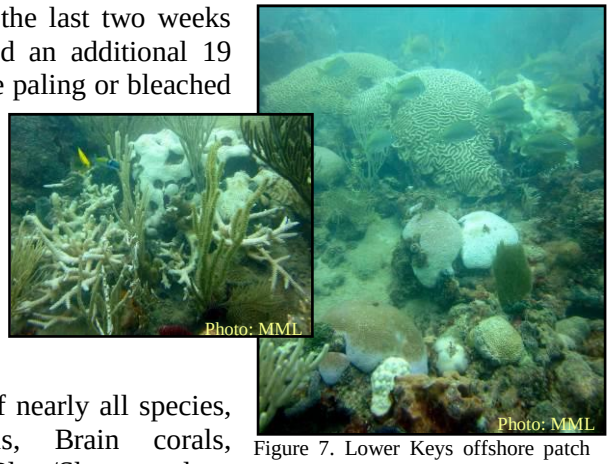

Figure 7. Lower Keys offshore patch reef on 8/27/14. **Left**: Partially bleached *Acropora cervicornis*. **Right:** Partially bleached reef.

Paling and bleaching observations consisted of nearly all species, including Encrusting/Mound/Boulder corals, Brain corals, Branching corals, Flowering corals, and Leaf/Plate/Sheet corals. However, no reports included observations of Fleshy corals bleaching (Fig. 8). Other observations included bleached *Palythoa spp.*, Fire Coral, and Gorgonians as well as reports of coral disease and observations of significant thermoclines and other temperature anomalies.

These observations, combined with continued elevated temperatures and accumulated thermal stress, indicate that the onset of a mass bleaching event is likely at this time; however, additional field observations are needed to determine the range, duration, and severity of coral bleaching impacts as this event continues to develop.

BleachWatch Reports for August 14-28, 2014

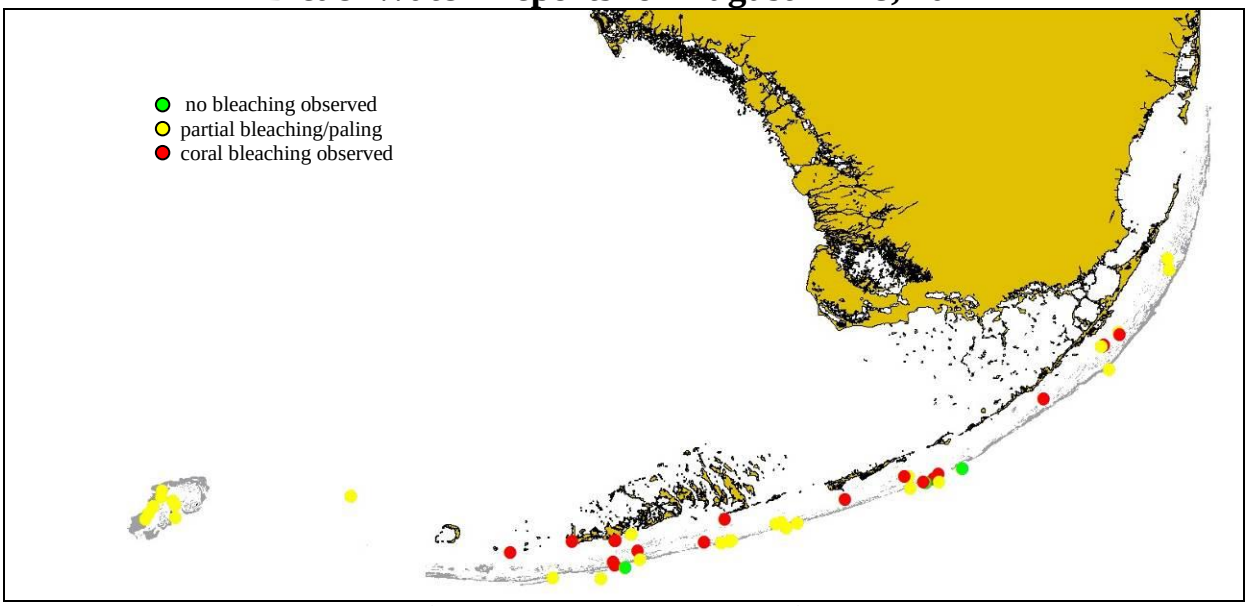

Figure 6. Overview of BleachWatch observer reports submitted from August 14-28, 2014

For more information about the BleachWatch program, or to submit a bleaching observation, contact:

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FUNDING THANKS TO….