

NOAA Coral Reef Watch
Seasonal Coral Bleaching Thermal Stress Outlook
(Experimental product, 2x2 degree spatial resolution)

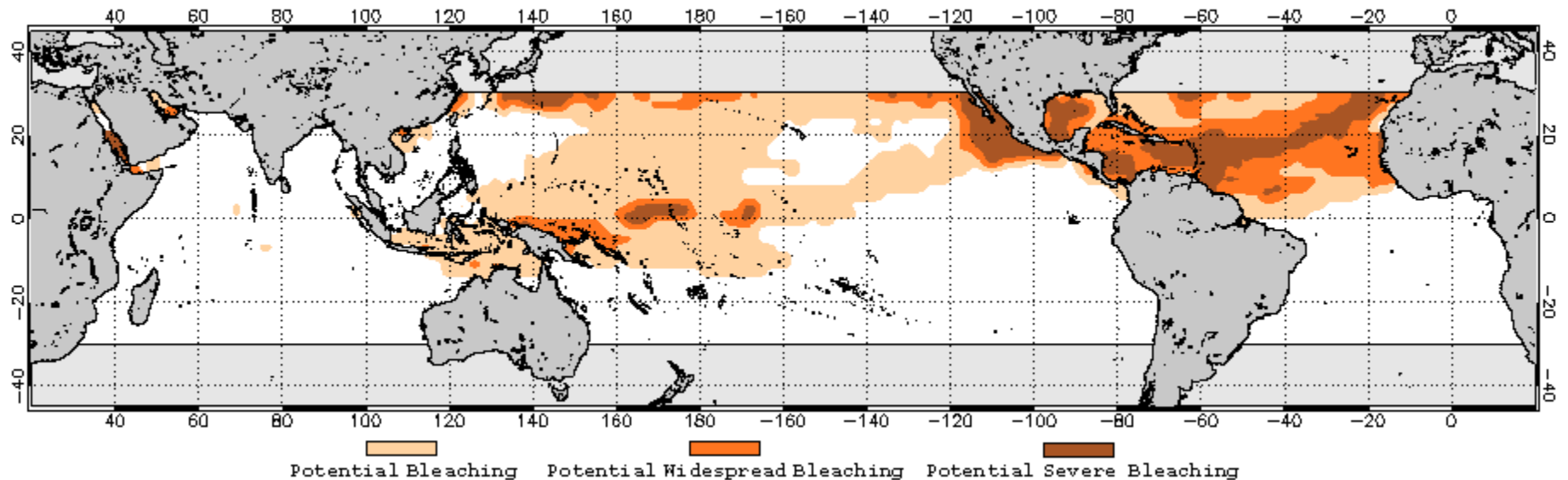
August NOAA Coral Reef Watch Thermal Stress Guidance Through November 2009

The NOAA Coral Reef Watch (CRW) [Coral Bleaching Thermal Stress Outlook](#) indicates that there is a significant potential for coral bleaching in the Caribbean in 2009, especially in the Lesser Antilles. Based on our current model output, there continues to be an elevated potential for stressful ocean temperatures in 2009. Additionally, El Niño warming is increasing the potential of bleaching along the Pacific coast of Mexico.

Other areas of concern between now and November is a region of the central Pacific along the equator from the Kiribati to the Marshall Islands. Some thermal stress may also develop between the Northern Marianas Islands and Japan. However, temperatures are expected to peak soon in both of these Pacific regions, so temperatures are unlikely to rise high enough for a long enough period to cause major bleaching. Temperatures may be high enough to stress more sensitive species in these areas.

An important caveat is that the model used for this outlook still indicates relatively weak El Niño development, whereas NOAA's operational Climate Forecast System is now calling for [El Niño development during 2009-10](#). If El Niño conditions continue to strengthen, this could increase the bleaching risk in the central to eastern Pacific and Caribbean late this year and next year. Remember that this guidance should be used as an indicator of potential general patterns rather than a precise predictor of thermal stress at any location.

2009 Aug 18 NOAA Coral Reef Watch Coral Bleaching Thermal Stress Outlook for Aug–Nov 2009

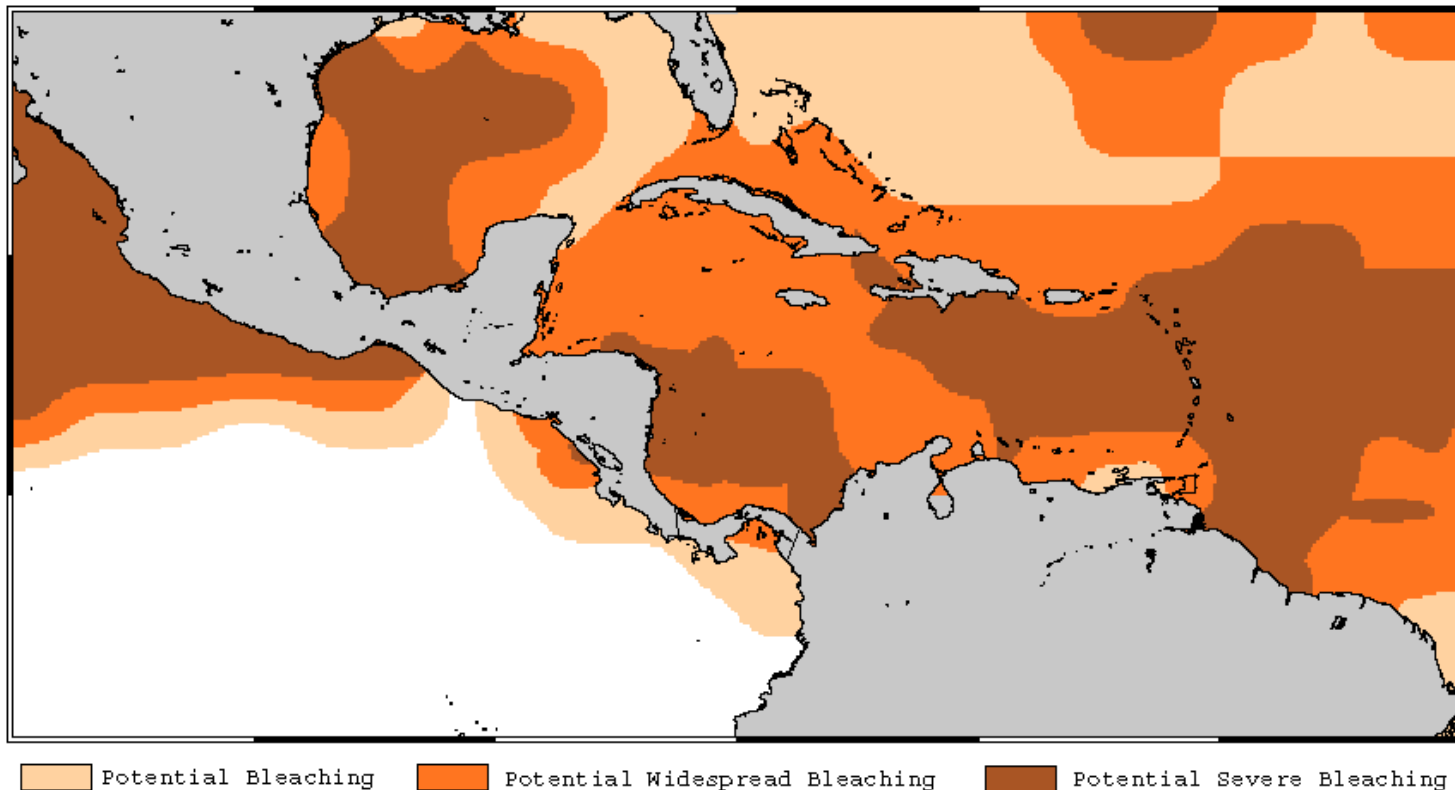


Caribbean and Eastern Pacific Bleaching Outlook:

The forecast system continues to indicate that there is a potential for bleaching across the Caribbean basin in 2009. At this time, the model indicates that there is potential for high thermal stress through October 2009. Fortunately, temperatures so far this year have not been as high as those in 2005, reducing the potential for bleaching this year to be as severe as that seen in 2005. Thermal stress may reach levels high enough to cause bleaching in the central Gulf of Mexico as well as a region stretching from the Lesser Antilles across to the southern coast of Hispaniola and the Caribbean coast of Central America. Additionally, with the developing El Niño, temperatures are likely to increase in the eastern Pacific Ocean off Mexico, posing a significant concern for reefs along that coast. Temperatures off Mexico will not peak until early-October and the Caribbean until mid-October, so sufficient time remains in the season for significant accumulation of thermal stress.

NOAA's operational Climate Forecast System is now calling for [development of El Niño conditions during 2009-10](#). Typically this has the strongest impact in the Caribbean during the second year of the El Niño (2010). Finally, in light of predictions for a potential of lower than normal precipitation in much of the Caribbean this year (see [International Research Institute for Climate and Society](#) and [Caribbean Institute for Meteorology and Hydrology](#) outlooks), we do not expect cloud cover to provide relief. However, tropical weather systems may cool areas due to increased clouds or mixing. We are still 1-2 months away from the peak of this year's warmest months and we recommend that you monitor these updates as we get closer to the event. The following figure shows the current Caribbean 4-month cumulative thermal stress potential through November 2009.

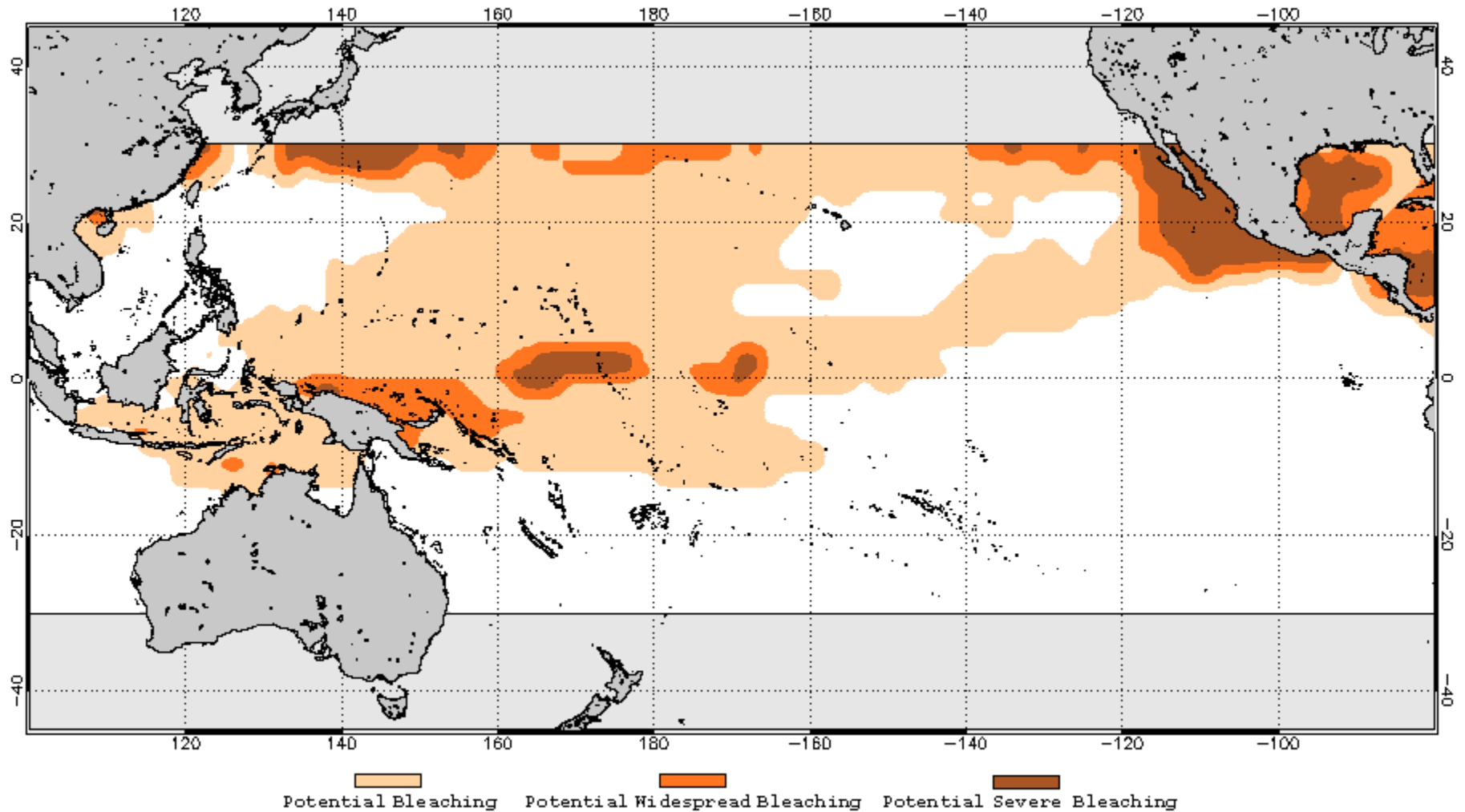
2009 Aug 18 NOAA Coral Reef Watch Coral Bleaching Thermal Stress Outlook for Aug–Nov 2009



Pacific Bleaching Outlook:

An area of some concern in the coming months, albeit less than the Caribbean, is the central equatorial Pacific from Kiribati to the Marshall Islands. There also is a potential for some thermal stress to develop between the Northern Marianas Islands and Japan. Because temperatures are expected to peak in mid-September and thermal stress is not currently accumulating, severe stress is unlikely in 2009. This region is also subject to intensification during El Niño conditions. The following figure shows the current Pacific 4-month Coral Bleaching Outlook through November 2009.

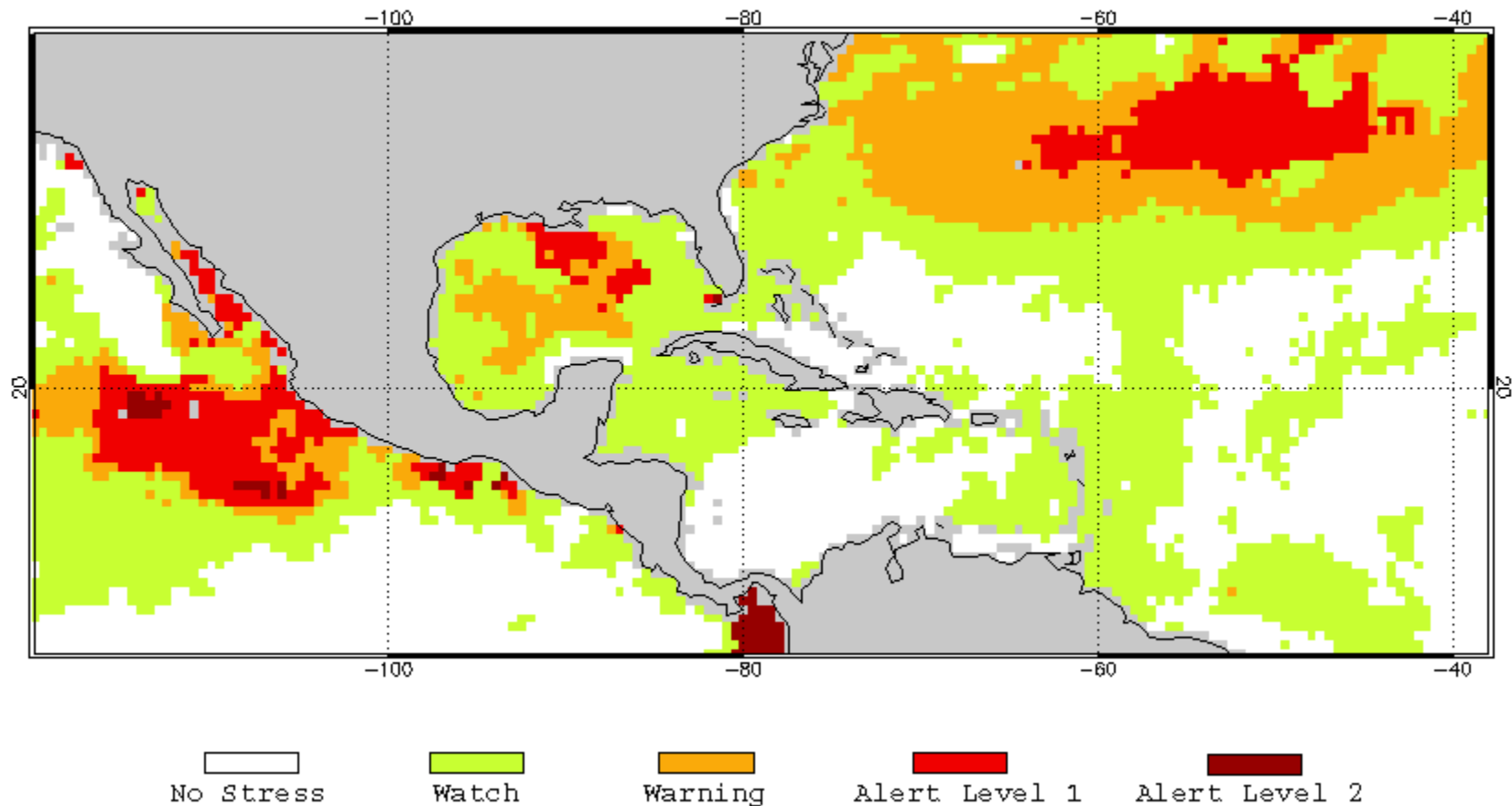
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Current Bleaching Conditions:

Temperatures are above normal in most of the Caribbean, but temperatures and thermal stress accumulation are not as high as those seen in August 2005. However, early intensification of heating has occurred in the Gulf of Mexico and around the Florida Keys with accumulation of Degree Heating Weeks (Bleaching Warning condition) in the central Gulf of Mexico, Florida Bay, the western Bahamas and waters around Bermuda. The Sombrero Reef virtual station has reached Alert Level 2 with a DHW of 8.1 due to an area of intensified warming in Florida Bay. We also now see thermal stress above DHW of 4 (Alert Level 1) along portions of the Pacific Coast of Mexico. Note: high thermal stress levels in the Gulf of Panama are the result of a known error in the climatology used for our products. CRW's current HotSpot and DHW data should be disregarded in the Gulf of Panama until we release our new, Enhanced-50km version of the CRW products later this year.

NOAA Coral Reef Watch Satellite Coral Bleaching Alert Area
20 Aug 2009



Temperatures across much of the Pacific are above normal, consistent with El Niño development. This currently has warmed waters above the maximum monthly mean (Bleaching Watch) in most North Pacific coral reef areas from the Marianas Islands east to the Americas except for a

central Pacific region encompassing the main Hawaiian Islands and lower half of the Northwestern Hawaiian Islands. In the western Pacific, warm waters extend from the northwestern Philippines to Asia, north to the eastern coast of Japan, characteristic of El Niño conditions.

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