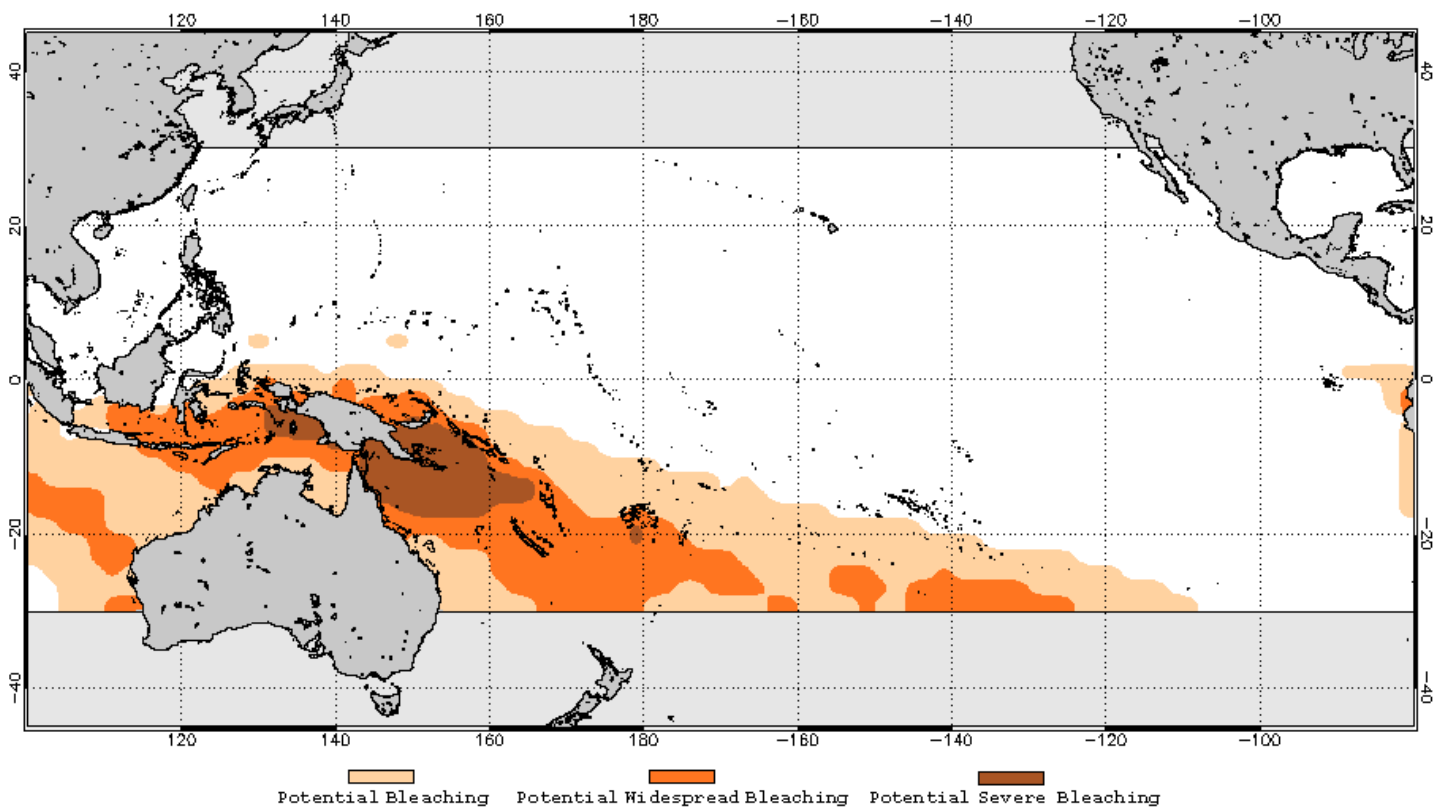




Bleaching Alert for the Northern Great Barrier Reef

A severe coral bleaching risk alert for the far northern Great Barrier Reef (GBR) has been issued (National Oceanic and Atmospheric Administration and Australian Bureau of Meteorology). The warning, which is based on forecast modelled sea surface temperatures, is current for the period from November 2008 to February 2009. The models predict that the risk of bleaching this summer will be severe from Papua New Guinea south to the approximate vicinity of Cairns, with potential for widespread bleaching as far south as the Whitsunday Islands (see figure). Reefs further south could also potentially experience some bleaching.

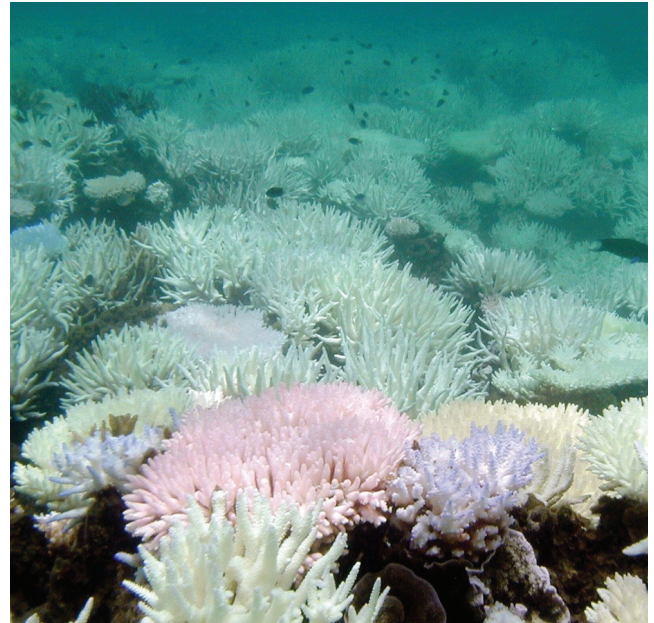


The 2008 NOAA Coral Bleach Watch Thermal Stress Outlook shows a severe coral bleaching risk in the Northern GBR area. Image courtesy of NOAA.

Hot Issues: Coral bleaching and other effects of increased sea temperatures

Marine and Tropical Sciences Research Facility (MTSRF) researchers from the Australian Institute of Marine Science, James Cook University and the University of Queensland have been modelling the effects of temperature rises on the Great Barrier Reef (GBR). Research findings include:

1. Bleaching events are expected to increase with global climate change, particularly in the central-southern part of the GBR. By 2050, some parts are expected to suffer catastrophic bleaching events once every five years.
2. MTSRF research has also pointed to greater sensitivity to bleaching in areas more exposed to terrestrial run-off. Coastal reefs are two to four times more sensitive to bleaching due to temperature stress than those not subjected to runoff.
3. Outbreaks of coral disease, particularly as a result of the stresses associated with coral bleaching are likely to increase.
4. Other research within the MTSRF has also revealed higher temperatures may affect the reproductive ability of sea turtles. Successful incubation of turtle eggs relies on a temperature range between 25 and 34 °C.
5. Also affected by rising temperatures, seabirds tend to show preference for feeding in cooler waters. Increased temperatures are likely to force many birds to forage further to find their preferred food source.



Corals are less vulnerable to bleaching in areas of good water quality (Photo: R Berkelmans, AIMS)

Scientists with solutions

Studies have revealed that corals may hold a capacity to adapt to changes in temperature by actively selecting thermally tolerant algal symbionts. MTSRF scientists from the University of Queensland are currently exploring coral-algal associations on the Great Barrier Reef that display relatively higher thermal resistance. They are hoping to identify whether these corals have the potential to survive increased sea temperatures as predicted by global climate scenarios and where they are located. This information will be important in identifying priority areas of the Great Barrier Reef for protection and conservation from other pressures.



Some corals have greater thermal tolerances than others (Photo G Carlos, JCU)

Recent MTSRF studies from the Australian Institute of Marine Science have revealed a strong link between the thermal tolerance of corals and water quality. A recent study identified that dissolved inorganic nitrogen (DIN) originating from terrestrial sources can cause declines of up to 2 °C in the upper thermal bleaching thresholds of symbiotic corals on inshore reefs of the GBR. By implementing best practise to land management and reducing fertiliser application in critical areas, we can increase the resilience of coral reefs to an increase in sea temperatures.

For more information please go to:
www.rrrc.org.au