

Is This The Worst Global Coral Bleaching Event Ever?

It was announced last week that 93% of the Great Barrier Reef has been hit by coral bleaching due to rising sea temperatures from El Niño and climate change. We first wrote about the third worldwide [coral bleaching in October 2015](#), noting this year's event could be bad. Those fears would appear to be coming true with the results of [Australia's National Coral Bleaching Task Force](#) aerial survey of 911 coral reefs which found 93% had suffered from bleaching; of which 55% had suffered severe bleaching.

Coral bleaching occurs when water stresses cause coral to expel the photosynthetic algae, which give coral their colours, exposing the skeleton and turning them white. The stress is mostly due to higher seawater temperatures; although cold water stresses, run-off, pollution and high solar irradiance can also cause bleaching.

Bleaching does not kill coral immediately, but puts them at a greater risk of mortality. Recovery is also possible if the water stress reduces and normal conditions return, which is what is hoped for in the Northern Sector of the reef above Port Douglas, where around 81% of corals had suffered severe bleaching - the water quality in this area is good, which should also aid recovery. The reefs fared better further south. Within the Central Sector, between Port Douglas and Mackay, 75 of the 226 reefs suffered from severe bleaching. Whilst in the Southern Sector below MacKay only 2 reefs suffered severe bleaching and 25% had no bleaching.

The news is not all bad. A survey of the coral reefs of the Andaman and Nicobar Islands, a territory of India that marks the dividing line between the Bay of Bengal & Andaman Sea, also [published this week](#) shows no evidence of coral bleaching. This survey is interesting for remote sensors as it was undertaken by a remotely operated vehicle, PROVe, developed by India's National Institute of Ocean Technology. As well as mapping the coral reefs, PROVe has a radiometer attached and is measuring the spectral signatures of the coral in the area, which could be used to support the monitoring of corals from satellites.

Monitoring coral bleaching from space has been done before. For example, Envisat's MERIS sensor [was determined](#) to be able to detect coral bleaching down to a depth of ten metres, or the Coral Bleaching Index ([Ziskin et al, 2011](#)) which uses the red, green and blue bands to measure increases in spectral reflectance in bleached corals. Given the size, geographical area and oceanic nature of corals, satellite remote sensing should be able to offer valuable support to the monitoring of their health.

Following the second global bleaching event, in 1997/98, research confirmed that 16 percent of the world's coral died. Who knows what the outcome of the current event will be?