

CORAL BLEACHING, THE VIEW FROM SPACE.

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Coral bleaching throughout the tropics during the '97 and '98 El Niño to La Niña event was of international extent and great concern. Throughout the tropics, >29% of all reef sites surveyed experience significant bleaching. Coral mortality ranged up to 95%, with a total of 20% destruction of live corals around the tropics. These El Niño and La Niña induced events clearly demonstrated that corals are highly sensitive to natural interannual climate variability, as well as continuing short-term anthropogenic environmental damage (like pollution, mismanagement, misuse, etc.). Using NOAA's Advanced Very High Resolution Radiometer sensor derived sea surface temperature products and NASA's TOPEX/Poseidon sea level height data, the oceanic "coral bleaching" environment was documented throughout the tropics. These satellite data showed that during the El Niño of 1997, and into 1998, more ocean area in the tropics experienced exceptionally high sea surface temperatures ("hot spots") and both high and low sea levels than have been observed in any full year since the El Niño of 1982. Using these data, available for all oceans for the first time, and REEF CHECK in situ data, the development of the '97-'98 "bleaching explosion" is mapped in time and space. Preliminary results indicate that high sea surface temperatures (thought to be the prime trigger for coral bleaching) are not always accompanied by higher sea levels. In the western tropical Pacific and SE Asian waters, during some long episodes of high sea surface temperatures, sea levels were anomalously low. These results provide a new dimension to our understanding of coral reef sensitivity to present and future climate changes.