

**Pilot early warning for regional bleaching warning network**

**WESTERN INDIAN OCEAN**

**DATE OF THIS ALERT: 10 April 2007**

*Date of previous alerts: 23 January 2007, 24 February 2007*

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**Bleaching interpretation/alert**

High moderate low none expected			
Ordered by date			
Date	Level	Observation	Alert
10 Apr 07	Low	Some bleaching/no mortality of sensitive species in Kenya, but wind switching to south from late March suggests season change will be early. Cyclones off Madagascar and only minor hotspot developing offshore of Kenya around Apr 3-10.	Low
24 Mar 07	Low	Mild bleaching in southern Tanzania dispersed and low to no bleaching in mid- to northern-Tanzania. NOAA CRW Bleach Watch reported for Seychelles, 26 Mar 07.	Low
24 Feb 07	Mod	Mild bleaching starting at southern latitudes as expected (February), not yet penetrated to more equatorial latitudes. Cyclones in Mauritius and Mozambique will reduce heating effect. Alert downgraded one more step to low	Low alert, Tanzania and Kenya
24 Jan 07	Mod	Tropical WIO hotspot very small and limited to NE Madagascar. Comparable to low bleaching in recent years.	NE Madagascar
January 2007	Mod.	Global/ocean indices: 2007 may be the warmest year on record (high bleaching), a moderate El Niño has been in effect for the last few months but is weakening (moderate-low bleaching), and the Indian Ocean Dipole is in a neutral state (no bleaching). Overall, this may mean that the Indian Ocean experience some level of bleaching in the summer months of February-May, but not at high levels.	

## Bleaching observations, *in situ*

High moderate low normal seasonal bleaching					
Ordered by latitude					
Lat.	Date	Location	Sites	Observation	Source
3-4°S	3-10 Apr	Kisite, Msambweni, Mombasa	multiple	>50% <i>Pocillopora</i> and many <i>Acropora</i> colonies bleached. Many massiv and branching <i>Porites</i> partially pale/bleaching. Some other genera with patch paling ( <i>Galaxea</i> , <i>Montipora</i> , others). No mortality.	David Obura
7-12°S	≈ 21 Mar	Zanzibar, Mafia Island, Mnazi Bay	multiple	Very minor bleaching of <i>Acropora</i> and <i>Pocillopora</i> colonies	Chris Muhando, Haji Machano, Jerker Tamelander
7°S	18 Feb	Dar es Salaam, Tanzania	Mbudya Island	Isolated bleached <i>Pocillopora</i> and <i>Acropora</i> in snorkeling depths, likely normal summer bleaching	Ian Bryceson
12°S	22 Feb.	Mnazi Bay, Tanzania	Msimbati and outer reef	Isolated/limited bleaching from lagoon and deeper reefs, apparently normal summer bleaching.	Dave Reynolds
18°S	18 Feb	Bazaruto, Mozambique	Two-Mile and Lighthouse reefs	Some bleaching and recently dead patches, apparently from incursions of warm water.	Michael Schleyer

## Regional climate and ocean indicators

### NOAA BleachWatch alerts for Seychelles

#### CRW Alert 20070326] Seychelles-Mahe: Bleaching Watch

Satellite observations: 24 Mar. 2007 - 26 Mar. 2007

- Bleaching Degree Heating Weeks : 0.0 Deg C-week
- Historical Maximum Degree Heating Weeks : 4.5 Deg C-week (1998)
- Coral bleaching HotSpot : 0.1 Deg C
- Sea surface temperature : 29.6 Deg C
- Maximum Monthly Mean SST at site : 29.5 Deg C

For more information, please visit the coral bleaching indices web site:

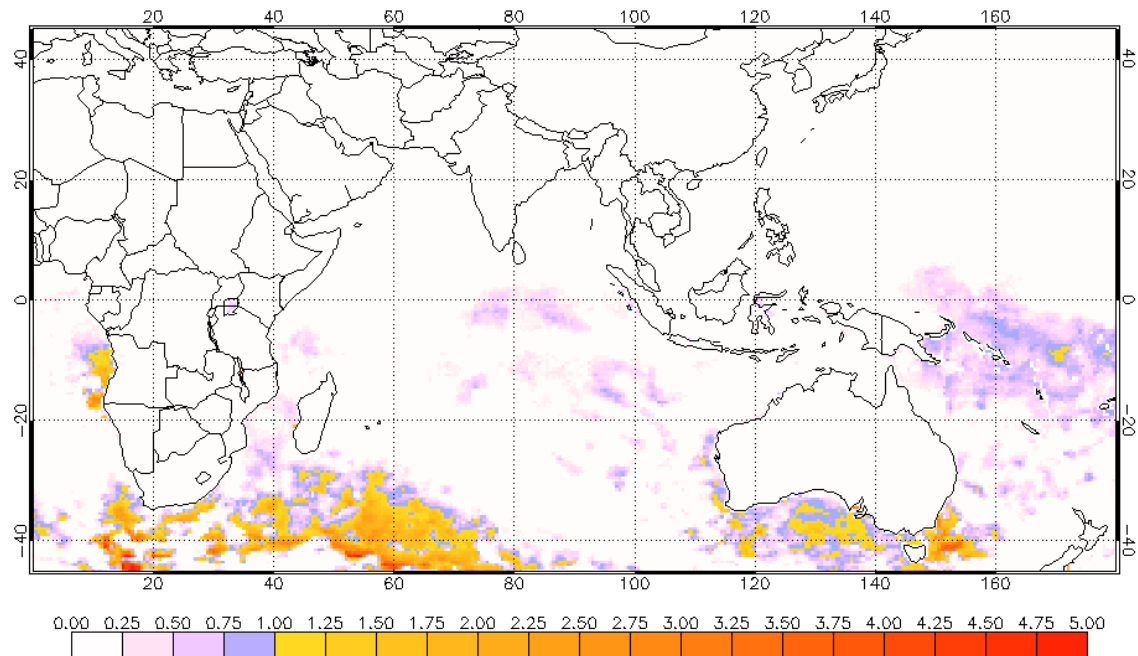
[http://www.osdpd.noaa.gov/PSB/EPS/CB\\_indices/coral\\_bleaching\\_indices.html](http://www.osdpd.noaa.gov/PSB/EPS/CB_indices/coral_bleaching_indices.html)

Previous Three Alerts for Seychelles-Mahe:

- 05/08/2006 No Stress
- 04/22/2006 Bleaching Watch
- 04/17/2006 No Stress

### SST maps – update for 23 March 2007

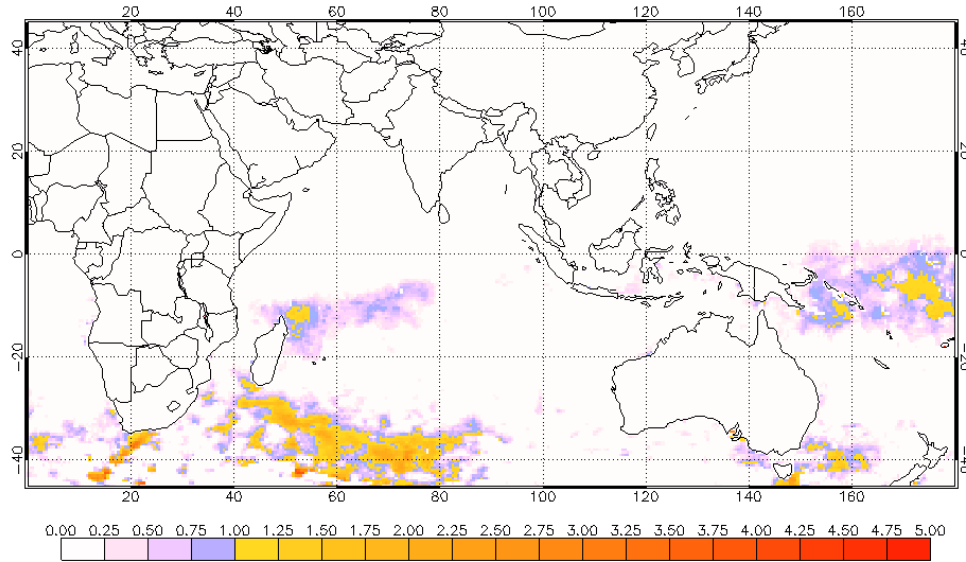
NOAA/NESDIS 50km SST – Maximum Monthly Climatology (C), 3/20/2007



### SST maps – update for 23 February 2007

SST maps – initial warning, January 23, 2007

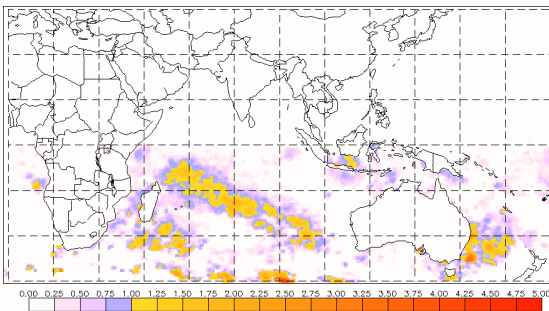
NOAA/NESDIS 50km SST – Maximum Monthly Climatology (C), 1/23/2007



Comparison with previous years with **high** bleaching, **mild** bleaching and **no** bleaching

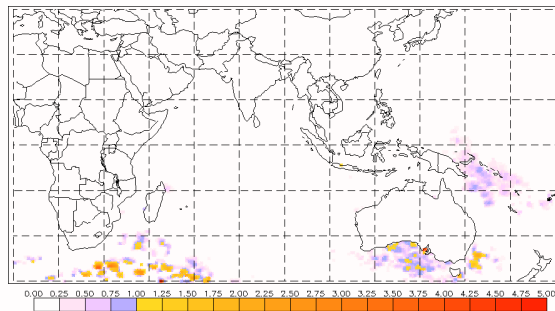
1998

NOAA/NESDIS 50km SST – Maximum Monthly Climatology (C), 1/24/1998



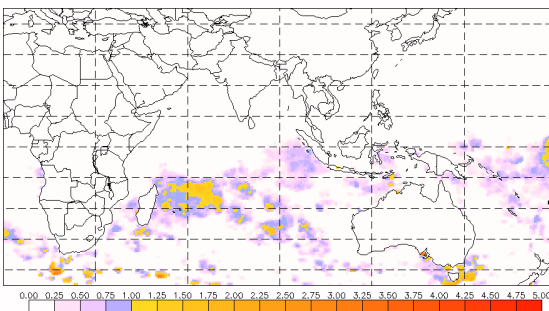
2001

NOAA/NESDIS 50km SST – Maximum Monthly Climatology (C), 1/23/2001



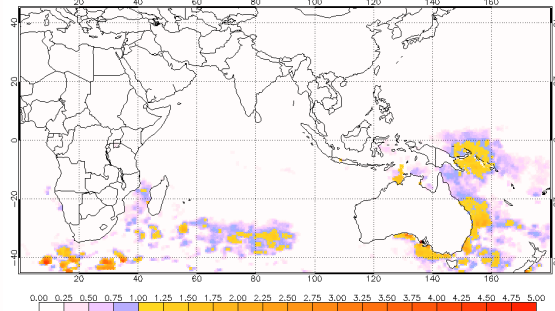
2003

NOAA/NESDIS 50km SST – Maximum Monthly Climatology (C), 1/24/2003



2006

NOAA/NESDIS 50km SST – Maximum Monthly Climatology (C), 1/24/2006



The small concentrated hotspot off NE Madagascar is most similar to conditions in 2003, but with a larger anomaly in the far south of the Indian Ocean.

***Cyclones***

Apr 4 – Madagascar - ???

Mar ??? – Madagascar - ???

Feb 23 – Mauritius – under high level warning from cyclone Gamede.

Feb 23 – Mozambique – cyclone landfall at Vilanculos (near Bazaruto)

***Winds***

NOAA doldrums under development to complement the SST hotspots.

These provide a cumulative doldrums index based on numbers of days with below-normal winds.

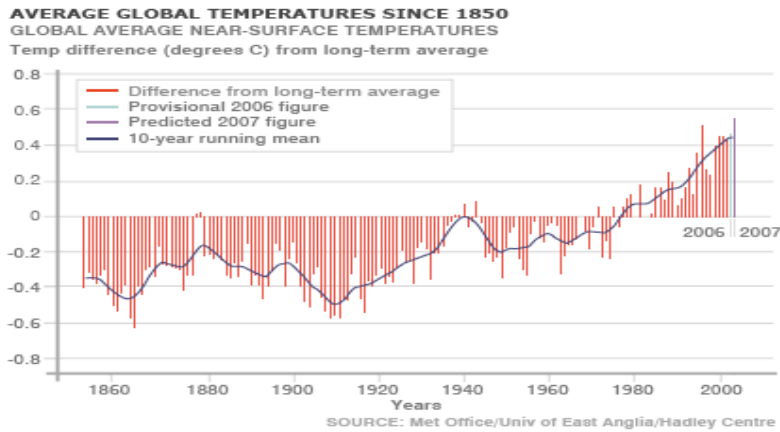
Website and examples to be provided early in 2007 and built into regional early warning alerts.

***Other***

## Global indicators, January 2007

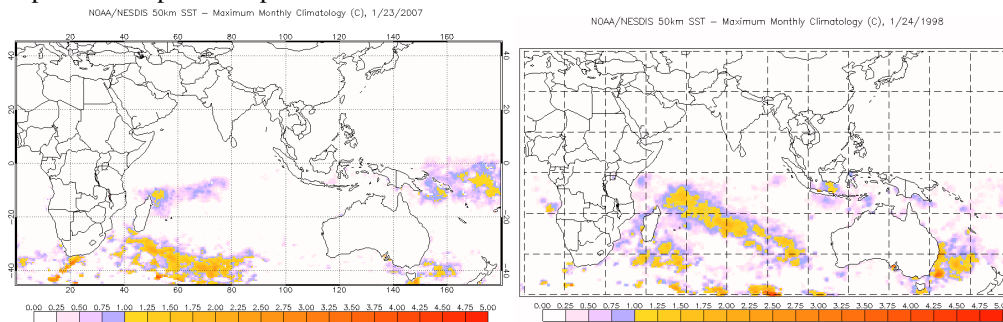
- 1) the Hadley Climate Center in the UK has predicted that 2007 may be the warmest year on record,
- 2) A moderate El Niño has been in effect for the last few months, but is apparently weakening,
- 3) The Indian Ocean Dipole is in a neutral state.

The first observation suggests there should be bleaching, as does the second, though perhaps only at weak or moderate levels, and the third does not indicate bleaching. Overall, this may mean that the Indian Ocean experience some level of bleaching in the 'summer' months of February-May, but not at high levels.



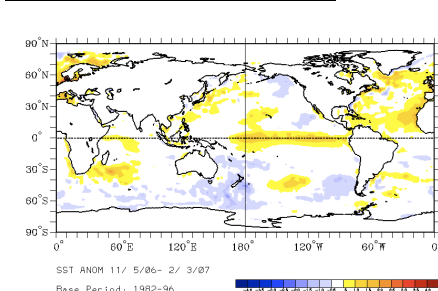
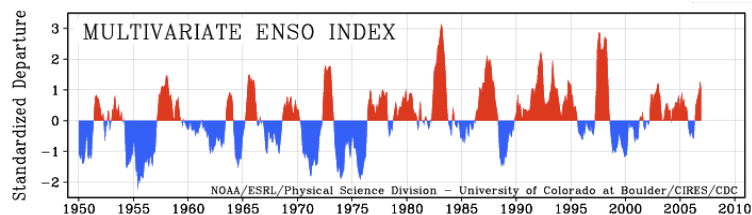
Left: 2007 is projected to be the hottest year on record, slightly above conditions recorded in 1998. Source Hadley Climate Center

showing January 23 2007 (left) and January 24 1998 (right), with much less development of tropical/subtropical hotspots in 2007.



Below: SST anomaly maps

Right: long term Southern Oscillation Index shows El Niño (positive anomaly) conditions for 2006-7.



Seasonal anomaly maps for the SOI (left) and IOD (below) show neutral conditions for both.

