frontiers

Supplementary Material

Reconstructing four centuries of temperature-induced coral bleaching on the Great Barrier Reef

Nicholas A. Kamenos* and Sebastian J. Hennige

***Correspondence:** Corresponding Author: nick.kamenos@glasgow.ac.uk

1 Supplementary Tables

Table SM1: Coral core sampling locations (PAGES-WDCA) and environmental relationships. Reef name, core number, length and location of utilised cores. Y denotes 'Yes' and indicates a significant relationship between annual core bleaching and El Niño Southern Oscillation (ENSO), Pacific Decadal Oscillation (PDO) or the Southern Oscillation Index (SOI).

Reef name	Core	Start year	End year	Deg. S	Deg. E	ENSO	PDO	SOI
Conical Rocks	01B	1887	1984	15.13	145.32			
Agincourt	01B	1781	1988	15.9	145.82		Y	
Snapper	01A	1956	1984	16.3	145.45	Y		
Low Is	01A	1953	1984	16.38	145.57			
Low Is	01B	1932	1985	16.38	145.57			
Normanby	01B	1872	1984	17.2	146.07	Y		
Flinders	01A	1701	1991	17.73	148.43			Y
Flinders	02A	1699	1991	17.73	148.43			
Kurrimine	02B	1783	1980	17.78	146.13			
Otter	01A	1811	1988	18.05	146.58			
Brook	01A	1786	1987	18.15	146.28			
Britomart	01A	1621	1983	18.23	146.73			
Britomart	01B	1572	1987	18.23	146.73	Y	Y	
Kelso	02A	1861	2001	18.42	146.98			
Rib	01A	1911	1983	18.48	147.88			
Rib	02B	1846	2000	18.48	147.88			
Rib	03B	1858	2001	18.48	147.88			
Yankee	01A	1889	1984	18.57	147.5			
Great Palm Island	01A	1935	1986	18.68	146.58			
Great Palm Island	02A	1880	1985	18.68	146.58			
Great Palm Island	02B	1953	1985	18.68	146.58			
Lodestone	01A	1753	1984	18.7	147.1			
Wheeler	01A	1891	1984	18.8	147.53	Y		
Wheeler	02A	1830	1984	18.8	147.53			

Pandora	04A	1889	1983	18.82	146.43			
Pandora	04B	1864	1983	18.82	146.43	Y	Y	Y
Pandora	07B	1891	1976	18.82	146.43			
Pandora	09A	1953	1983	18.82	146.43			
Pandora	10B	1927	1984	18.82	146.43			
Havannah	01A	1697	1988	18.85	146.55			
Magnetic	01D	1815	1986	19.15	146.87			Y
Stanley	01A	1903	1986	19.25	148.12	Y		Y
Hook	01B	1667	1985	20.07	148.95			
Stonehaven	01A	1819	1992	20.1	148.9			
N Molle Is	01B	1881	1983	20.23	148.8			
S Molle Is	01C	1853	1984	20.27	148.83			
Lupton Is	01A	1918	1983	20.28	149.12		Y	
Lupton Is	01C	1825	1983	20.28	149.12		Y	
Sanctuary	01A	1684	1984	22.07	152.67			
Abraham	01A	1645	1985	22.1	152.5		Y	Y
Abraham	01H	1606	2001	22.1	152.4			
Sweetlip	02A	1837	2001	22.23	152.75			
Sweetlip	03A	1874	2001	22.23	152.75			
Sweetlip	03B	1806	2001	22.23	152.75			

Table SM2: Breakpoints and relationship parameters. Linear model breakpoints (indicated by *) creating linear frequency and prevalence (Fig. 3) segments. Relationships describing each model indicated (Yr = year) along with breakpoint 95% CI and standard error (SE) on relationship gradient. Intercept SE relates to the intercept of the starting (oldest) segment only.

Start Year	**End Year**	**Relationship**	**Breakpoint 95% CI**	**Gradient SE**	**Intercept SE**	***P***
Frequency						
1620	1753*	0.03*Yr-45.56	±28	0.007	12.53	>0.01
1753	1820*	-0.05*Yr+89.94	±31	0.021		
1820	2001	0.01*Yr-22.47		0.006		
Prevalence						
1606	1774*	-0.06*Yr+136.1	±78	0.037	64.01	0.04
1774	2001	0.02*Yr-13.56		0.015		

PAGES-WDCA (2015). from the NOAA National Climatic Data Centre: https://www.ncdc.noaa.gov/data-access/paleoclimatology-data