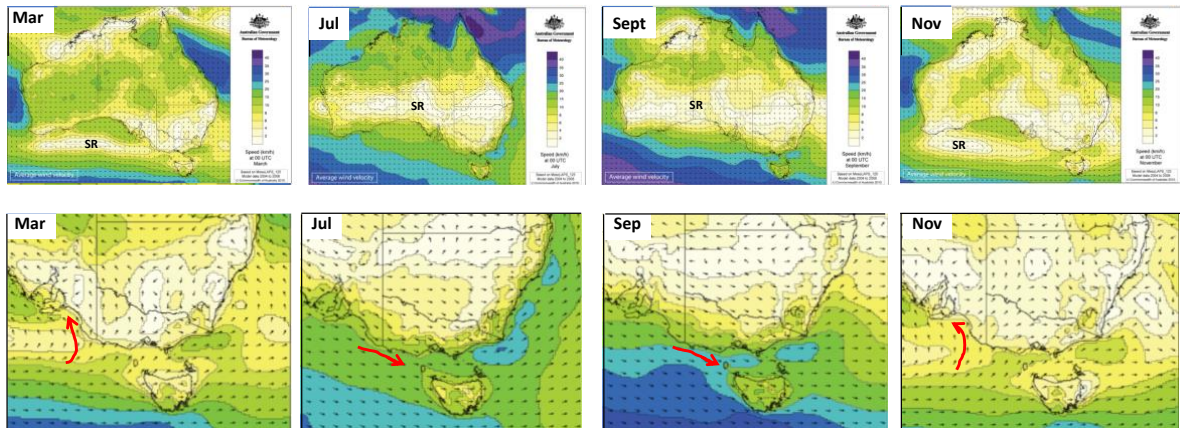
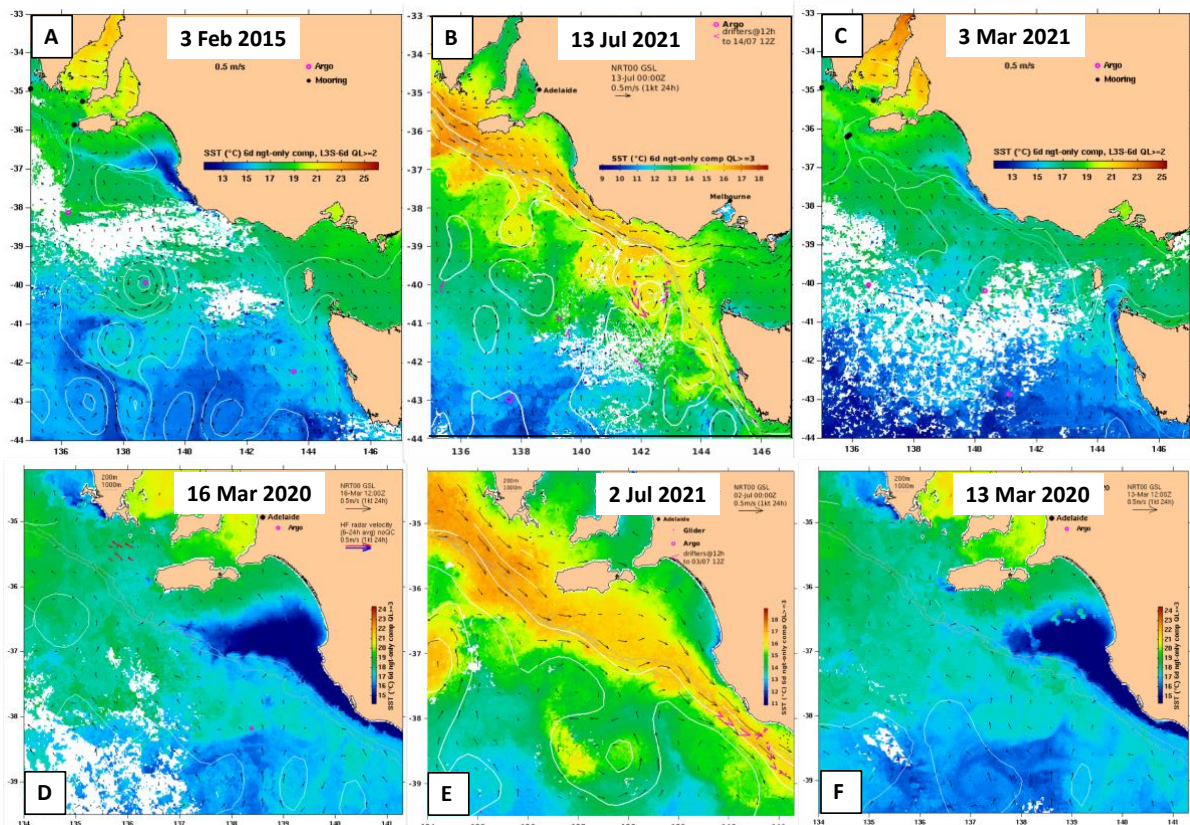


Supplementary material for

De Deckker, P. "The Holocene hypsithermal in the Australian region"

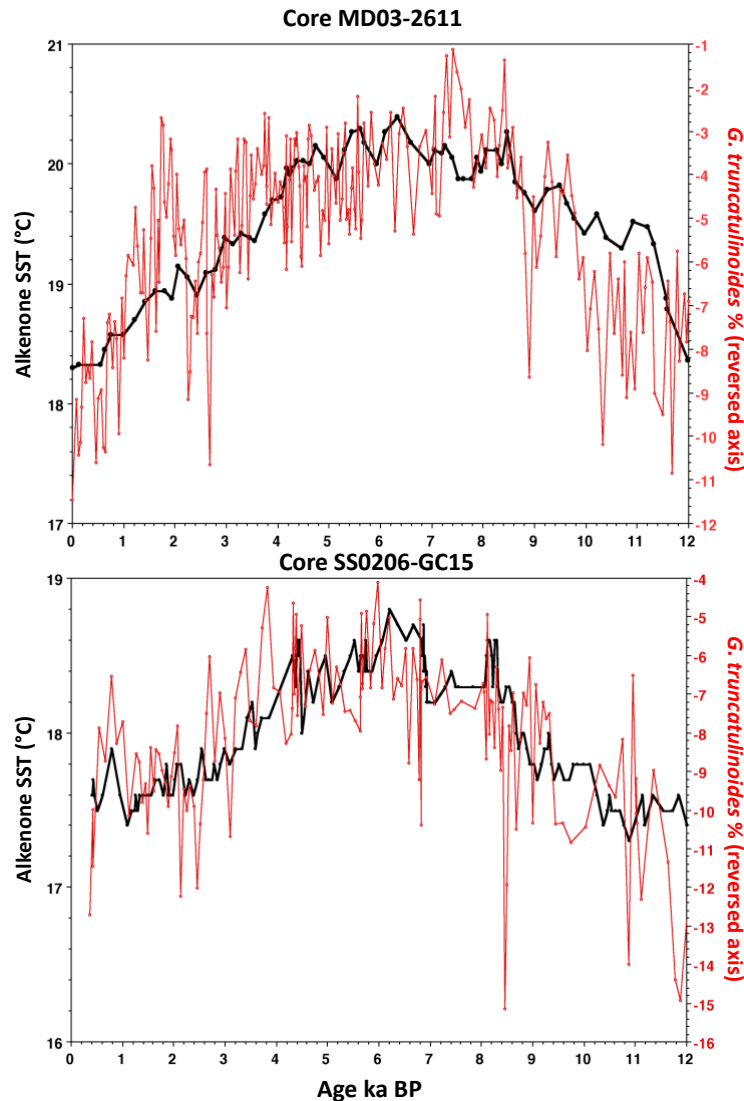


Supplementary figure S1. Maps obtained from the Australian Bureau of Meteorology [BOM] website showing in the upper panel modelled average wind velocities (km/h) for the period 2004-2008 for different seasons (represented by March, July, September and November). The lower panel displays enlarged portions of SE Australia. The red arrows indicate the predominant wind directions that would directly affect the upper parts of the oceanic water column, and consequently induce ephemeral upwelling as indicated by Middleton and Bye (2007) and Richardson *et al.* (2020) when the arrows reverse direction in both March and November.



Supplementary figure S2. False colour satellite images obtained from the CSIRO web site (<http://oceancurrent.imos.org.au/daily.php#>) showing colour-coded sea-surface temperatures and trajectories of surface ocean drifters, showing derived estimates of the surface velocity together with the observed temperatures.

Six images for selected dates are presented here, in order to document that at times the presence of cold-water upwelling offshore the Bonney coast (in A, C, D, and F), and also at times along the west coast of Kangaroo Island and the Eyre Peninsula, all offshore South Australia. Note the 2 days (B, E), when there was no upwelling, with instead the orange colouring indicating the presence of the shallow water Leeuwin Current that is usually prevalent in winter during La Niña phases (see fig. 26 in Wijffels *et al.*, 2018). Note that some of the images are of different scales.



Supplementary figure S3. Plot of alkenone-SST versus the percentage of *G. truncatulinoides* in both cores (2611 and GC15) that shows the good correspondence between the two parameters. When SSTs were high, the thermocline was deeper resulting from stronger water column stratification. Note the reversed axis for *G. truncatulinoides* to aid visualization.

References:

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- Wijffels, S.E., et al., 2018. A fine spatial-scale sea surface temperature atlas of the Australian regional seas (SSTAARS): Seasonal variability and trends around Australasia and New Zealand revisited. *Journal of Marine Systems* 187, 156-196. <https://doi.org/10.1016/j.jmarsys.2018.07.005>