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## Will the link between north Australian SST and ENSO change?

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Interannual variations in the sea surface temperature (SST) to the North of Australia are strongly linked to variations in Australian climate, for example in controlling average winter rainfall, or tropical cyclone numbers. The North Australian SST is also closely linked to ENSO and Tropical Pacific SSTs, with the relationship exhibiting a strong seasonal cycle. Valuable predictions of future Australian climate change therefore depend on climate models being able to represent ENSO and its connection to North Australian SSTs. First the observational datasets of HadISST and ERSST are used to further investigate links between the Niño3.4 index and a North Australian SST index, and the temporal evolution of North Australian SSTs during ENSO events. It is found that during Austral autumn, the correlation between Niño3.4 SST and North Australian SST is positive, and in Austral spring is negative. During El Niño events, the North Australian SST anomalies become negative in the Austral spring preceding the development of the positive Niño3.4 SST anomalies. The coupled models participating in the IPCC AR4 are evaluated in terms of this temporal evolution of Niño3.4 SST and the relationship to North Australian SSTs for the 20th century simulations. Some of the models perform very well, while some do not capture the seasonal cycle of correlations at all. The way in which these relationships may change in the future are examined using the A2 scenario from the models which do a reasonable job of capturing the present day observed relationship.