



Locally and remotely forced atmospheric circulation anomalies of Ningaloo Niño/Niña

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Ningaloo Niño (Niña), which is a recently identified climate mode, is associated with positive (negative) sea surface temperature (SST) anomalies off the western coast of Australia and negative (positive) sea level pressure (SLP) anomalies in the overlying atmosphere. Generation mechanisms of atmospheric circulation anomalies associated with Ningaloo Niño/Niña are examined by conducting a series of numerical experiments with an atmospheric general circulation model. Even when interannual SST anomalies outside of the eastern South Indian Ocean are excluded from the SST forcing, negative (positive) SLP anomalies are formed off the west coast of Australia in Ningaloo Niño (Niña) years, supporting the existence of local ocean-atmosphere interaction. When the model is forced by SST anomalies outside of the eastern South Indian Ocean, an anomalous low (high) is also generated in Ningaloo Niño (Niña) years due to a Matsuno-Gill type response to atmospheric convection anomalies in the tropical Pacific. Regarding climatic impacts, it is found that Ningaloo Niño (Niña) induces wet (dry) anomalies over the northwestern part of Australia even when SST is allowed to vary interannually only in the eastern South Indian Ocean.