



On the mechanisms of Interdecadal Pacific Oscillation-type variability

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Using a suite of idealised AGCM and OGCM simulations, a possible mechanism for Interdecadal Pacific Oscillation (IPO)-type variability is identified. In our forced atmosphere-only and ocean-only runs, it is shown that persistent equatorial Sea Surface Temperature anomalies (SSTa) that occurred for example in the first decade of the 21st century, are able to generate extratropical atmospheric circulation changes that in turn modify the North Pacific gyre on a decadal-interdecadal time scale. Moreover, the extratropical ocean feeds back on the equatorial region resulting in reversed SSTa in the equatorial Pacific on a multidecadal timescale. Such a delayed feedback seems to be at least partially responsible in giving rise to multidecadal Pacific oscillatory variability in our model integrations. In fact, our simulations are able to reproduce observed statistical modes of variability such as the IPO. It is also shown that this mode produces global teleconnections, potentially influencing the phase of the North Atlantic Oscillation and its reversal.