



Localization of multidecadal variability

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In this presentation we show model results to explain the difference between the (multi)decadal variability in the Atlantic (the Atlantic Multidecadal Variability, AMV) and in the Pacific (the Pacific Decadal Variability, PDV). Multidecadal variability is studied in idealized one- and two-ocean basin configurations, using simulations with the Modular Ocean Model (MOM). We demonstrate that the multidecadal variability on the global ‘conveyor-type’ circulation is strongly localized in the North Atlantic. The physics of this localization is subsequently investigated by considering more equatorially-symmetric background flows in the two-basin configurations and one-basin situations. Interbasin exchange and cross-equatorial flow processes determine the regions of deep water formation and are eventually responsible for the localization of the multidecadal variability. The results indicate that the AMV and PDV are caused by very different physical mechanisms.