



Different flavors of the Atlantic Multidecadal Variability

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The existence of fluctuations describing the alternation of warm and cold phases in North Atlantic Sea Surface Temperatures (NASSTs) paced at a typical timescale of ~ 50 – 90 years has been assessed by observational, reconstructions-based and numerical climate simulations-based studies. This component of NASST variability is thought to be predominantly internally-generated in the North Atlantic basin and is often referred to as “Atlantic Multidecadal Variability” (AMV). In this contribution, we illustrate the distinctive traits of differently-defined AMV indices evaluated for a set of unperturbed as well as externally-forced millennial climate simulations conducted with a hierarchy of Earth System Models differing in both resolution and complexity. We aim at assessing how differently-defined AMV indices capture different flavors of simulated multidecadal NASST variability as well as of its hemispheric atmospheric signature and implications for ocean dynamics. We demonstrate that multiple definitions of the AMV are compatible with prominent multidecadal NASST variability. The associated teleconnection patterns can have different regional or a hemispheric character, implicative for the interpretation of the AMV as a regional and as a hemispheric-relevant phenomenon. We discuss how the multi-faceted appearance of AMV complicates the physical understanding of the phenomenon concerning its climatic implications and, possibly, its origin.