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Added-value from initialization in skilful predictions of North Atlantic multi-decadal variability

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Initialized decadal hindcasts and radiatively-forced historical simulations from the fifth phase of the Climate Model Intercomparison Project (CMIP5) are analysed to address the relative roles of the initial conditions and external forcing in providing multi-year skill of the Atlantic multi-decadal variability (AMV). According to previous attribution studies, initialized hindcasts reproduce better the phase of the AMV index fluctuations, while the forced component provides a flat positive trend. These results are consistent with previous experiments (e.g. ENSEMBLES) and confirm a better performance of the initialized hindcasts in capturing AMV-related SST anomalies over the subpolar gyre and Labrador Sea regions, and the inability of the historical runs to simulate the horseshoe-like AMV signature over the North Atlantic. The impact of the start date frequency is described, showing that the standard of five-year interval between start dates yields the main features of the AMV skill that are robustly detected in hindcasts with yearly start date sampling.