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Origins of variability and predictability in the North Atlantic region

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The atmosphere over the North Atlantic sector exhibits significant interannual and interdecadal variability, as well as long-term trends due to global change. This variability is accompanied by changes in predictability. The origins of North Atlantic variability can to a large extent be traced back to the ocean and the land surface, the upper atmosphere, the tropics, as well as circum-global patterns. In particular, the tropical Pacific and the upper atmosphere have a strong influence on interannual and decadal variability in the North Atlantic region. As an example, the tropical Pacific affects the North Atlantic both through a tropospheric pathway across North America and through an indirect pathway through the stratosphere. Hence, due to the large number of factors influencing the North Atlantic region, their inter-dependence and their non-stationarity, the influence of these different factors is difficult to disentangle. Furthermore, models are often not able to capture the inter-dependence and superposition of these factors, which affects to what extent models are able to predict the North Atlantic region. This submission will explore the contribution to variability and predictability for several of these remote influences.