

Predictability of North Atlantic Ocean Heat Content

Numerous modeling studies have suggested that the North Atlantic is a region of enhanced predictability of sea surface temperatures and that initialization of the ocean circulation is key to making predictions in this region. However, the degree of predictability in the North Atlantic varies substantially between models. In this presentation I will discuss a novel diagnostic for ocean predictability, the heat content integrated over the wintertime mixed layer depth. Then, I will present three measures of predictability of the heat content derived from (1) ocean state estimates and (2) control runs of CMIP5 models. Predictability timescales vary substantially between models, but predictability timescales are generally longer in subpolar regions. Between forty and eighty percent of the regional variance of predictability timescales in the North Atlantic can be explained simply by variations in wintertime mixed layer depths. Ocean dynamics, including variations in the AMOC, are important in regions where predictability timescales cannot be explained by variations in mixed layer depths.