

Observations have established clear patterns of decadal to multidecadal variability in Atlantic SST. A growing body of work has also shown that these SST patterns can have a significant influence on climate on both regional and hemispheric scales. What is not clear is what causes those SST variations, and the degree to which they could be predicted in advance. Here we review work on the potential causes of these SST variations, including the potential role of internal variability and the AMOC, as well as radiative forcing changes, such as aerosols. We also provide some perspective on the potential for predicting AMOC fluctuations and their climatic relevance, including the formidable challenges that need to be overcome.