Mechanisms and predictability of the AMOC: progress and questions

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Over the last 15 years or so we have learnt substantial amounts from observations and models about AMOC variability and the processes that are responsible. In short, AMOC varies on a range of timescales and there are many processes that contribute. However, the important processes vary with timescale and location. In particular, evidence suggests interannual wind-forcing dominates in the subtropics whereas buoyancy forced changes are thought to dominate at the subpolar latitudes and longer timescales. However, there are also many questions that remain unanswered and some issues are still shrouded in major uncertainty. These include the relative importance of different mechanisms, the role of historical external forcings, and whether climate models are able to adequately represent the AMOC and the key processes. In this talk, I'll broadly review the key processes that affect the strength of the AMOC on interannual to decadal timescales and I'll discuss some of the implications for the predictability. Finally, I'll outline some key questions that still need to be addressed to better understand and predict the upcoming decades.