# Predicting near-term AMOC variations and their associated impact

**Daniela Matei**[1*]

* *Presenting author*

*1) Max Planck Institute for Meteorology, Ocean in the Earth System, Germany*

Over the past decade a rich body of literature attributed a major role to AMOC variations in driving significant decadal scale or longer climate variations or setting the preconditions to abrupt strong climatic shifts over the North Atlantic region. Moreover, AMOC variations itself were found to be potential predictable from a couple of years to a decade in advance. However, most of these inferences were based on coupled model simulations or model-based proxy reconstructions and therefore, the results were model dependent. Benefiting from the recently emerged field of initialized decadal climate predictions and the already a decade-long direct AMOC observational estimates from the RAPID-MOCHA program, we are now in the position to make the first evaluations of the real AMOC predictability and its potential associated climate impact.

By using various suites of initialized decadal hindcast/prediction experiments performed with the MPI-M coupled models, I will investigate whether state-of-art couple models are able to skillfully predict subseasonal-to-interannual AMOC fluctuations and how important is an accurate initialization of AMOC state for extending the climate predictive potential over the North Atlantic/European sector up to a decade or more ahead. A special focus will also be on the interplay between heat transport changes associated with AMOC and gyre variability in setting the evolution and predictability of strong climatic changes over the North Atlantic Subpolar Gyre region, such as the mid1990s warming and the currently forecasted cooling tendency.

**Theme 3 Invited talk**