



Contribution ID: 55

Type: **Talk**

Social and economic impacts of changes in the Atlantic Meridional Overturning Circulation

Tuesday 18 July 2023 09:00 (15 minutes)

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People living in coastal zones, islands and continents surrounding the Atlantic Ocean experience weather, climate and marine conditions that are directly impacted by the Atlantic Meridional Overturning Circulation (AMOC). Changes in the strength of the AMOC can have serious environmental, social and economic impacts on timescales of years to decades. The ability for communities to plan mitigation and adaptation to future change in the AMOC depends on reliable projections and good knowledge of the chains of physical, chemical and biological processes that lead to societal and economic impacts. The ocean research community has collaboratively implemented a sparse AMOC observing system that provides the only accurate source of information of the present-day currents and their evolution over the past 20 years. However, the challenge for planning is that future scenario projections were given a 'low confidence' rating by the Intergovernmental Panel for Climate Change in 2021 because of model inconsistencies with observations. Furthermore, knowledge about ways in which the AMOC affects society-relevant environmental conditions is scattered throughout academic literature and can be difficult or even impossible for potential users to access. Here we present a summary of the state of knowledge about AMOC-led environmental change that directly affects people and their livelihoods, highlighting priority areas for research and for the provision of actionable knowledge.

Topic

Value of AMOC observing –what have we learned?

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Session Classification: Value of AMOC Observing / Observational Priorities

Track Classification: Value of AMOC Observing