Contribution ID: **31** Type: **Talk**

South Atlantic Meridional Overturning Circulation in the LENS2 Simulations

Tuesday 18 July 2023 11:45 (15 minutes)

The Atlantic Meridional Overturning Circulation (AMOC) is essential for the distribution of heat, salt, and carbon dioxide, so it is a fundamental part of understanding climate change and its ocean's role as a mitigator of those changes. Focusing on the South Atlantic, this work aims to understand the AMOC upper and lower branch changes in the SSP3-7.0 scenario compared to the present climate. We rely on simulations performed as part of the Community Earth System Model, version 2, Large Ensemble Project (LENS2). Our results show that LENS2 represents the AMOC stream function well from the comparison we made with other models and observations. According to LENS2, The AMOC upper branch intensified between the years ~1850 and ~2000. However, after ~2000, the AMOC weakened mainly due to the reduced formation of North Atlantic Deep Water, evidenced by the decreased mixed layer depth. However, the lower branch of the AMOC will be intensified by the end of the century, evidenced by a likely intensification of bottom water transport. The intensification of this lower branch may act as a compensatory mechanism of mass transport due to the weakening upper branch. This result indicates that it is crucial that observational systems can monitor volume transport at different depths from the surface to the bottom, as distinct mechanisms may drive the AMOC upper and lower branches in different ways.

Topic

Observational priorities –what should we measure?

Author: ROCHA, Maurício (University of São Paulo)

Co-authors: Dr MARQUES, Gustavo (National Center for Atmospheric Research); Dr CASTRUCCIO, Frederic (National Center for Atmospheric Research); Dr DANABASOGLU, Gokhan (National Center for Atmospheric Research); Prof. SATO, Olga (University of São Paulo); Dr BRYAN, Frank (National Center for Atmospheric Research); Dr DEPPENMEIER, Anna-Lena (National Center for Atmospheric Research)

Presenter: ROCHA, Maurício (University of São Paulo)

Session Classification: Value of AMOC Observing / Observational Priorities

Track Classification: Observational Priorities