

CGD SEMINAR



DATE: Tuesday, 4 December 2018

TIME: 11 a.m.

LOCATION: NCAR, 1850 Table Mesa Drive
Mesa Lab, Main Seminar Room

TITLE: Changing Phases of Atlantic Meridional
Overturning Circulation and its Impact
on Global Climate

SPEAKER: Xianyao Chen, Ocean Univ. of China

ABSTRACT:

In the presence of top-of-atmosphere (TOA) radiative imbalance, earth's surface would have warmed much more rapidly were it not for the buffering role of the deeper oceans. Here we describe and quantify one of the effective mechanisms for ocean heat sequestration and its variability: the Atlantic meridional overturning circulation (AMOC) that spans both hemispheres, responsible for sequestering about half of the excess heat globally during one of its phases. A picture of how AMOC varies through one complete cycle emerges: After a relatively stable low phase 1975-1998, AMOC sped up rapidly, and then declined rapidly from the 2005 peak to present. During that stable low phase Atlantic did not sequester additional heat, and the TOA radiative imbalance manifested itself mainly at the surface as rapid global warming for 25 years. This concept of rapid surface warming during a period of low AMOC runs counter to the common perception based on preindustrial data, which becomes inapplicable when there is TOA forcing.

Live webcast: <http://ucarconnect.ucar.edu/live>

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The National Center for Atmospheric Research is sponsored by the National Science Foundation. Any opinions, findings and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the National Science Foundation