

AMOC ANNUAL MEETING AGENDA
Mini-Workshop Sessions

15-17 August 2012
National Center for Atmospheric Research
Center Green Campus, Boulder, Colorado

The second day of the 2012 USAMOC Annual Meeting will be devoted to four "Mini-Workshops" that are intended to focus discussion on several of the near term priorities of the program and how progress toward these priorities might be achieved. A summary of the near-term priorities of the program can be found in the 2011 USAMOC Annual Report, available on the meeting webpage (<http://www.joss.ucar.edu/events/2012/amoc/>). Each of the meeting attendees can choose two of the mini-workshops to attend, one in the morning and one in the afternoon.

A set of "Guiding Questions" has been developed for each of the mini-workshop topics, as outlined below. Invited speakers will kick off the sessions, and others are welcome to contribute short presentations and participate in a moderated discussion.

Mini-Workshop #1: AMOC Fingerprinting from Historical and Proxy Data

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Topic 1: Ocean-2k synthesis and the reconstruction of the past multi-decadal variability in the Atlantic, and its potential link to the AMOC research community

Speaker: Casey Saenger

Guiding questions:

1. What AMOC fingerprints can we construct using both paleo proxies and climate models?
2. What AMOC fingerprints can we construct using both modern observations and climate models?
3. What were the AMOC variations during the last millennium estimated from the paleo proxies?
4. What were the AMOC variations during the 20th century estimated from AMOC fingerprints?

Topic 2: Sea level as a potential bridge between modern records and long-term paleo-climate indicators

Speaker: Benjamin Horton

Guiding questions:

5. What is the relationship between sea level change at the coast and AMOC variability?
6. How does this relationship change by region?
7. With what accuracy and fidelity might paleoclimate records of sea level be developed as a proxy for AMOC variability?

Mini-Workshop #2: AMOC's Impact on the Carbon Cycle

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Topic 1: Impacts of climate forcing on CO₂ uptake in the North Atlantic

Speaker: Scott Doney

Topic 2: North Atlantic carbon cycle variability on multi-decadal timescales

Speaker: Galen McKinley

Guiding questions:

1. What is the role of AMOC in global biogeochemical cycles, in particular carbon cycles?
2. How does AMOC variability affect variability of carbon cycles?
3. What are future projections regarding the role of AMOC in the global response to greenhouse warming?

Mini-Workshop #3: The AMOC Observing System

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Topic 1: AMOC state and variability from existing and planned mooring arrays in the Atlantic

Speaker: Johanna Baehr

Guiding questions:

(see below)

Topic 2: Atlantic circulation and variability estimates from satellite data and state estimates

Speaker: Rui Ponte

Guiding questions:

1. What comprises the current AMOC observing system?
2. What are the main limitations of the current AMOC observing system in meeting the goal of measuring the overturning in the Atlantic basin?
3. What are the main limitations of the current AMOC observing system in meeting the goal of gaining a mechanistic understanding of AMOC variability?
4. What component or components should be added to address the limitations in questions 2 and 3?
5. Which elements of the Atlantic circulation does the observing system constrain, and how well do these in turn constrain climate-specific metrics?
6. To what extent do satellite data complement the existing and planned in-situ observing system(s)?

Mini-Workshop #4: AMOC Mechanisms and Predictability

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Topic 1: Review of proposed mechanisms for decadal to multidecadal AMOC and Atlantic variability

Speaker: Tom Delworth

Guiding questions:

1. What are some of the proposed mechanisms for AMOC variability?
Hopefully this list will involve some grouping with respect to their critical elements such as Nordic Sea overflows, Labrador Sea heat flux, Arctic freshwater flow, subtropical gyre expansion, impacts from low latitudes, etc.
2. Do some of the above variability elements play similar or different roles among the proposed mechanisms?
3. Can we tell if some mechanisms are more plausible than others based on model physics, robustness, and available observations?
4. What is needed from observations and models to help identify robust aspects of AMOC variability?

Topic 2: Initial value predictability of upper layer temperature and AMOC

Speaker: Grant Branstator

Guiding questions:

5. What is the current state of initial value predictability in climate models on decadal time scales?
6. What are the measures of predictability? Are some atmospheric and oceanic fields more predictable than others?
7. What is the predictability of AMOC on decadal time scales?
8. What are the prospects for determining predictability from observations?
What are the prospects for AMOC in particular, and what observations are most crucial?