From: Deirdre Des Jardins <ddj@cah2oresearch.com>
Sent: Tuesday, April 4, 2023 9:41 AM
To: Delta Council ISB <DeltaCouncilISB@deltacouncil.ca.gov>

Subject: Talk on new research on Atlantic Multidecadal Variability

Dear Delta Independent Science Board members,

This talk on new research on Atlantic Multidecadal Variability may be of interest. You can view by zoom by emailing Julia.Moriarty@Colorado.edu.

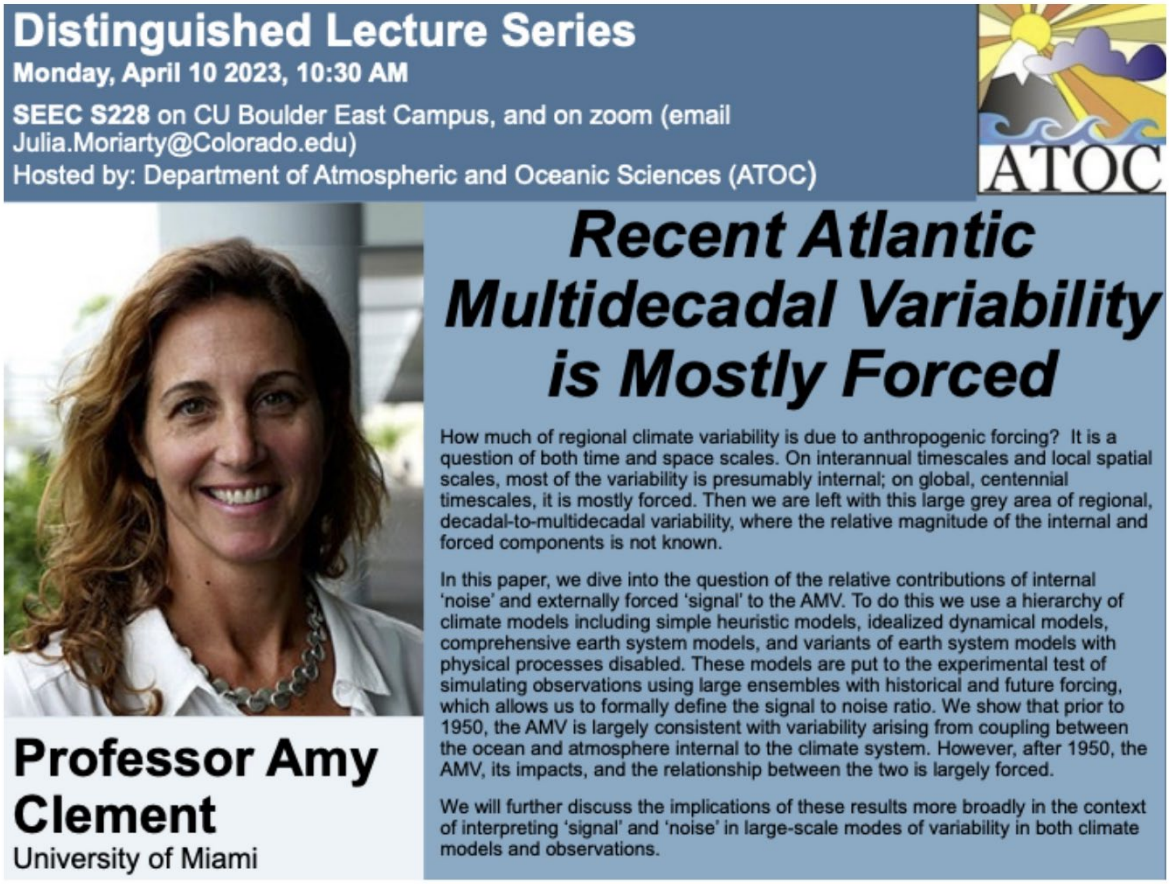
Flyer:

Distinguished Lecture Series
Monday, April 10 2023, 10:30AM
SEEC S228 on CU Boulder East Campus, and on zoom (email Julia.Moriarty@Colorado.edu)
Hosted by: Department of Atmospheric and Oceanic Sciences (ATOC)
Recent Atlantic Multidecadal Variability is Mostly Forced

"How much of regional climate variability is due to anthropogenic forcing? It is a question of both time and space scales. On interannual timescales and local spatial scales, most of the variability is presumably internal; on global, centennial timescales, it is mostly forced. Then we are left with this large grey area of regional, decadal-to-multidecadal variability, where the relative magnitude of the internal and forced components is not known. "

"In this paper, we dive into the question of the relative contributions of internal 'noise' and externally forced 'signal' to the AMV. To do this we use a hierarchy of climate models including simple heuristic models, idealized dynamical models, comprehensive earth system models, and variants of earth system models with physical processes disabled. These models are put to the experimental test of simulating observations using large ensembles with historical and future forcing, which allows us to formally define the signal to noise ratio. We show that prior to 1950, the AMV is largely consistent with variability arising from coupling between the ocean and atmosphere internal to the climate system. However, after 1950, the AMV, its impacts, and the relationship between the two is largely forced. "

"We will further discuss the implications of these results more broadly in the context of interpreting 'signal' and 'noise' in large-scale models of variability in both climate models and observations. "



The Atlantic and Pacific basins are connected through the tropics. This is from my draft synthesis:

(IPCC AR6 WG1 2021) found evidence for "two-way teleconnections between the tropical Atlantic and Pacific on interannual to decadal time scales, such that the tropical Atlantic variability responds and feeds back to the Pacific." (Yang et al. 2020) found that Pacific SST anomalies are driven by a coupling of the variation in surface SSTs in the tropical Atlantic with the tropical Pacific via surface wind anomalies in the central and eastern Pacific.