Update on Ocean Isotope-Related Activities

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Working Group on Observations and Modeling of Water Isotopes in the Climate System
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- Goals: assess state of knowledge of water isotope science; identify opportunities for advancing modeling and observational work in the area

- Working group officially sunset but members continue to collaborate

- Major products: two review papers (Environmental Research: Climate)
Review Paper #1: Water Isotopes as Constraints on Climate Variability and the Hydrological Cycle (in revision)

Sylvia Dee, Adriana Bailey, Jessica Conroy, Alyssa Atwood, Samantha Stevenson, Jesse Nusbaumer, David Noone
Water Isotopes and scales of climate information: past, present, and future

Dee et al. (2023)
Water Isotopes and scales of climate information: past, present, and future

Dee et al. (2023)
Dee et al. (2023)

The Connected Water Isotope Cycle: linking models and observations

Water Isotopes capture climate variability in the Past, Present, and Future in the same units
Review Paper #2: Water Isotopes as Constraints on Climate Sensitivity and Feedbacks (in prep, submission target ~5/23)

Adriana Bailey, Jesse Nusbaumer, David Noone, Samantha Stevenson, Sylvia Dee, Jessica Conroy, Alyssa Atwood
Major themes/points in review papers:

- Water isotopes provide a “common unit” for modern observations, models, and paleoclimate proxy records.
- Isotopes have already provided important insights into modes of climate variability across multiple timescales and in different time periods.
- Isotopes also serve as additional “degrees of freedom” for evaluating hydrological processes in climate models and observations.
- Need for sustained, long-term measurements of isotopic variability, both to provide constraints on modern hydrologic trends and as calibration for proxy records.
- Development of usable databases for isotope information key to increase utility and uptake by the wider climate community.
- Isotope-based tracers in climate models also critical to maintain and improve.
Long term: need to maintain isotope expertise on PRP

Also maintain dialogue with other working groups:

- CLIVAR regional panels
- Community Earth System Model working groups @ NCAR
- TPOS

PRP can have input into observational strategies, data management practices, “observations of opportunity” which may arise