Monitoring the strength and variability of the MOC
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**Oleander Project**

**GOAL:** Determine mass and heat fluxes across four distinct regions: the continental shelf, Slope Sea, Gulf Stream, and northwest Sargasso Sea.

**Recent and Future Advancements**
- Weekly XBT sections across GS and Sargasso due to AXIS system Fratantoni et al. 2017 and NOAA support
- New partnership with Bermuda Institute of Ocean Sciences
- UHDAS implemented.
- Future ADCP enhancement: - 150 kHz to provide observations of near-surface and shelf waters, - 38 kHz ADCP capable of measuring currents through the base of the thermocline.

**Gulf Stream Transports**
- No clear evidence of a decrease.
- Not significant at 95% confidence level.
- Factor 2-4 less than accelerated US sea level rise north of Hatteras.

**Trans-Atlantic Transports**
The Oleander Project will be able to track the strength and interannual variability of the MOC with new enhancements.

**Conclusions**
- The high-horizontal resolution afforded by the ADCP is essential to resolve GS transport.
- Direct observations show no long-term trend in GS surface transport.
- ADCP transports over long distances are possible.
- Improvements to the Oleander system will provide additional information regarding the MOC connectivity along the western boundary.

**Oleander ADCP and SSH surface layer transports**
- Transport calculation places strong demands on ADCP accuracy.
- Unrealistically wide GS region required due to altimeter horizontal and temporal resolution.
- Update to Worst et al. 2014 to examine agreement below the influence of Ekman layer.
- ADCP and SSH layer transport anomaly times series track each other well.
- Correlations are excellent: 0.93 Sargasso, 0.88 GS.
- Standard deviations of differences are smaller for the long ~570 km Sargasso section compared to the ~300 km GS section.
- Sargasso equivalent velocity error is less than 1 cm/s−1.

**Project web site and data delivery:**
Oleander.bios.edu
Oleander Workshop II: 25 Years Operations
Eos.org/meeting-reports/packing-science-into-a-shipping-vessel

**References**