Citation:

Meinen, C. S., S. Speich, **R. C. Perez**, **S. Dong**, A. R. Piola, **S. L. Garzoli**, **M. O. Baringer**, S. Gladyshev, and E. J. D. Campos, 2013: Temporal variability of the Meridional Overturning Circulation at 34.5°S: Results from two pilot boundary arrays in the South Atlantic, J. Geophys. Res., 118 (12), 6461-6478, doi:10.1002/2013JC009228.

Justification text:

NOAA is a lead agency studying the MOC as described in the US interagency Ocean Research Priorities Plan, and MOC research directly addresses NOAA Climate research goals by aiding our understanding of the mechanisms that change important climate variables (e.g. sea surface temperature, precipitation patterns, hurricane intensification). In this paper, ~20 months of data collected by the NOAA Southwest Atlantic MOC project is combined with data from a parallel French project to produce the first ever daily time series of MOC variability at 34.5°S. Among the key results of the paper: the measured MOC at 34.5°S is highly variable on time scales ranging from a few days to a few months, and the observed variability is roughly on par with that observed at 26.5°N; the observed MOC variability at 34.5°S is driven roughly equally by changes at both the western and eastern sides of the basin at time scales ranging from days to months; and at periods less than 20 days the Ekman transport dominates MOC variations at 34.5°S, while at longer time scales the geostrophic and Ekman transports play roughly equal roles. These research results will help guide the ongoing enhancements of the MOC array at 34.5°S and the analysis of the data that will be collected. These results will also represent a 'ground-truth' for future numerical model studies looking into the mechanisms and impacts of MOC variations in the South Atlantic region.