



## **The Atlantic Meridional Overturning in the Ocean Reanalysis**

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The Atlantic Meridional Overturning Circulation (AMOC) plays a key role in the North Atlantic climate. The AMOC controls global ocean climate at decadal and longer time scales, as well as the formation of new water-masses connecting the two through its exchange mechanisms between the surface and deep ocean and ventilating and renewing water layers of the interior ocean. Recent observations of the AMOC at 26°N from the RAPID array suggest that a weakening has occurred in the past decade associated with a decrease in the Labrador density, which lags a decrease in the AMOC by a few years (Smeed et al., 2014, Jackson et al. 2016). Such changes in the North Atlantic are driven by physical interaction at the atmosphere-ocean interface controlling heat and momentum transfer but also by freshwater inflow from the Arctic, which in turn induces changes in the North Atlantic density field (Rashmstof et al., 2015).

Using the GREP ocean reanalysis produced by CMEMS (Copernicus Marine Environment Monitoring Service) at a horizontal resolution of 1/4° and 1/12°, we evaluated the AMOC and compared it with RAPID observations. The AMOC in the ocean reanalysis are in good agreement with the observations We found a very good agreement between the two time series with a mean value of 15.6 +/- 1.6 Sv compared to 16.9 Sv in the observations. The 10-days average timeseries between the ocean reanalysis and the observations in interannual variabilities are correlated at 0.82 and the trend of is -0.413 +/- 0.18 Sv.yr-1 found by the RAPID array during the observation period (April 2004-October 2015) is found (Smeed et al., 2016). However, no significant trend is found over the all period of the reanalysis (1993-2015) Sv/y, The MOC trend is -0.43 Sv/y, which is consistent with RAPID observations.