

Atlantic Meridional Overturning Circulation: monitoring heat transport from sea and space

Will Hobbs[†]; Joshua Willis

[†] Jet Propulsion Laboratory, USA

Leading author: wiliam.r.hobbs@jpl.nasa.gov

Using temperature, salinity and displacement data from Argo floats combined with satellite sea surface height, a time series of the Atlantic meridional heat transport from 2002-2009 has been calculated for 41°N. The calculation method is validated against hydrographic climatologies and output from the ECCO2 ocean data assimilation model, and the assumptions are shown to be reasonable; the greatest source of error is from the sparse distribution of Argo floats. The mean heat transport is 0.49 PW, consistent with previous estimates made using hydrographic or surface flux data. The heat transport has a significant annual cycle and high degree of sub-annual variability, indicating that uncertainties in previous calculations may have been underestimated. There is little evidence of a trend over the short period of available data. Correlations with sea surface temperature show clear physical relationships between Ekman transport and overturning temperature transport, even on the short time scales of available data.