



# ECCO Representation of Water Masses

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*WMW: water-mass women, women of mode waters, women of water mass, etc...*

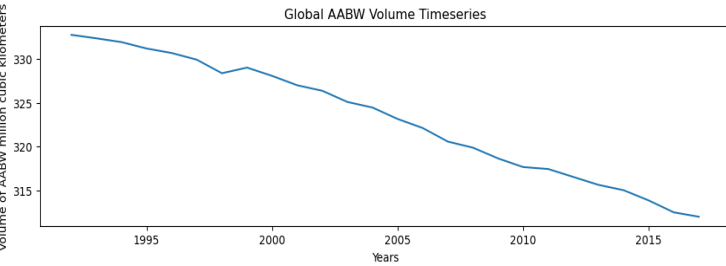


## Overview

Understanding how ECCO represents water masses, specifically Antarctic Bottom Water (AABW), and whether recent Antarctic extremes are captured in ECCO.

## Products, Resources Used

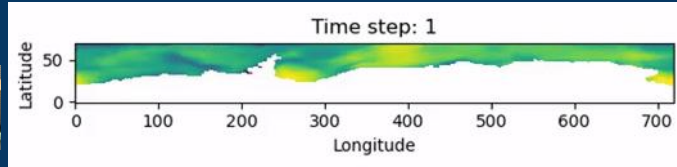
- ECCO V4r4: density, temperature, salinity, grid products
- ecco\_v4\_py (and Ian), ecco\_access
- ECCO hack week tutorials, OSS



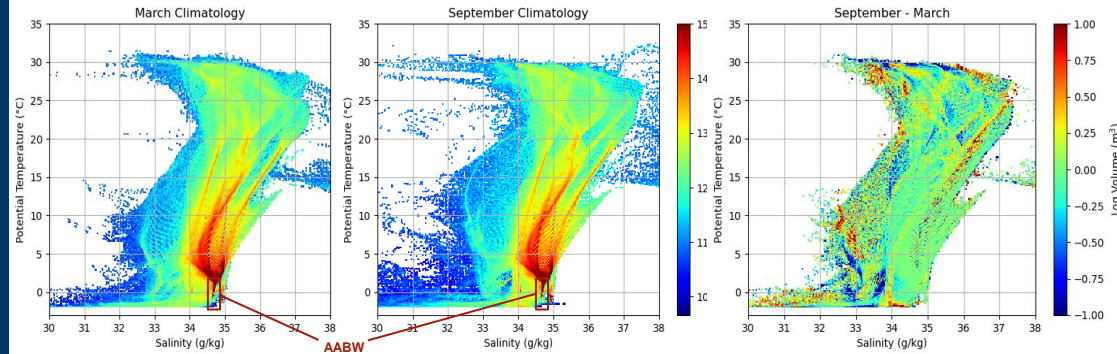
AABW ranges from  $\theta = -0.8$  °C to 2 °C and salinity of 34.6 to 34.7 g/kg. We calculated the volume of ocean water within this range from our volumetric TS plot. Then, repeated the calculation from 1992 to 2017.

## Challenges Faced

- Calculating/understanding volume of ocean using MITgcm grid
- Identifying where AABW waters were
- Calculating AABW volume by constraining temp and salinity



Antarctic Surface Density: 1992 (Feb. - Oct.)



Global volumetric temperature & salinity: 1992-2017 averages in March, September, and March subtracted from September, respectively. Volumes (m<sup>3</sup>) are represented in log scale.

## Future Work

- Plot the ECCO temperature, salinity along an ocean transect (ex. recreate WOCE A16)
- Validate AABW volume derivations with observations/other model outputs
- Explore High Salinity Shelf Water production using ECCO