Abstract View

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Structure and Transport of the Antarctic Circumpolar Current at Drake Passage from Short-Term Measurements

Worth D. Nowlin Jr. and Thomas Whitworth III

Department of Oceanography, Texas A & M University, College Station 77843

R. Dale Pillsbury

School of Oceanography, Oregon State University, Corvallis 97331

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ABSTRACT

Three-week average speeds from an array of current meter moorings which spanned Drake Passage were used in conjunction with geostrophic calculations to estimate the short-term transport of the Antarctic Circumpolar Current. Closely spaced hydrographic stations show that the current consists of three vertically coherent bands of relatively high speed within the generally eastward flow. These bands separate four water mass regimes which have distinct *T-S* relationships at depths above the core of the Circumpolar Deep Water. The geostrophic transport relative to 3000 db averaged 95×10^6 m^3 s^{-1} for five transects of the Passage and is consistent with previous measurements. Referencing the geostrophic transport to the current meter measurements gives an adjusted transport of 124×10^6 m^3 s^{-1} to the east. This estimate is about midway between values obtained in the two previous attempts to adjust relative transport through Drake Passage to observed velocities. The previous estimates are reconsidered and compared with this latest estimate.