



## **Mean and eddy features of the Antarctic Circumpolar Current**

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The Antarctic Circumpolar Current (ACC) has been investigated by means of a comprehensive data set obtained from the World Ocean Circulation Experiment (WOCE) data base. Data consist in lagrangian observations, collected in the Southern Ocean, by means of Surface Velocity Programme (SVP) drifters deployed since the late eighties. About 440 drifters have been considered in the analysis and results can be representative of the period 1994-2002, during which most of the drifters were deployed.

Data have been analysed to address some general and specific issues. First of all the time independent surface current field was derived following a method based on the use of natural bicubic splines. This method allowed the definition of the mean flow at high spatial resolution, very useful in this case in order to define the meridional shear and the jets, which are peculiar characteristics of the dynamics of the ACC.

The evaluation of the mean component of the total current field allowed the definition of the eddy component and then the characterization of the main processes associated with it. In particular, eddy momentum fluxes were evaluated in order to determine their role in the dynamical balance of the ACC. Together with sea surface temperature (SST) values collected by the drifters, the eddy component was used to compute the surface eddy temperature fluxes. A rough estimate of the total eddy temperature fluxes was derived and a value of about 0.75 PW determined. This value is in agreement with previous estimates derived from satellite data but is about two times the estimate obtained from an indirect approach.

Together with positions, surface current components and SST, NCEP/NCAR re-analysis wind data, interpolated at the same drifter position and time interval, were included in the data set. Wind data are particular important in order to evaluate the

wind induced current and then the associated transport. This calculation was carried out resulting in an average Ekman transport of 6.2 Sv relative to the latitudinal band 70° S to 45°S, the latter being the northernmost limit of the investigated area.