



## **A two-equilibrium theory for the Antarctic Circumpolar Current(ACC) and its associated meridional circulation**

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The Antarctic Circumpolar Current(ACC) and its associated meridional circulation is investigated through using nonlinear inertia theory. The model consists of two layers—an upper mixture layer(Ekman layer) mainly driven by sea surface wind stress and a lower thermocline controlled by ideal fluid nonlinear equations which can be solved by identifying the form of universal functions. The results show that the thermocline exists a two-equilibrium solution though the same Ekman layer condition is given beyond it. Compared to the first equilibrium, the second one has a heavy intensity and deeper circulation which seems to close to the existing data.