Geophysical Research Abstracts,
Vol. 11, EGU2009-11856, 2009
EGU General Assembly 2009

The Leeuwin Current and surrounding currents system: A numerical Study

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The surface circulation including the surrounding current system off south of Western Australia was simulated using the Regional Ocean Model Systems (ROMS). The Leeuwin Current (LC) and Flinders Current (FC) were reproduced in two application; with wind and without wind stress. With wind situation, result show a strong LC in autumn and winter flowing close to the shelf, and accelerate once it reach the south-west corner. The geopotential gradient is presence through all seasons, indicate that it is still the main forcing of the current. At subsurface, the continuation of the undercurrent also evidence at the corner. Comparison between the two result shows that LC strength drop significantly in autumn and winter when there is no wind stress, which subsequently allow the FC to gain in transport. Nonetheless, FC also drop significantly in summer when there is no wind stress. Inshore, presence of Cresswell current is evidence along the coast when there is south-easterly wind in summer. The current ceased as the wind stress change direction in autumn.