

Influence of the Wyrтки Jets on the western Arabian Sea upwelling region

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The sea surface temperature (SST) in the upwelling region along the western boundary of the Arabian Sea is known to influence the Indian summer monsoon rainfall. In this study, we examine how a reflection of semiannual Kelvin waves, which is forced by westerly winds during monsoon breaks and accompanied by the Yoshida-Wyrтки Jet, may influence this region based on ocean general circulation model experiments. When results from two experiments with and without a damping near the eastern equatorial Indian Ocean are compared, the SST in the western Arabian Sea becomes colder by as much as 0.4 degree C in the latter experiment. By calculating mixed layer heat balance, it is shown that this SST difference is mainly due to a difference in horizontal advection, but is damped by surface heat flux.

Keywords: Tropical Indian Ocean, Ocean general circulation model, Equatorial wave