Comparison of Ocean Fluxes over North Indian Seas and South China Sea and their Impact on Summer Monsoon Rainfall

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Summer monsoon is very important for the economies of many Asian countries including Asian giants like china and India. A study of ocean fluxes and their manifestation in determining the intensity of monsoon circulations over Asian regions is of practical and scientific interest.

In the present article the ocean fluxes for three regions namely region 1(Arabian Sea), region 2 (Bay of Bengal) and region 3 (South China Sea) was consider for the purpose of comparison. It should be mentioned that the Arabian Sea is in the part of summer monsoon and encounters the monsoon circulation prior to region 2 and 3. Region2 gets the monsoon circulation after it passes through Arabian Sea and Indian subcontinent. Whereas, the region 3 is east side of the Asia, onset of monsoon is before region 1 and 2 and the monsoon circulation extended from May to September. A comparison of these three regions will through light on not only the passage, but also the metamorphism in monsoon circulation. The latent heat flux (LHF) is very important parameter among ocean fluxes and so is taken as an index for ocean fluxes. LHF for the three regions are compared for the monsoon months (JJAS) using well known data sets like NCEP, OA flux and ECMWF.

Results points out that the region1 is very much crucial for summer monsoon entering Indian subcontinent. Region1 is not only influenced by Findlater Jet, the local conditions promoting evaporation, but also the variations in global monsoon circulation like El Nino, La Nina and IOD. In region1, the variation of LHF are drastic and of higher amplitude. These indices are very important for the onset and variations of southwest monsoon over Indian subcontinent, which influences the subsequent rainfall over Indian subcontinent. Region2 shows the metamorphism after the monsoon circulation departs from the Indian subcontinent. The flux parameters in the region2 have profound influence on Indo-China region. Region3 is very important in the monsoonal circulations, because it influences the monsoonal climate of southern Chin. The ocean fluxes here will not have such large variations in LHF and the influence of the teleconnections is also not that profound.

Over the region 1 and 2, during El Nino (YY), the seasonal variability of LHF and rainfall are showing the opposite magnitude, whereas during YY-1 and YY+1 the rainfall is slightly higher the normal rainfall. Over the region 3, the effect of LHF and rainfall over the china during El Nino can be seen opposite magnitude, whereas the feature cannot be evident during YY-1 and YY+1.