

Definition of Summer Monsoon Index for Vietnam Region

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One way to identify the summer monsoon's activities is based on the summer monsoon index. Basically, for the creation of the summer monsoon index, it is necessary to base on the definition and physical characteristics of monsoon and also the typical domain and parameters chosen. To characterize the summer monsoon's activities over Vietnam region, we had a study on definition of summer monsoon index for Vietnam. The important thing, this index has to be presumed as a good/useful index if it can characterize the variability of large-scale circulation and local climate in Vietnam. From the empirical orthogonal function analysis for the 850 hPa zonal wind in 1981-2010 of Climate Forecast System Reanalysis, the summer monsoon index for Vietnam (VSMI) was proposed. The VSMI index is defined as the mean zonal wind at 850 hPa over 5°N-17°N and 100°E -110°E.

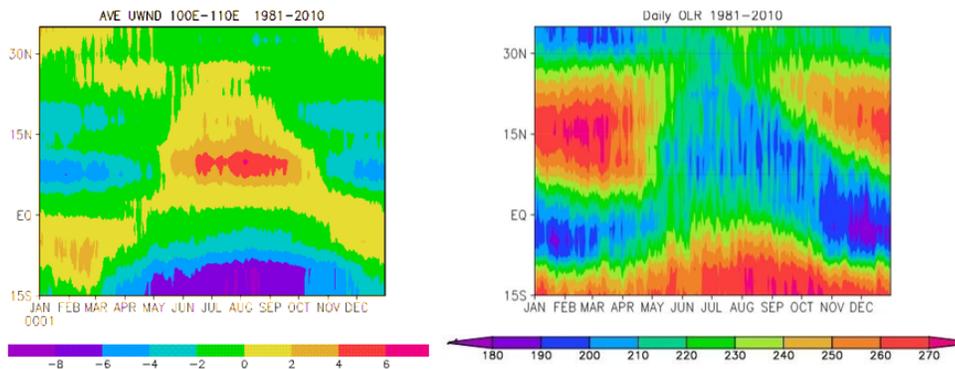


Figure 1. Hovmöller diagram for (a) 850hPa zonal wind and (b) mean OLR in 1981-2010

Figure 1. Figure 1 shows that both of westerlies and low values of outgoing longwave radiation (OLR) occur during the onset of summer monsoon in May; whereas, in October, wind reverses from westerlies to easterlies indicating the break of summer monsoon; nonetheless, OLR keeps low value until the end of December.

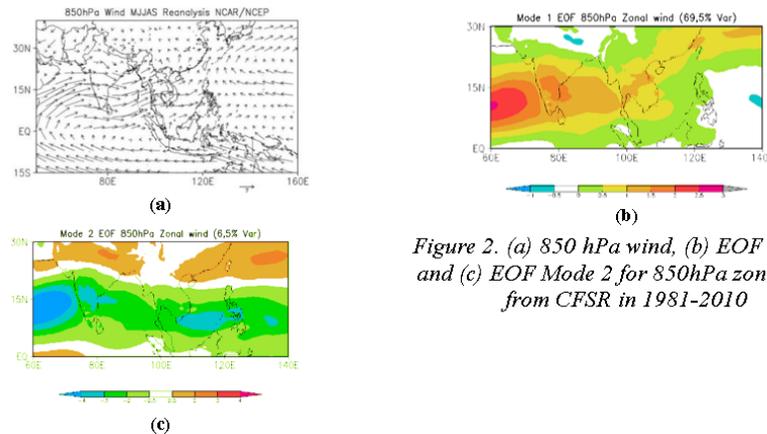


Figure 2. (a) 850 hPa wind, (b) EOF Mode 1 and (c) EOF Mode 2 for 850hPa zonal wind from CFSR in 1981-2010

Figure 2. For average in the summer, Mode 1 presents 65.9% from East Africa Coast to Philippine; Mode 2 presents 6.3% from west Pacific Ocean to Indochinese Peninsula (Fig 2b,c). The results show that Vietnam is affected by both factors.