

The post-monsoon rainfall in the western Cambodia - its mechanism and occurrence factors

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From the analysis of the data of an Automatic Weather Station at the southwest lakeshore and 30 raingauges all around the lake, the authors found that about 30-40% of the post-monsoon rainfalls in the western Cambodia happened even with no water vapor convergence at the scale of the Indochina Peninsula, especially from midnight to early-morning. From numerical simulations, it was suggested that the land-lake-atmosphere interaction caused by Tonle Sap Lake contributed to bringing these rainfalls. It was shown that nocturnal land-breeze circulation generated a weak lined-up convective system along the southwest lakeshore and it developed into a deeper convective system which accompanied rainfall when the large-scale northeasterly blew strongly in a moderate level. Based on the understanding of the mechanism of the the post-monsoon rainfalls in the western Cambodia, the authors found out the three requisite conditions for these events: Firstly, abundance of precipitable water ($\geq 40\text{mm}$) is required. Decrease of precipitable water in China at late November reduces water vapor over Cambodia, resulting in the disappearance of the locally-produced rainfall after this period. Secondly, development of the land-breeze from the southwest of the lake is required. It should be stronger than about 0.15m/s . This land-breeze generates a weak lined-up convective system along the southwest lakeshore. Although it never brings precipitation by itself, it develops into a larger convective system with rainfall when it meets moderately strong northeasterly. This northeasterly is the third requirement. However, if it is too strong, it suppresses the land-breeze from the southwest lakeshore. The moderate strength of the northeasterly wind, around $0.6\text{-}4.0\text{m/s}$, is required.