Environmental Science : An Indian Journal

ISSN: 0974-7451

Short Communication | Vol 17 Iss S1

Presentation on How El-Nino/La-Nina & India Ocean Dipole (IDO) Influence on Myanmar Rainfall Distribution (Statistical Analysis Report) (1990-2019)

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Abstract

Every agriculture countries essential need to examine the rainfall pattern or it influences. This study examined the relative impacts of NiÃ±o and Indian Ocean Dipole (IOD) anomalies events on Myanmar summer monsoon precipitation (June to September) on a sub-regional scale. This study used the NiÃ±o3-4 and IOD index data sets for 1990-2019 from UCAR and NOAA. As well as ERA5- Reanalysis Data precipitation data, summer monsoon precipitation data across Myanmar for homogeneous and sub-regional precipitation data sets. The spatial distribution of partial correlations between IOD and summer monsoon rainfall over Myanmar indicates a significant influence on rainfall along the monsoon trough regions, parts of the southwestern coastal regions of Myanmar, and over some parts of Thailand. For the region of rainfall, we take average area (90E-105E and 10N-28N) as Myanmar, and about the time scale, selected summer monsoon season (JJAS) data for every dataset are used. NiÃ±o and IOD indexes data are already defined regions but time is collected. For NiÃ±o anomaly (El NiÃ±o or La NiÃ±a) events, selected data are defined as +/- 4 of monthly SST average of NiÃ±o3-4 region. The positive and negative phase of IOD is defined as the above paragraph and selected data are defined as +/-4 of monthly two SST anomalies difference. We analyze all dataset the whole statistics analysis base on the following formula from Guidelines on the Calculation of Climate by World Meteorology Organization especially anomalies and correlation analysis. Study the relative influences of the IOD and the NiÃ±o anomalies on the summer rainfall of these regions by grid data analysis with Open-Grads climate data display to understand the impacts of the IOD/NiÃ±o anomalies on Myanmar monsoon rainfall at a regional scale. If IOD and NiÃ±o anomalies are the same values positive or negative, rainfall distribution was randomized distribution. If IOD negative anomaly or negative phase can impact monsoon rainfall over Myanmar. Found NiÃ±o can impact positively correlation over Myanmar monsoon rainfall distribution during IOD normal situations with weak correlation. And during IOD normal year rainfall distribution are not enough strong correction with NiÃ±o directly and not a correlation with for IOD anomaly year rainfall. We can also found a strong negative correlation (-0.3 to -0.4) with strong regression values (- 0.3 to -0.6) between SST and Myanmar monsoon rainfall distribution. As the results of the 3 variables correlation, IOD and rainfall distribution had a negative correlation and IOD and NiÃ±o had a positive correlation. Their turning point is around values of +/- 0.3 and its values indicate a weak positive (negative) linear relationship via a shaky linear rule. The influence of the IOD negative phase on monsoon rainfall over Myanmar is more than that of positive IOD during NiÃ±o normal situation.

Citation: Kyaw Than Oo. Presentation on How El-Nino/La-Nina & India Ocean Dipole (IDO) Influence on Myanmar Rainfall Distribution (Statistical Analysis Report) (1990-2019), J Environ Sci. 2021; 17(S1):03