**Drought Monitoring Using MODIS and Meteorological Data in BANGLADESH**

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**Abstract:** Drought is one of the most devastating and frequent natural disasters in Bangladesh despite having less scientific attention than floods or cyclones. In this study, the potential use of remote sensing for drought detection and monitoring in Bangladesh was investigated. Multi-temporal drought severity maps were derived by using an empirical index called Temperature Vegetation Dryness Index (TVDI). TVDI provides information on soil moisture conditions and therefore, it could be used as a potential tool for drought study. TVDI was calculated based on the triangle relationship between Normalized Difference Vegetation Index (NDVI) and Land Surface Temperature. MODIS products of MCD43B4 (Nadir BRDF-Adjusted Reflectance) was used to calculate NDVI, while LST was derived from MOD11A2 (Land Surface Temperature). TVDI images of pre-Kharif and Kharif cropping season from 11 consecutive years (2000-2010) were processed for monitoring the status of dry and wet areas. On the other hand precipitation based drought index, Standardized Precipitation Index (SPI) was also used in this study to compare the results of TVDI. There are 35 rainfall stations available from the Bangladesh Meteorological Department, however, only 29 stations with more than 30 years record of rainfall data were used to calculate the SPI in the present study.

Droughts in different cropping season have their own spatial and temporal characteristics. In general, droughts were observed in the northwest part of Bangladesh. A comparison between TVDI, SPI and actual precipitation, and its sensitivity to surface parameter were examined. TVDI is more closely related to LST rather than NDVI and should help to identify the status of water stressed. The conclusion is reached that TVDI approach is an effective drought indices, and therefore appropriate for drought detection and monitoring.