



## Analysis of Drought from Humid, Semi-Arid and Arid Regions of India Using DrinC Model with Different Drought Indices

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### Abstract

The study aims at evaluating the various drought indices for the humid, semi-arid and arid regions of India using conventional indices, such as rainfall anomaly index, departure analysis of rainfall and other indices such as Standard Precipitation Index (SPI) and Reconnaissance Drought Index (RDI) that were analyzed using the DrinC software. In SPI, arid region has seven drought years, whereas humid and semi-arid regions have four. In case of RDI, the humid and semi-arid regions have 11 drought years, whereas arid regions have 10 years. The difference in SPI and RDI was due to the fact that RDI considered potential evapotranspiration, and hence, correlation with plants would be better in case of RDI. Humid region showed a decreasing trend in initial value of RDI during the drought as compared to semiarid and arid regions and indicated possible climate change impact in these regions. Among all the indices, RDI was considered as an effective indicator because of implicit severity and high prediction matches with the actual drought years. SPI and RDI were found to be well correlated with respect to 3 months rainfall data and SPI values led to prediction of annual RDI. The results of our study established that this correlation could be used for developing disaster management plan well in advance to combat the drought consequences.

**Keywords** Drought · DrinC · Drought indices · SPI · RDI

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