

# **APPLICATION OF REMOTE SENSING AND GIS IN ASSESSMENT OF SOIL MOISTURE CHANGES IN THE BA/DA RANG RIVER BASIN FOR THE PERIOD OF 2000-2019**

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## **Summary**

The Ba/Da Rang river basin is the largest basin in the South Central of Vietnam with agricultural activities as the major one. Drought is becoming more and more severe in the basin. Hence, monitoring soil moisture changes over a long period is critical to control the drought situation and sustainably manage water resources. Temperature Vegetation Dryness Index (TVDI) is used in this study in order to assess the status of soil moisture in the basin for the period of 2000-2019. TVDI values were extracted and calculated from Landsat and MODIS remotely sensed data. A part of the process was based on Google Earth Engine (GEE) which saved time and storage. The soil moisture level in the basin from 2000 to 2019 was from moderate to very dry level and changes without a certain tendency over the years. The monthly TVDI values fluctuated within (0.50; 0.90). Especially, TVDI has increased in the dry season with the highest value in 2011 of 0.73. Besides, the study compares the TVDI results in 2016 from Landsat and MODIS image data to see the difference in the spatial distribution of TVDI levels although average values of Landsat-TVDI and MODIS-TVDI were all dry. Soil moisture from MODIS is observed at all 5 thresholds, whilst the one from Landsat is mainly average (27.91%) and dry (46.75%).

**Keywords:** *Soil moisture, Drought, TVDI, Google Earth Engine, Ba river basin.*