

DROUGHT ASSESSMENT USING REMOTE SENSING AND GIS

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Drought is occurring all over the planet. Preparedness for drought should be an important part of national policies. Presently, with the aid of Earth Observation system and GIS Technology, this task is becoming more and more feasible. In Vietnam generally and in Ninh Thuan province particularly, drought is occurring wider than ever. Every year, in dry season, the lack of water takes place often, bringing negative effects to agriculture productions, which then affecting the people's life. Recently, drought occurred in 1997, 2002, 2005 and 2009. Those drought events put the people in the situation of food-shortage, lack-of-water for agriculture and livestock. To better understand the drought status in Ninh Thuan province, we do the drought mapping using the aid of and GIS Technology. This study demonstrates the usage of remote sensing and GIS in drought mapping. Landsat TM and ETM+ data were used to compute drought-related characteristics (indices) such as NDVI (Normalized Difference Vegetation Index), TCI (Temperature Condition Index), LST (Land Surface Temperature)... These indices were then integrated into GIS environment with Saaty matrix taken into consideration to produce maps of drought severity. By integrating Saaty matrix in the calculation, the weight of every factor that contributed to forming drought was assessed. This made the result more accurate. The result shows that most of Ninh Thuan province area has suffered moderate drought. Therefore, preparedness should be soon performed. The study may be used as a drought-monitoring model and as a tool for decision-making support in regional drought assessment and management.

Keyword: drought assessment, Saaty matrix, remote sensing and GIS, drought indices, drought monitoring