

## **Impact of Extreme Drought Climate on Water Security in North Borneo: Case Study of Sabah**

### **ABSTRACT**

For countries in Southeast Asia that mainly rely on surface water as their water resource, changes in weather patterns and hydrological systems due to climate change will cause severely decreased water resource availability. Warm weather triggers more water use and exacerbates the extraction of water resources, which will change the operation patterns of water usage and increase demand, resulting in water scarcity. The occurrence of prolonged drought upsets the balance between water supply and demand, significantly increasing the vulnerability of regions to damaging impacts. The objectives of this study are to identify trends and determine the impacts of extreme drought events on water levels for the major important water dams in the northern part of Borneo, and to assess the risk of water insecurity for the dams. In this context, remote sensing images are used to determine the degree of risk of water insecurity in the regions. Statistical methods are used in the analysis of daily water levels and rainfall data. The findings show that water levels in dams on the North and Northeast Coasts of Borneo are greatly affected by the extreme drought climate caused by the Northeast Monsoon, with mild to the high risk recorded in terms of water insecurity, with only two of the water dams being water-secure. This study shows how climate change has affected water availability throughout the regions.