Satellite Indicators in Drought Monitoring in Iran

Introduction: Drought is a significant climatic phenomenon in Iran, influenced by variations in temperature and precipitation. This study focuses on the use of satellite-based indicators for effective drought monitoring, which is more economical and time-efficient compared to traditional field methods.

Material and Methods: The research identifies the most practical satellite indicators for drought monitoring, utilizing meteorological satellite images. The analysis reveals that the electromagnetic spectrum ranges of 670 nm (red band) and 765 nm (infrared band) are commonly used in all vegetation indices. The study demonstrates the high efficacy of these indicators in revealing vegetation changes and monitoring drought.

Results and Discussion: The research employs the Normalized Difference Vegetation Index (NDVI) and Enhanced Vegetation Index (EVI) to analyze vegetation cover and drought conditions. The results show that NDVI and EVI are effective in identifying vegetation stress and drought impacts, particularly in regions with dense vegetation. The study also highlights the importance of using satellite data for large-scale drought monitoring due to its accuracy, speed, and cost-effectiveness. The findings suggest that satellite-based indicators can provide real-time data with minimal human error, making them invaluable for drought management.

Conclusion: The research concludes that the integration of satellite imagery and vegetation indices can significantly improve drought monitoring and management strategies in Iran. This approach can help mitigate the adverse ecological and economic impacts of drought, ensuring better preparedness and response to future drought events.

Keywords: Infrared Band, Red Band, Satellite Drought, Iran