

Satellite Gravimetry-Land Surface Model for Evaluating Drought and Water Scarcity in Arabian Basin

*Arya Pradipta Prasetyo¹, Mohammad Makkawi¹, Hatim Sharif², Abdalla Elamin¹, Abdulaziz Al-Shaibani¹, SanLinn Kaka¹

1. King Fahd University of Petroleum & Minerals, 2. University of Texas at San Antonio

Separating drought and water scarcity particularly in region with low of water resources must be well considered. As both of these terms have different definitions, mixing up drought and water scarcity might lead to inefficient water management strategies. In this study GRACE-satellite based observation was integrated with LSM derived from GLDAS. The stated approach distinguished the natural variabilities (drought) and human influences (water scarcity) in Arabian Basin, Saudi Arabia. It' s noticed that the Total Water Storage (TWS) change caused by natural variabilities was rather stationary and tend to slightly increase during the study period (2007-2016). In contrast, TWS change influenced by human activities has been continually decreasing. Several severe drought occurred and caused water deficiency. However, the drought severity is relatively low in comparison with water scarcity severity. Integration of satellite remote sensing data with global hydrological models could be an innovative tool to help decision-makers to adapt water plans in effective and practical way.

Keywords: Remote Sensing, Drought, Water Scarcity