



Assessing the potential of Landsat 8 OLI for retrieving salinity in the hypersaline Arabian Gulf

Jun Zhao (1) and Marouane Temimi (2)

(1) Masdar Institute, Abu Dhabi, UAE (jzhao@masdar.ac.ae), (2) Masdar Institute, Abu Dhabi, UAE (mtemimi@masdar.ac.ae)

The Arabian Gulf, located in an arid region in the Middle East, has high salinity that can exceed 43 practical salinity units (psu) due to its special conditions, such as high evaporation, low precipitation, and desalination discharge. In this study, a regional algorithm was developed to retrieve salinity using *in situ* measurements conducted between June 2013 and November 2014 along the western coast of Abu Dhabi, United Arab Emirates (UAE). A multivariate linear regression model using the visible bands of Operational Land Imager (OLI) was proposed and indicated good performance with a determination coefficient (R^2) of 0.7. The algorithm was then applied to an OLI scene, which revealed the spatial distribution of salinity over the study area. The findings are favorable for better interpretation of the complex water mass exchange between the Arabian Gulf and the Sea of Oman through the Strait of Hormuz, validating salinity from numerical models, studying the effects of anthropogenic activities and climate change on ecosystem in the hypersaline Arabian Gulf, etc.