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MONITORING AND PREDICTING THE LAND USE AND LAND COVER CHANGES FROM MULTI-TEMPORAL DUBAISAT-2 DATA USING REMOTE SENSING AND GIS TECHNIQUES – A CASE STUDY OF AL MARMOOM DESERT CONSERVATION RESERVE

Abstract

Monitoring nature conservation in deserts is of a vital concern since it is a critical habitat for rare animals and plant species, in addition to its economic value for tourism. Nowadays, Geographic Information System (GIS) and remote sensing tools are the most practical approaches in monitoring nature reserves. They are mainly used due to their higher accuracy and lower cost in comparison with traditional approaches. The outcome of these tools contribute in predicting the future of such areas and assist in decision making. Moreover, the derived information is utilized to characterize the status of the area over a specified period of time in certain aspects. Al Marmoom Desert Conservation Reserve is the first unfenced nature conservation reserve in the United Arab Emirates (UAE), located in the Emirate of Dubai. It spans 10% of Dubai total area and will host more than 20 initiatives in different aspects such as environmental, cultural, and sport-related. This study will monitor the developments of Al Marmoom Desert Conservation Reserve project and detect the changes in certain features, such as road networks, vegetation, and water surfaces, throughout the years of study. The monitored features were studied on biennial bases starting from 2014 to 2018 using data from DubaiSat-2, which is the second Earth observation satellite owned by Mohammed Bin Rashid Space Centre (MBRSC). Upon the completion of the analysis study, noticeable increase in the overall percentages of the studied features were observed.