World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:16, No:06, 2022

Contribution of Remote Sensing and GIS to the Study of the Impact of the Salinity of Sebkhas on the Quality of Groundwater: Case of Sebkhet Halk El Menjel (Sousse)

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Abstract : Water resources in Tunisia have experienced quantitative and qualitative degradation, especially when talking about wetlands and Sbekhas. Indeed, the objective of this work is to study the spatio-temporal evolution of salinity for 29 years (from 1987 to 2016). A study of the connection between surface water and groundwater is necessary to know the degree of influence of the Sebkha brines on the water table. The evolution of surface salinity is determined by remote sensing based on Landsat TM and OLI/TIRS satellite images of the years 1987, 2007, 2010, and 2016. The processing of these images allowed us to determine the NDVI(Normalized Difference Vegetation Index), the salinity index, and the surface temperature around Sebkha. In addition, through a geographic information system(GIS), we could establish a map of the distribution of salinity in the subsurface of the water table of Chott Mariem and Hergla/SidiBouAli/Kondar. The results of image processing and the calculation of the index and surface temperature show an increase in salinity downstream of in addition to the sebkha and the development of vegetation cover upstream and the western part of the sebkha. This richness may be due both to contamination by seawater infiltration from the barrier beach of Hergla as well as the passage of groundwater to the sebkha.

Keywords : spatio-temporal monitoring, salinity, satellite images, NDVI, sebkha
Conference Title : ICMMMWP 2022 : International Conference on Modelling, Monitoring and Management of Water Pollution
Conference Location : Istanbul, Türkiye
Conference Dates : June 27-28, 2022