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Climate variability and its impact on the spatial distribution of mangroves in Qatar

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ABSTRACT

Mangroves are a unique vegetation community that can adapt to harsh climatic conditions, including in areas of high temperature and high salinity levels. It is an important coastal wetland community in many countries that provide a multitude of ecosystem services. Qatar has a small mangrove community covering about 21 km^2 and it is probably the only natural vegetation type found in Qatar. They are important because of their aesthetic value, as a buffer zone protecting the lowland coastal area as well as its role in storing carbons. Therefore, it is important to understand mangroves response to global climatic variability. This is particularly important as *Avicennia*, which is the only mangrove species found in Qatar has limited elevation range and less able to resist extreme physical and environmental changes. Species distribution models combined with GIS and Remote Sensing are some of the tools that can be used to project the potential change of mangrove vegetation communities. These spatial information technologies can be used to extract and map current distribution of mangrove vegetation while species distribution model can be used to predict the potential geographical distribution of suitable habitats and species occurrence. In the current research, MaxEnt, GIS and high resolution World View 3 satellite data were used to classify, map and predict mangrove vegetation. The preliminary findings show the potential habitats in the east and the northwest part of Qatar. This research is important as there are no current studies examining the spatial distribution of mangroves or assessing the potential impact of climate variability on mangrove communities in Qatar.

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