

# Assessment of Lake Water Quality and Quantity using Satellite Remote

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Lakes provide various socioeconomic benefits such as fisheries, recreations, hydroelectricity, and drinking and irrigation water supply among others. They impact our daily lives and our resources. Therefore, monitoring lakes' health is important to understand what their major cause of deterioration is since it can threaten human and wild livelihood. The project would be focus on checking how lakes' water quality and surface area has changed during a determined period of time.

Around 10 lakes would be picked around the globe from different continents based on their importance on human livelihood. The data from each lake would be gathered by using remote sensing satellite data from Landsat, MODIS, and SAR and any in situ measurements available, if any, for a period of 20-30 years. Visible and infrared data would be collected for determining surface area change, turbidity/sedimentation, and algal blooms (eutrophication) happening in each lake.

The information collected will be processed using GIS and MATLAB to do statistical analysis of each parameter. Satellite imagery over the selected period of time from MODIS and Landsat database provided by NASA will be used to estimate the water surface area difference. The water quality analysis will be based on water color and the Inherent Optical Properties (IOP) of each substance at different wavelengths. Therefore, the optical characteristics of the lake would be used to estimate the reflectance intensity to determine algal blooms (chl a) and sediments in the water. The water quality classification of the lake will be based on the county that lake is located.

Key Words:

Remote Sensing, Lakes, Lakes' water quality, Algal blooms.

Data Source:

The Moderate-resolution Imaging Spectroradiometer (MODIS), Land Satellite (Landsat), Synthetic Aperture Radar (SAR).