Chlorophyll-a concentrations in the Lagos Lagoon using a comparison assessment of satellite data products and laboratory results

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Remote sensing data is a viable alternative for mapping these pigments, and consequently, the trophic. Chlorophyll-a (Chl-a) is present in all phytoplankton species. This study therefore estimates chlorophyll-a concentration in Lagos Lagoon using Landsat 7 (ETM+) and Landsat 8 (OLI) data. The techniques used were band rationing and regression modelling. The Landsat data were first geometrically rectified. Then brightness values were converted to reflectance through the radiometric correction process. For the regression models, logarithmically transformed chlorophyll-a was used as the dependent variable. Single bands, band ratios and logarithmically transformed band ratios were the independent variables. R2 values were computed and evaluated. The models of Chl-a concentration showed reasonable results but the concentrations across the study lagoon was impacted by the ocean current distance of Atlantic Ocean. The study concluded that the Landsat 7 & 8 images were effective in estimating chl-a concentration and producing chl-a spatio-temporal map.. The study therefore concluded that the detail examination of sptaio-temporal chlorophyll-a distribution is quite important for improvement of nutrient cycling and eutrophic conditions of lagoon water