

Machine Learning for Water Optical Properties Using Satellite Imagery

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Oceans occupy about 70 percent of the surface of the earth and support innumerable living organisms. Despite its vast spatial extent and the invaluable role it plays, the precious resource is continually threatened by both anthropogenic and natural factors. Pollution and climate change are the key threats to water quality (WQ). Satellite imageries have the capability of detecting and extracting various parameters which assist in evaluating, predicting and monitoring changes in ocean colour. We will present on the work we are conducting in validating the use of satellite remote sensing using in-situ data for water optical properties. In this study, we are utilising free satellite imageries of Landsat 8 and 9 together with Sentinel 2 and 3 to determine the water optical properties in a unique bay in the west coast of Ireland. The study analyses the variation of chlorophyll concentration with respect to changes to its environment. This is to provide an understanding of the various factors influencing the fluctuations. Machine learning is used to support the analysis by providing insights into the complex association between various elements to improve on accuracy. Additionally, it is used to support WQ prediction for monitoring in order to support in realisation of the sustainable development goal (SDG) 14 on conservation of the oceans.

Keywords: chlorophyll, machine learning, remote sensing, water optical properties

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