# Remote Sensing of Water Quality, Demonstrating the Capabilities of Sentinel-2 for the Nile Delta

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This paper describes a hydro-optical model for deriving water quality variables from satellite images, hereafter HydroSat. HydroSat corrects images for atmospheric interferences and simultaneously retrieves water quality variables. An application of HydroSat to Landsat Enhanced Thematic Mapper (ETM) observations over the Rosetta Branch of the Nile River demonstrates that reliable estimates of water quality are obtained. For example, the impact of the many water inlets along the Rosetta on the water quality can be very well identified. Quantitatively, the accuracy of the derived products is assessed via comparison with the output of a validated water quality process model for the Rosetta Branch. This matchup between the HydroSat and process model's output results in determination coefficients, $R^2$ s, larger than 0.6 for all derived water quality variables. It should be noted that derivation of water quality variables using Hydro-Sat does not rely on any tuning parameters. Hence, the successful application of HydroSat to Landsat-ETM data could also be seen as a demonstration of the future Sentinel-2 capabilities for mapping water quality over rivers and inland lakes.