# Retrieval of Chlorophyll- a using satellite and ground spectral data in Japanese and Sri Lankan water bodies

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## ABSTRACT

The suitability of a handheld spectrometer and ASTER satellite data for monitoring water quality in coastal waters of Sri Lanka and inland waters of Japan was tested in November 2010 to March 2012. In-situ Chlorophyll-a (Chl-a), turbidity, total suspended solid, secchi depth and reflectance data were measured at ASTER overpass times in Negombo estuary, Trincomalee bay, Puttalam and Chilaw lagoons, Sri Lanka, and in Lake Senba and Lake Kasumigaura, Japan. ASTER based Chl-a retrieval algorithms were developed support with in-situ Chl-a and MODIS OC3 Chl-a. The original MODIS Chl-a and the in-situ Chl-a were regressively analyzed for determination of a MODIS Chl-a correction equation because it may overestimate in tropical coastal waters. Then, three ASTER VNIR band ratios were compared for correlation with the corrected MODIS Chl-a and in-situ Chl-a. Finally, the regression equation of the ASTER band ratio, B1/B2, with highest correlation was used for generation of high-resolution Chl-a distribution maps. Significant correlation between the ratio of the reflectance peak at 705 nm and the Chl-a absorption at 678 nm and the in-situ Chl-a content was observed and these reflectance ratios were used to establish spectrometric Chl-a estimation algorithms. The proposed algorithms successfully determined localized environmental effects in the study areas. ASTER-based high resolution Chl-a distribution maps will be derived more precisely by further correction of these algorithms, which will be useful in mitigate impacts of the environment change in those coastal and inland water environments.