

PROBA-V for Total Suspended Matter mapping in coastal areas

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Coastal areas are of high ecological and economic value however they are, today, subject to intense human-induced environmental pressures. An effective monitoring system is therefore vital for the operational management and safeguarding of the coastal areas. Satellite remote sensing has the potential to monitor the coastal area and its dynamics in a synoptic and cost-effective way. However, due to frequent cloud coverage, combined with the high dynamic nature of near shore coastal waters, one single sensor such as for example MODIS has shown to provide only limited information on the Total Suspended Matter (TSM) dynamics. To monitor coastal areas a 250 m spatial resolution is often put forward (e.g. MODIS 250 m channels, MERIS, Sentinel-3). However this spatial resolution might be inadequate to monitor small scale features in near shore areas such as ports and estuaries i.e. areas which are facing intensified anthropogenic pressures from maintenance of capital dredging activities, large scale construction works etc. The remote sensing community has therefore already been looking to some extent into the usage of non-OC sensors to fill the gaps, both in time of temporal and spatial coverage.

Although designed as a land mission only- the PROBA-V instrument, providing a daily coverage at 300 m and a 5-daily coverage at 100m resolution, opens opportunities for retrieval of coastal products. The high revisit time, coastal coverage and the good image quality, provides opportunities to expand its current use from the typical land applications to coastal water applications.

At the conference we will present the first results of a study which has been recently set-up to analyze the feasibility of the use of PROBA-V data for coastal applications, more specifically for the monitoring of TSM. The study will take into account the possible limitations imposed by the design of the PROBA-V instrument as a land mission such as the broad spectral bands and reduced radiometric sensitivity at low radiances (i.e. lower SNR compared to typical OC sensors for typical water scenes) of the instrument. This activity will also look into the selection of both an optimal atmospheric correction scheme and TSM retrieval algorithm.