# GEOSTATIONARY OCEAN COLOUR FEASIBILITY STUDY: MAPPING SUSPENDED MATTER WITH SEVIRI

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Geostationary ocean colour sensors do not yet exist, but are under consideration by a number of space agencies. This study tests the feasibility and assesses the potential for optical remote sensing of coastal waters from geostationary platforms, with the existing SEVIRI (Spinning Enhanced Visible and InfraRed Imager) meteorological sensor on the METOSAT Second Generation platform. Data are available in near real time every 15 minutes. SEVIRI lacks sufficient bands for chlorophyll remote sensing but its spectral resolution is sufficient for quantification of Total Suspended Matter (TSM) in turbid waters, using a single broad red band, combined with a suitable near infrared band. A data set for the Southern North Sea covering 34 consecutive days in June and July 2006 was obtained to test the feasibility of mapping TSM with SEVIRI. Atmospheric correction of SEVIRI images included corrections for Rayleigh and aerosol scattering, absorption by atmospheric gasses and atmospheric transmittances. Assumptions on the ratio of waterleaving reflectances and aerosol reflectances in the red and near-infrared bands were needed to solve the system of equations. A one-band TSM retrieval algorithm, calibrated by non-linear regression of seaborne measurements of TSM and water-leaving reflectance was applied. The effect of the above assumptions on the uncertainty of the water-leaving reflectance and TSM products was analysed. Results show that (1) mapping of TSM in the Southern North Sea is feasible and sufficiently accurate with SEVIRI and that TSM maps are well correlated with TSM maps obtained from MODIS-AQUA (2) during cloud-free days, high frequency dynamics of TSM are detected and (3) daily composites of TSM could be generated in partially cloudy weather.