MICROPHYTOBENTHOS PRODUCTION AND BIOMASS MONITORING ON INTERTIDAL MUDFLATS USING REMOTE SENSING

De Wever Aaike[1], Rodney Forster[2] and Koen Sabbe[1]

[1] Universiteit Gent, Vakgroep Biologie, Afdeling Protistologie en Aquatische Ecologie, Krijgslaan 281 S8, 9000 Gent, Belgium
E-mail: aaike.dewever@ugent.be

[2] Centre for Environment, Fisheries & Aquaculture Science (CEFAS), Lowestoft, UK

Coastal areas and estuaries are ecosystems with a high economic and ecological value. Microphytobenthos organisms form thin biofilms on intertidal mudflats and are important for stabilizing the sediment and transferring inorganic nutrients to the estuarine foodweb. Knowledge about the microphytobenthos is therefore essential for the management of these areas. As intertidal mudflats are not easily accessible for routine sampling and show high spatial variability, remote sensing techniques are increasingly used for monitoring these areas. Despite the wider use of remote sensing techniques in these systems, the potential of these techniques is still not fully explored. We obtained a variety of hyperspectral and satellite images from the Westerschelde and IJzer Estuary to obtain indices suitable for mapping microphytobenthos biomass. The most widely used marker pigment to quantify algal biomass is chlorophyll a. The microbial mats on intertidal mudflats are generally dominated by diatoms, but blooms of noxious algae such as *Ulva* and cyanobacteria are also frequently observed. Using traditional HPLC-pigment analysis techniques, these different algal groups can readily be distinguished based on differences in their marker pigment composition (fucoxanthine/lutein/zeaxanthine). We will explore the potential for mapping different algal groups on hyperspectral images using these marker pigments. In addition, the data on the biomass and composition of the microphytobenthos will be used for modelling the primary production on the mudflats.