

Classification of Mussel Beds in Dutch Wadden Sea using high resolution WorldView-2 satellite data

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The Dutch Wadden Sea coast requires coastal defence, and an extensive DELTA programme on protection of the Dutch coast has been recently established. The Wadden Sea is a natural barrier, protecting the coast with a shallow, turbid and dynamic ecosystem. Important natural features of the Wadden Sea are oyster/mussel beds, considered as important biogenic structures for coastal defence, by reducing wave's energy.

Remote sensing could be a useful tool for monitoring this aspect of coastal defence, however, the remote sensing data and techniques in this case must be suited to detect changes, threatening the integrity of the coast. WorldView-2 satellite images are able to provide specific details in 2.5 meters in multi-spectral and 60 sm in panchromatic bands.

The image analysis employed Object Oriented advanced image classification tools using Subpixel classifier in analysis and classification of spectral signatures of sediments and mussel/oyster beds. The final results of classification were compared with in-situ data. The study revealed usefulness of high resolution data in detecting mussel and oyster beds and changes in salt marshes along in the Wadden Sea. It can be concluded that WorldView-2 imagery is an indispensable tool in monitoring and change detection providing highly precise information, and it can serve as application in coastal defence and nature conservation.

The WorldView-2 images were provided by Digital Globe, Intergraph Geospatial ERDAS IMAGINE 2012 international contest and European Space Imaging. The study was part of DELTA project of IMARES, component 3- monitoring (2011) and continued under funding by Netherlands Organization for Scientific Research NWO, through the National Programme Sea and Coastal Research - Changing Capacity ZKO program.