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Short Communication

Coastal Water Components Segmentation Techniques and Methodologies

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DESCRIPTION

Ecosystems in the coastal waters are quite active. The strong tidal currents in particular cause frequent changes in the water along the shallow, soft-bottomed shore of the North Sea. It is highly challenging to monitor these features, including suspended particulate matter and all of its components as well as phytoplankton. Ocean colour remote sensing is one technique for locating some of the key variables and generating high-resolution weekly or monthly maps of their distribution. The optically complex coastal waters, in contrast to the open ocean, provide a number of obstacles for optical remote sensing since they contain a variety of different classes of chemicals [1].

Techniques and methods

Two major approaches are required for remote sensing of ocean colour. It is necessary to first calculate the atmosphere because it typically accounts for more than 90% of the light at the top of the atmosphere, making this atmospheric adjustment step particularly crucial. The sunlight that is backscattered by water molecules and all other water components, including phytoplankton, is what is known as the radiance reflectance that exits the water [2].

The amounts of the chemicals in water must be calculated from the radiance reflectance spectrum that emerges from the water as the second stage, as well as the inherent optical qualities, such as the absorption and scattering coefficients. While some of the procedures developed for this goal are empirical, for coastal waters they are frequently based on radiative transfer models [3].

North sea phytoplankton seasonal changes

Ocean colour remote sensing is one application that looks at the horizontal phytoplankton dispersion patterns in the North Sea throughout the year. It might change as a result of climate change in the future, which could have significant effects on the North Sea ecology, particularly its fish populations. In the spring, when the water is nutrient-rich, light is the main factor that controls the development of phytoplankton growth [4].

There aren't enough days in winter, the sun raises low in the sky, and the majority of the North Sea has a well-mixed water column. Because it is present throughout the whole water column, even the deepest regions, a phytoplankton cell will not receive enough light for 24 hours to flourish. As the days get longer, shallow water is where phytoplankton starts to bloom since there is adequate light there every day, even in a water column that is well-mixed. Only when the water column has stratified due to a combination of calm, sunny weather and sufficient heating can growth start in the uppermost layers of deep seas. These conditions prevent the phytoplankton from descending into the lower, darker levels and allowing it to stay in the top mixed layer. When there is enough light, it starts to grow [5].

CONCLUSION

Around the middle of April, the deepest, northernmost North Sea typically begins its growing season. The growth phase stops or terminates when high winds break the stratification or when there are no more nutrients available. In addition, grazing by zooplankton, which emerges after phytoplankton, reduces the latter's biomass. There are two exceptions: the Skagerrak and the Norwegian Trench. Less salinized light water from the Balitc Sea may cause stratification in this area if it reaches the North Sea as an upper layer and flows counterclockwise down the Norwegian coast. The phytoplankton growing season starts much sooner because this upper layer has more illumination.

REFERENCES

1. Maure ER, Terauchi G, Ishizaka JC. Globally consistent assessment of coastal eutrophication. Nat Comm. 2021; 12 (1): 6142.
2. Mengel M, Winkelmann R. Future sea level rise constrained by observations and long-term commitment. Proc Natl Acad Sci U S A. 2016; 113 (10): 2597–2602.
3. Wiggin KJ, Holland EB. Validation and application of cost and time effective methods for the detection of 3–500 μm sized microplastics in the urban marine and estuarine environments surrounding Long Beach, California. Mar Pollut Bull. 2019 ;143: 152–162.

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4. Nagelkerken I.Ecological Connectivity among Tropical Coastal Ecosystems. Sprin Nether. 2009; 3(1): 401-421.

5. Nagelkerken I. The habitat function of mangroves for terrestrial and marine fauna: A review". Aquatic Botany. 2008; 89 (2): 155–185.