

Turbidity Sensors and the Optical Properties of Coastal Waters

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Different optical measurements are used to quantify turbidity in coastal waters including light attenuation, side scattering and back scattering. In addition to angular scattering the wavelengths used vary between these techniques. Given the multiplicity of techniques it is desirable to know whether there is an optical technique that is superior in prediction suspended particulate mass (SPM) in coastal waters.

In 2006, the Alliance of Coastal Technology (ACT) has conducted a test of existing technologies. The test included seven coastal sites where different commercial sensors, measuring different optical properties, were deployed. This data set is unique and ideal to answer the question posed above.

We compared the ability of different techniques in predicting total suspended matter (SPM) measured by ACT personnel. We find that the different optical techniques are similar in their ability to predict SPM, despite being theoretically as well as experimentally differently dependent on particle size, composition and shape. In addition, we find that multiple optical variables are better than a single optical variable as multivariate predictors of SPM.

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