

OCEAN OPTICS XXIV

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Wednesday, October 10

Oral Session 6

08:30–09:50

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09:10–09:30

SATELLITE OCEAN COLOUR BASED HARMFUL ALGAL BLOOM IDENTIFICATION FOR IMPROVED RISK ASSESSMENT AND MITIGATION

The aquaculture industry faces environmental threats from harmful algal blooms (HABs), which have the potential to cause devastating economic losses. Satellite earth observation offers a cost effective method for operational monitoring of HABs over vast areas. Whilst the Chl-a product, often used as a proxy for phytoplankton biomass, can be used to indicate high biomass blooms, there is a clear need for value-added products that not only alert on bloom presence, but also on the bloom type and persistence. The high biomass nature of the regional waters provide strong assemblage related spectral variability, which can be exploited with the spectral bands of OLCI and MERIS. This study demonstrates the identification of three different phytoplankton types relevant to the aquaculture industry of South Africa. Thresholds of known spectral reflectance features, including the Fluorescence Line Height (FLH), the Maximum Chlorophyll Index (MCI) and the reflectance trough depth at 510 nm, are used to identify blooms that pose a high hypoxia and/or toxicity risk. These techniques are applicable to both OLCI and MERIS reflectance data and are routinely used by the aquaculture industry in South Africa for timely risk assessment and mitigation. Using both MERIS and OLCI data we produce risk climatology maps which provide critical information on the site selection of industries sensitive to the presence of HABs, such as aquaculture farms and desalination plants.

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