

# Thinking out of the box: How two coastal events led to a new algorithm concept for global ocean biology

**Chuanmin Hu**

University of South Florida

## **Abstract**

Traditional ocean color algorithms to estimate water constituents from satellite measurements often take the form of ratios between several spectral bands, which often lead to image speckle noise and cross-sensor inconsistency. Despite the continuous progress in sensor calibration and algorithm development, these problems appear to be inherent with the atmospheric correction and bio-optical inversion algorithm design. Here, I show how two coastal events, namely macroalgae blooms in the Yellow Sea and oil spills in the northern Gulf of Mexico, led to a new algorithm concept to overcome such technical challenges. The algorithm concept appears to be applicable to chlorophyll concentration, phycocyanin concentration, particulate inorganic matter, particulate organic matter, and floating vegetation. These results prove that, once again, similar to other business, scientific research also requires thinking out of the box.