

Use of SeaWiFS, MODIS, and MERIS in developing water quality numeric criteria for Florida's coastal waters.

Blake A. Schaeffer<sup>1</sup> and James D. Hagy III

<sup>1</sup>US EPA National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, 1 Sabine Island Drive, Gulf Breeze, FL 32563, USA

Human activities on land often increase nutrient loads to coastal waters and may cause increased phytoplankton production, algal biomass, and eutrophication. The U. S. Environmental Protection Agency determined that numeric criteria were necessary to protect Florida's coastal waters from the impacts of anthropogenic nutrients. Coastal waters are defined here as marine waters up to 3 nautical miles from shore, excluding semi-enclosed waters generally defined as estuaries. Florida's coastal waters have not been monitored comprehensively via field sampling therefore traditional monitoring data are insufficient to support numeric criteria development. However, satellite remote sensing had the potential to provide more extensive data. Spatial and temporal measures of SeaWiFS, MODIS, and MERIS chlorophyll-*a* (Chl<sub>RS</sub>-*a*, mg m<sup>-3</sup>) were resolved across Florida's coastal waters between 1997 and 2010. These derived values provided a quantitative baseline that could be used to protect against long-term changes in chlorophyll-*a* resulting from anthropogenic nutrients. The objective of this study was to evaluate an approach for calculating numeric criteria for Florida's coastal waters in the absence of adequate field monitoring data.