Chlorophyll concentration- a great challenge but promising

Figure 11. The comparison of chlorophyll between in situ measurements and MODIS estimates using band ratio (CHL_OC3) and a semi-analytical method (Chl_GSM01), showing the band ratio and semi-analytical algorithms, respectively, tends overestimate and underestimate chlorophyll for the Bay.

Figure 12. (A) MODIS FLH (mW cm$^{-2}$); (B) OC3 chlorophyll (mg m$^{-3}$) images acquired on Oct. 22, 2003. An in situ transect line was overlaid onto both images. (C) In situ Chl, MODIS Chl and MODIS FLH x100 to facilitate comparison with MODIS Chl along the transect line in panel A and B; (D) Scatter plots of in situ Chl versus MODIS FLH and MODIS Chl obtained along the transect line. Solid line is the regression line between in situ Chl and MODIS FLH, showing FLH shows better correction than OC3.

Summary

MODIS and SeaWiFS reveal distinctive spatial and temporal variability of water turbidity, water clarity and color across the Bay because satellites provide more ‘realistic’ and consistent estimates due to the synoptic and frequent observations;

Satellite remote sensing of chlorophyll is still a challenge for Tampa Bay using absorption-based algorithms but MODIS fluorescence does show promises;

Satellite observations show that most of the developed algorithms are robust and can be used for operational monitoring of these two important water quality indices.

References


Acknowledgments

This work was funded and logistically supported primarily by the U.S. Geological Survey (USGS), USF-ERSI Corporate Graduate Assisting Program, and the National Aeronautics and Space Administration (NASA) SeaWiFS and MODIS data collection and processing were made possible by the efforts of the NASA GSFC SeaWiFS and MODIS Project and affiliated Science Teams respectively. The in situ turbidity and SDD were collected by EPCHC Tampa Bay water quality monitoring program and their willingness to share data is greatly appreciated.

Gulf of Mexico Alliance implementation workshop July 10-12 2007 Saint Petersburg, FL