Repair for VOCCO Coastal Products
Evaluation of the IDPS (VOCCO) ocean color products in Coastal regions

Robert Arnone¹, R. Vandermeulen¹, S. Ladner², G. Fargion ³, P. Martinolich⁴, Jen Bowers⁴
¹University of Southern Mississippi Department of Marine Science, ²Naval Research Laboratory Stennis Space Center, ³San Diego State University, ⁴QNA Corporation

Objectives:
- Define Limitations of the present IDPS VIIRS processing for ocean color in high scattering waters (VOCCO failures)
- Evaluate the impact of negative radiance in high scattering waters for VOCCO
- Demonstrate how VIIRS IDPS products can be improved
- Show need for a DR to be established for the NIR processing

Atmospheric correction:
- Correctly partitioning the contribution of various atmospheric components from the total radiance signal is necessary to retrieve confident ocean measurements (Lu):

\[ L_t(\lambda) = L_r(\lambda) + L_a(\lambda) + L_u(\lambda) \]

Black Water Assumption
\[ L_a(865) = L_t(865) - L_r(865) - L_u(865) \]

In high scattering water the Lu 865 > 0
- Black pixel assumption violations can be handled using an “iteration” or Coastal NIR processing procedure
- Uses the spectral water backscattering to derive the Lu(865)

Impact of “non-zero” nLw 865 on coastal products

Validation of NIR Coastal Products

Summary: It Works - Major Improvement

Black Water assumption and Coastal NIR Affects coastal and Shelf waters
a) Produces Negative or "NO" nLw retrievals
    Greater in 410, 443, 488
b) Produces reduced values in “certain areas”
c) Impacted the Aerosol (La) atmospheric correction removal
d) Impacts - Lower nLw (radiances) and Higher Chlorophyll values
e) Accounts for differences of VIIRS and MODIS products
f) Results in VIIRS not meeting Ocean requirements.