

# Evaluation of Commercial Satellite Observations for Coastal Ecosystem Science Studies

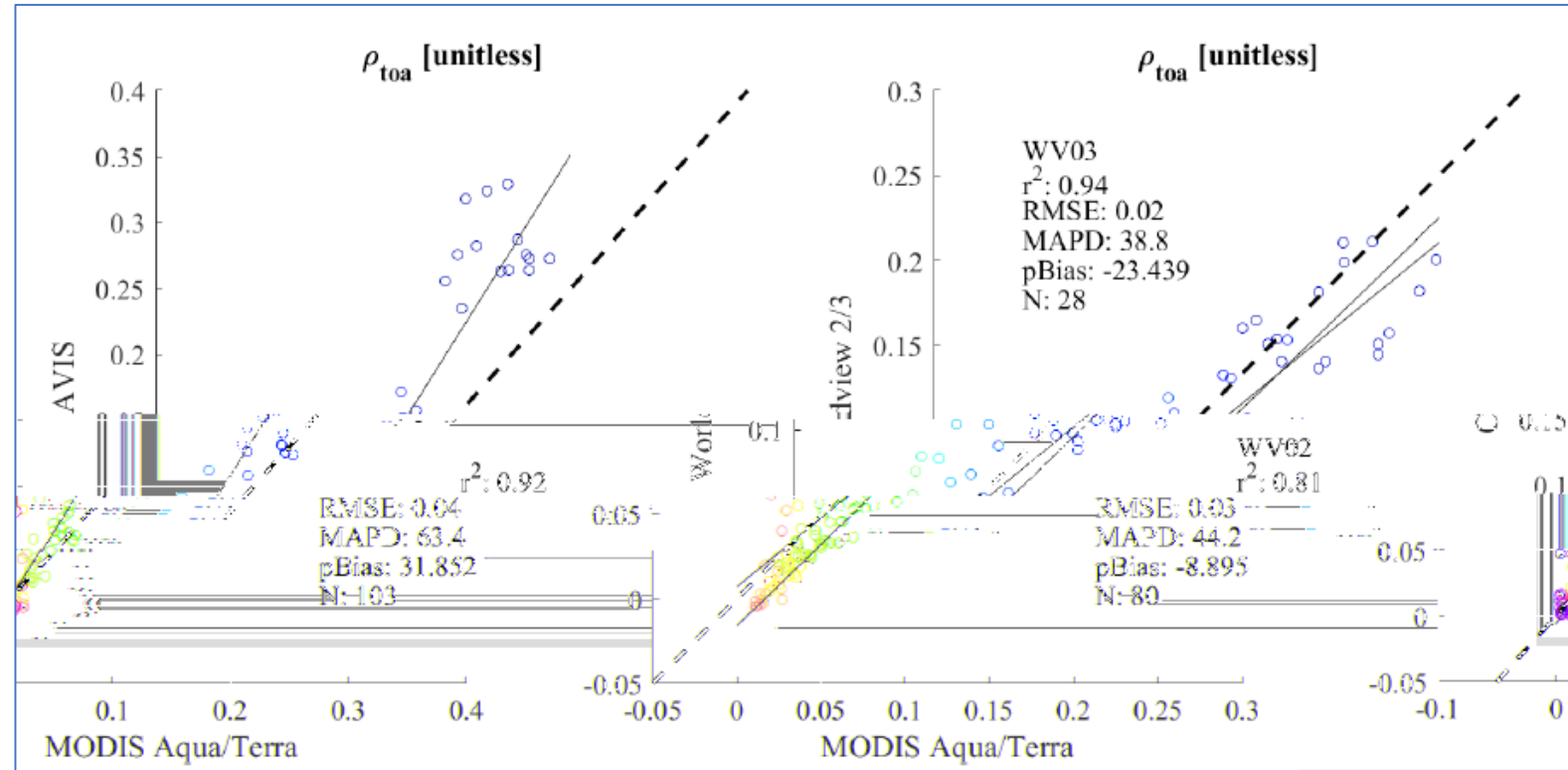
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**Purpose:** Monitor ocean color marine biogeochemical research

**Study Objective:** Evaluate the usefulness of commercial imagery for use in ocean color remote sensing against imagery acquired by the MODIS instrument aboard Aqua and Terra

**Imagery:** WorldView-2, WorldView-3 multispectral, and WorldView-3 CAVIS imagery

**Findings:** While the top of the atmosphere reflectance and radiance derived from commercial imagery showed good first-order agreement with MODIS imagery, additional effort will be required to establish its radiometric quality. Band-specific vicarious calibration factors will be required for sensors being evaluated. Development of a robust water-exiting spectral radiance and atmospheric correction for sensor will allow a direct comparison of sensor estimates with *in situ* measurements that are regularly recorded at ocean color research and calibration sites. Calibrated, validated estimates of ocean reflectance will allow development of algorithms capable of retrieving ocean constituents at finer spatial resolutions than previously possible.



Regression plots between MODIS and WorldView-2/3 Multispectral and WorldView CAVIS top-of-atmosphere reflectance at the MOBY calibration site in Hawaii. The colors represent the wavebands from blue to SWIR. Statistics include the adjusted  $r^2$  values, the root mean square error (RMSE), mean average percent difference (MAPD), and percent bias (pBias).