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Comparison of inherent optical properties as a surrogate for particulate matter concentration in coastal waters

Emmanuel Boss[1], Lisa Taylor[1], Sherryl Gilbert[2], Kjell Gundersen[3], Nathan Hawley[4], Carol Janzen[5], Tom Johengen[6], Heidi Purcell[7], Charles Robertson[8], Daniel W. Schar[9], G. Jason Smith[10], and Mario N. Tamburri[11]*

[1]School of Marine Sciences, University of Maine, Orono, ME, 04469
[2]College of Marine Science, University of South Florida, St. Petersburg, FL 33701
[3]Department of Marine Science, University of Southern Mississippi, Stennis Space Center, MS 39529
[4]National Oceanic and Atmospheric Administration, Great Lakes Environmental Research Laboratory, Ann Arbor, MI 48108
[5]Sea-Bird Electronics, Inc., Bellevue, WA 98005
[6]Cooperative Institute for Limnology and Ecosystems Research, University of Michigan, Ann Arbor, MI 48109
[7]Department of Naval Architecture and Marine Engineering, University of Michigan, Ann Arbor, MI 48109
[8]Skidaway Institute of Oceanography, Savannah, GA 31411
[9]Hawaii Institute of Marine Biology, University of Hawaii, Kaneohe, HI 96744
[10]Moss Landing Marine Laboratories, Moss Landing, CA 95039
[11]Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science, Solomons, MD 20688

Web Appendix I

Specific relationships between meter output and PM associated with each of the sensors participating in the ACT Technology Evaluation.

In Table A1, we provide the regressions we found between the different parameters obtained by the scattering instruments used and PM for all the data points for which both are available excluding data from HI. These data are intended to provide a conversion equation to users of these specific instruments when no biogeochemical data is available and should not be applied to other turbidity sensors. For all sensors, the correlation coefficient with these data was 0.95 or better, and the median relative error in PM prediction was 21% or better.

Table A1. Output of type-II regressions between PM and the measurements of the different scattering sensors. Note that the number of data points (n), locations sampled (M) and PM range were different between instruments (we did not use data from HI which were anomalous for all sensors). Values in brackets are one standard deviation of the slope and intercept.

Instrument (n = number of pairs, M = number of sites)	Units	Conversion to PM [mg L^{-1}]
AQUATEC 210TY (n = 49, M = 3, $0.5 \leq PM \leq 82.4$)	FTU	log (PM) = 0.80 (0.06) × log(NTU) + 1.04(0.2)
In-Situ Troll 9500 (n = 159, M = 6, $1.9 \leq PM \leq 82.4$)	FNU	log(PM) = 1.02(0.03) × log(FNU) + 0.17(0.09)
McVan Analite NEP395 (n = 112, M = 6, $0.43 \leq PM \leq 82.4$)	NTU	log(PM) = 0.99(0.03) × log(NTU) + 0.16(0.11)
WET Labs ECO-BB-SB (n = 177, M = 4, $1.2 \leq PM \leq 82.4$)	NTU	log(PM) = 0.96(0.03) × log(NTU) + 0.86(0.08)
YSI 6136 (n = 188, M = 6, $0.43 \leq PM \leq 82.4$)	NTU	log(PM) = 0.86(0.02) × log(NTU) + 0.95(0.07)
SeaTech Transmissometer (n = 237, M = 6, $0.37 \leq PM \leq 80.2$)	m^{-1}	log(PM) = 1.14(0.02) × log(m^{-1}) + 0.56(0.04)