Instrumentation class, SMS 598, Fall 2012
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Group IV, AC-9 lab:

In this lab you will hyperspectral transmission and attenuation using the ac-S.

Run the following samples through both a and c-sides of the AC-S (In sequence). Note the date and temperature in the filename.

Sample	Filename_a	Filename_c
DIW		
Filtered seawater		
Seawater		
Culture_1		
Culture_2		
Culture_3		

In Excel open the files and obtain a single median spectra for a and for c.

Obtain CDOM spectra by subtracting the DIW from the filtered seawater. How do the absorption and attenuation of CDOM compare?

Obtain particulate spectra by subtracting filtered sea water from the seawater and cultures samples.

Plot the beam attenuation as function of wavelength. How do their steepness compare? Are they consistent with the LISST wrt size?

Plot the raw absorptions as function of wavelength. Can you observe the pigments peaks? Are they consistent with literature/web values?

If time permit, Emmanuel will work with you on scattering correcting the absorptions collected with the ac-S. That will require interpolating both to a common wavelength, temperature correcting the spectra (see Sullivan et al., 2006, Slade et al., 2010) and assuming a wavelength in the NIR where scattering is nil.

References

Slade, W.H, E. Boss, G. Dall'Olmo, M.R. Langner, J. Loftin, M.J. Behrenfeld, C. Roesler, and T.K. Westberry, 2010. Underway and moored methods for improving accuray in measurement of spectral particulate absorption and attenuation. Journal of Atmospheric and Oceanic Technology, 27:10, 1733-1746.

Sullivan, J., M. Twardowski, J. R. V. Zaneveld, C. Moore, A. Barnard, P. Donaghay, and B. Rhoades, 2006: Hyperspectral temperature and salt dependencies of absorption by water and heavy water in the 400–750 nm spectral range. Appl. Opt., 45, 5294–5309.