Instrumentation class, SMS 598, Fall 2012
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Group III, LISST lab:

In this lab you will measure transmission and near forward scattering. However, we will mostly concern ourselves with calibrating the sensor and using it to obtain size information.

You will be using a LISST-B and a LISST-Floc (discontinued).
We will obtain 'ZSCAT's file, which are the calibration files for these meters.

1. Put DIW in the small cuvette. Let it calm down and make sure no bubbles are observed in the water. Cover the top to minimize stray light getting into the detector. Run the meter and see how the counts per detector change with time. If the changes are erratic do it again until stabilized. Save the file using an obvious name which includes the date.

2. Repeat this procedure with filtered sea water using the DIW water ZSCAT as a blank. How do they compare? Can you explain it to yourself/instructor?

3. Using the filtered sea water ZSCAT run the whole sea water sample, cultures, and an aggregate samples. Note dominant sizes of particles and compare to the microscopic readings from Lee's lab. See Karp-Boss et al., 2005, for other some culture data.

Table:1 Fill the table with data

Sample	Size	Filename
DIW		
Filtered seawater		
Seawater		
Culture_1		
Culture_2		
Culture_3		
Aggegates		
DIW+beads		

4. Clean the sensors.
Put DIW back in the sensors and do a 'post calibration', that is keep cleaning until you get a ZSCAT that is similar to that from the beginning of the lab. Put a few drops of calibration beads and observe the size based on the instrument. How well do they agree?

5. Advance topic (if measurements are available): order your cultures by observed size. Is it consistent with the steepness of the spectra of beam attenuation measured by the AC-S?

References

Karp-Boss, Lee, L. Azevedo, and E. Boss, 2007. LISST-100 measurements of phytoplankton size distribution: evaluation of the effects of cell shape. Limnol. Oceanogr. Methods 5, 2007, pp. 396-406.