OASIS 2006 meeting, February 3rd, WHOI

MISC lab report

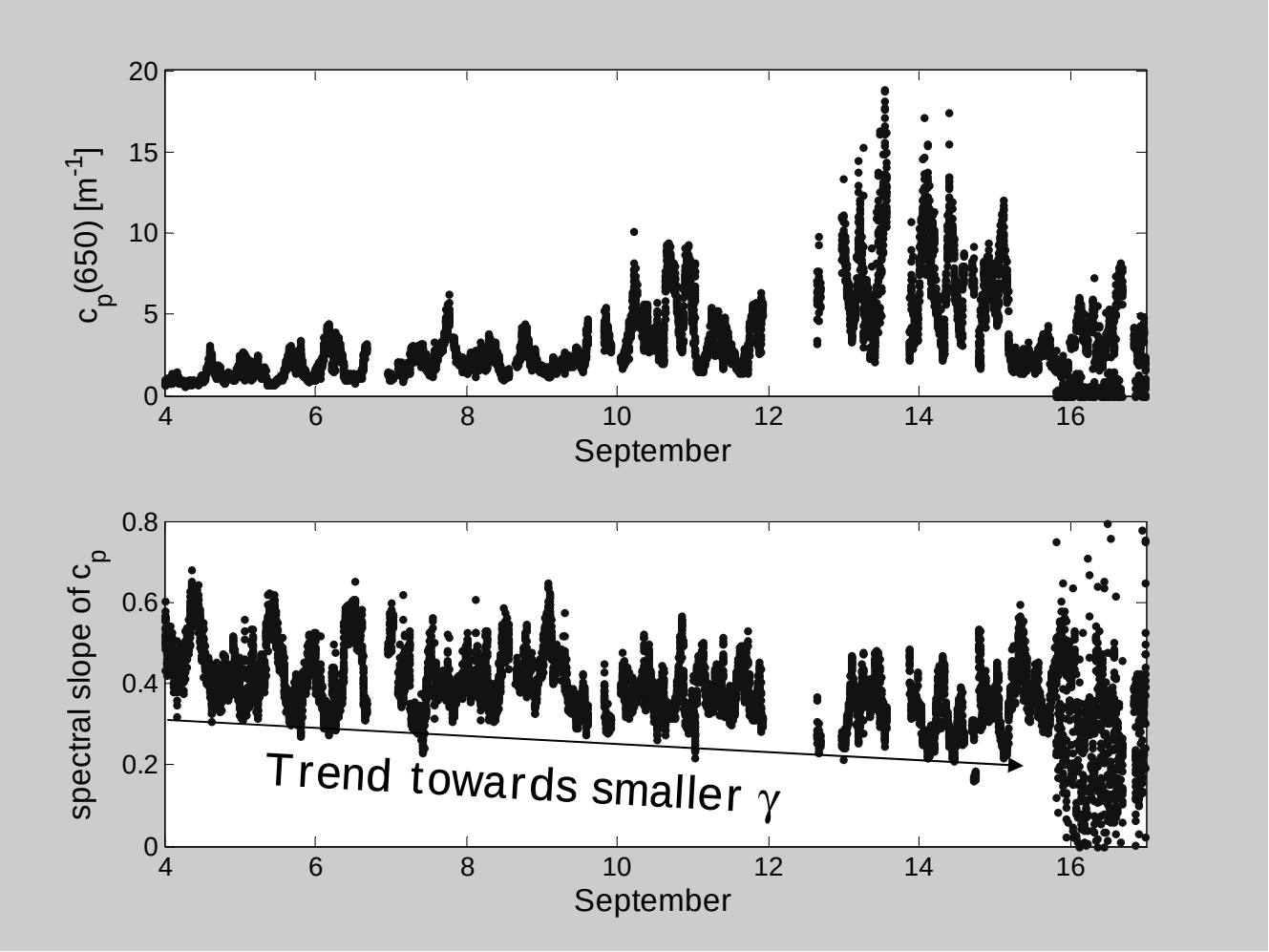
Processed data (available on our FTP site) includes 12days of 1min averages of:

- C-side ac-9.
- LISST-FLOC.
- LISST-B.
- BBRT (β(117))
- Nortek ADV (3D velocity. Acoustic backscattering).

Signs of biofouling are eviedent in LISST's data towards the end of the deployment.

Ac-9 data:

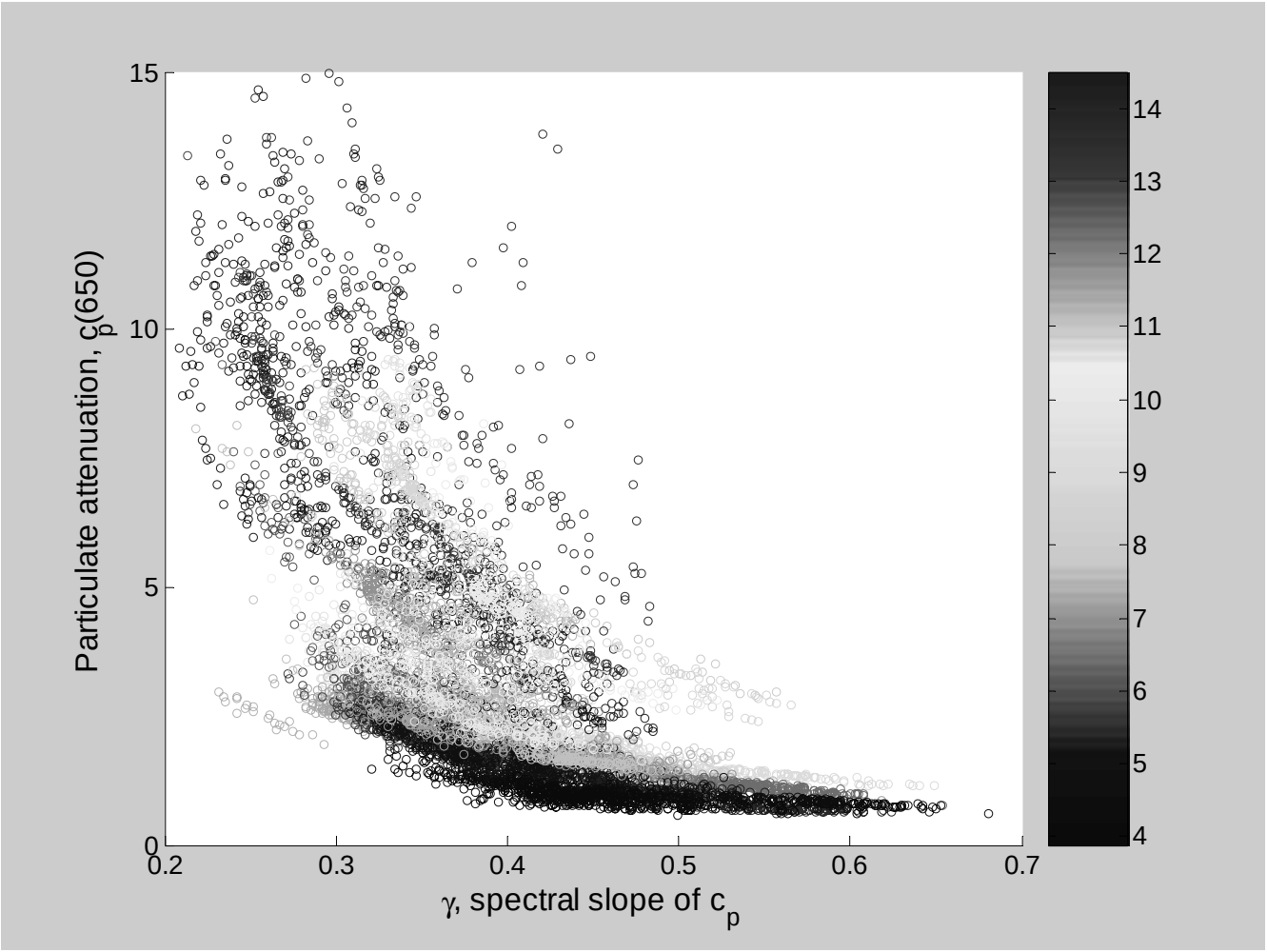
C_p:



Suggests filtration system worked well for 12 days.
Large and rapid changes in beam attenuation.

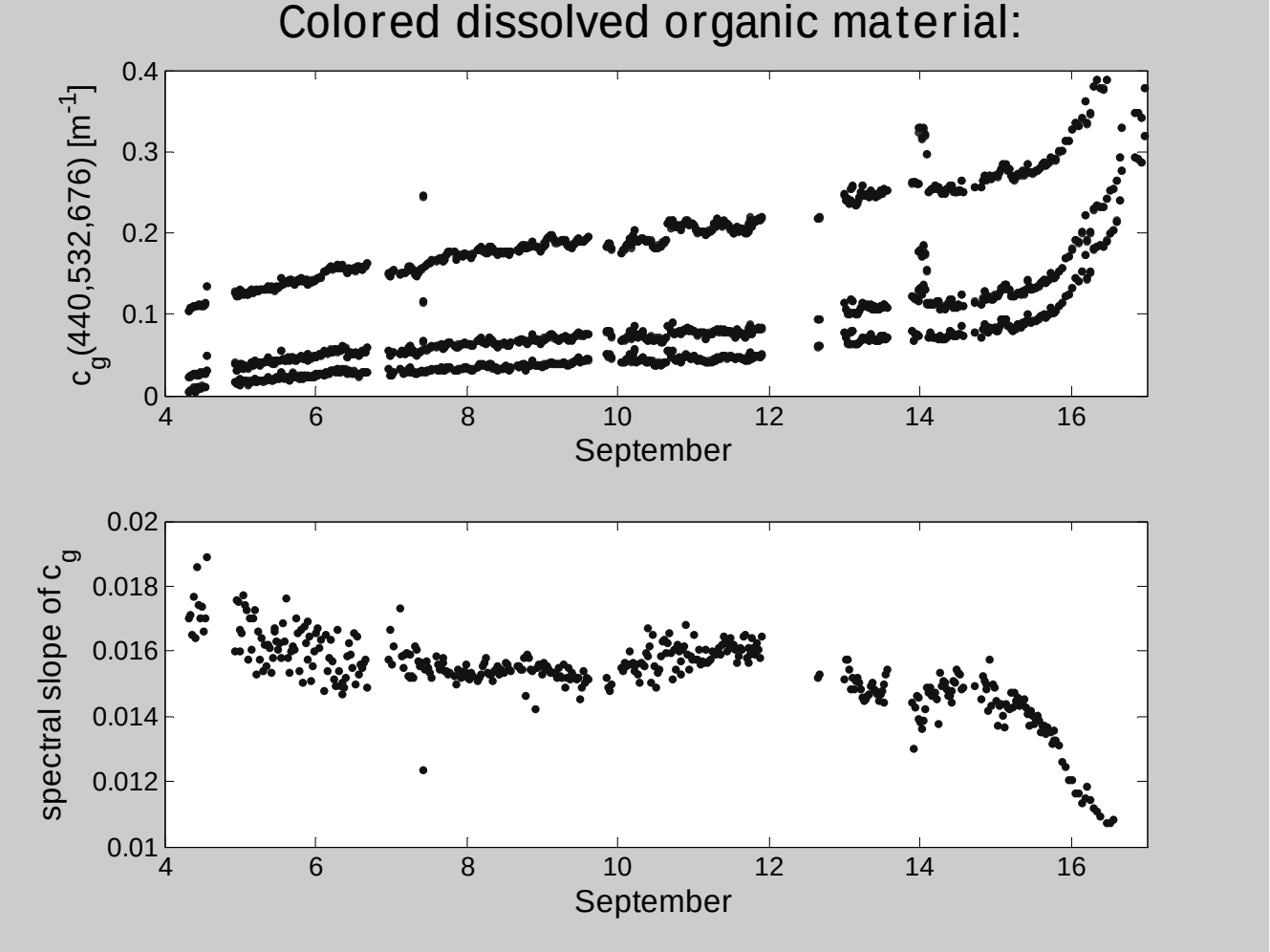
Ac-9 data:

C_p:



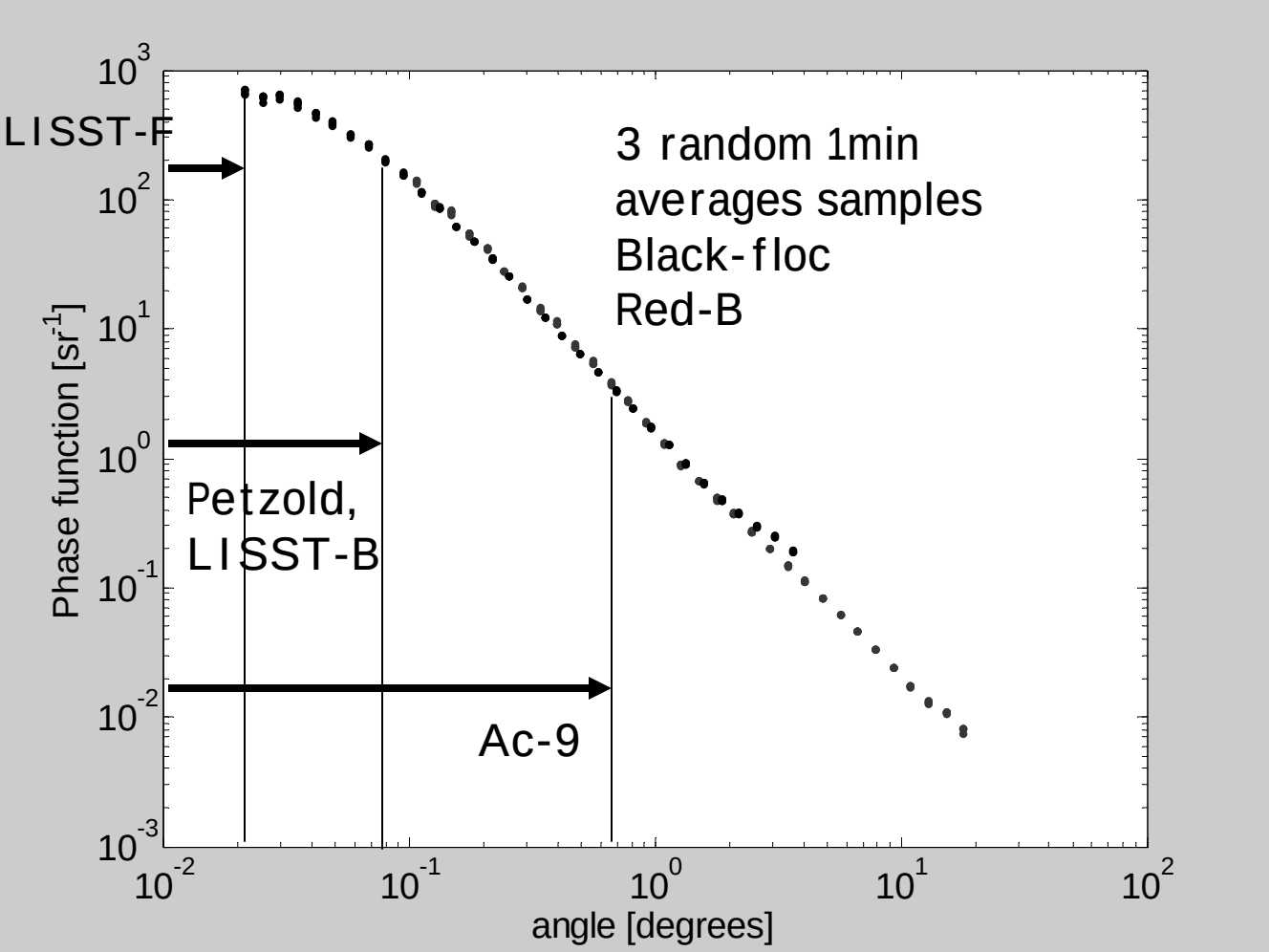
Change of relationship in time (disaggregation ?).

Ac-9 data:



- Suggests filtration system worked well for 12 days.
- 676nm absorption increases as function of time (Organic coating of windows/ instrumental drift). Removal of red signal removes much of the increase.
- Influence of particulate resuspension events is *not* observed.

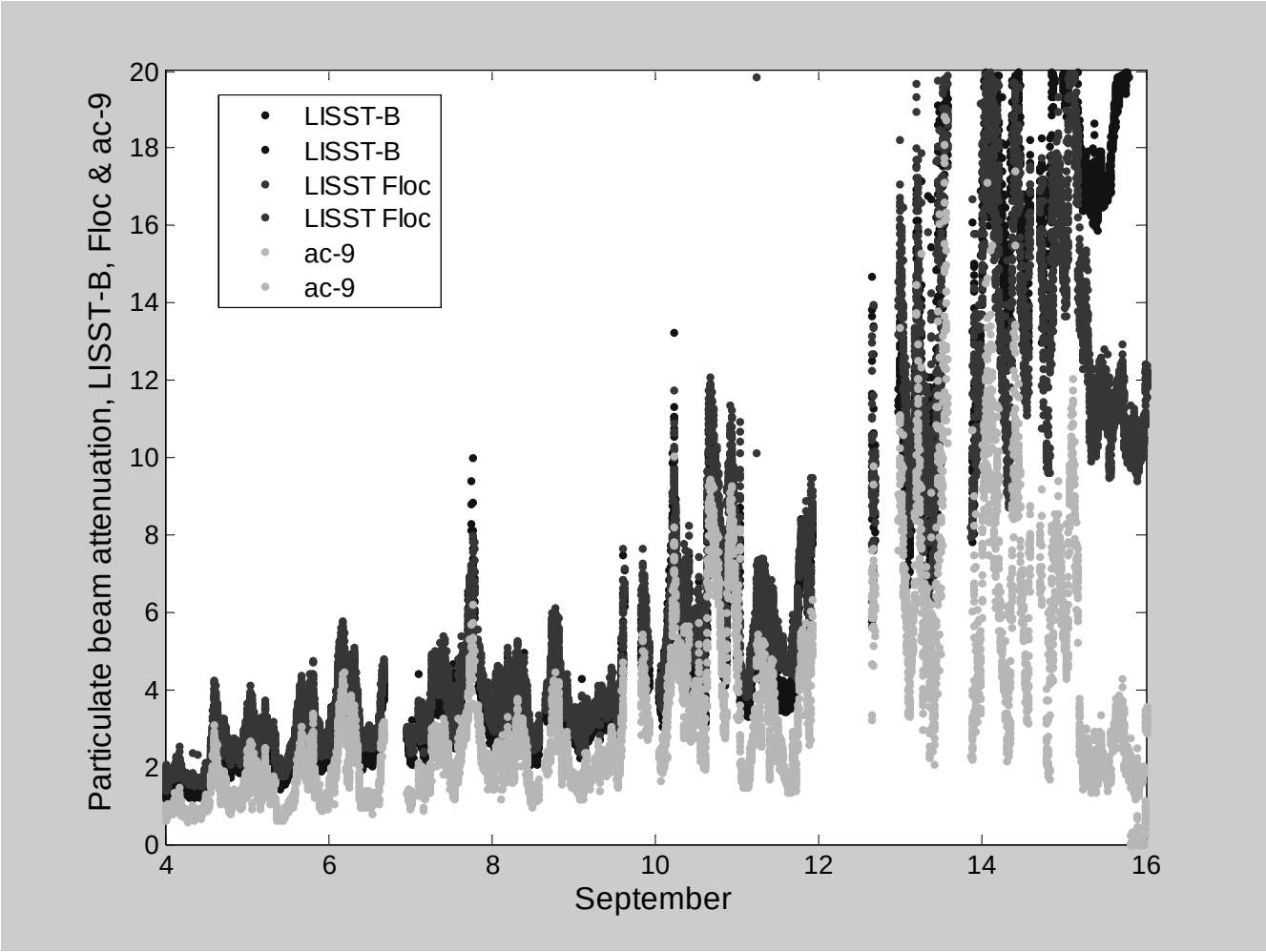
Combine LISST-B and Floc data:



Matching LISST-FLOC and LISST-B to obtain the phase function (and ulitimately the VSF) in the near forward.

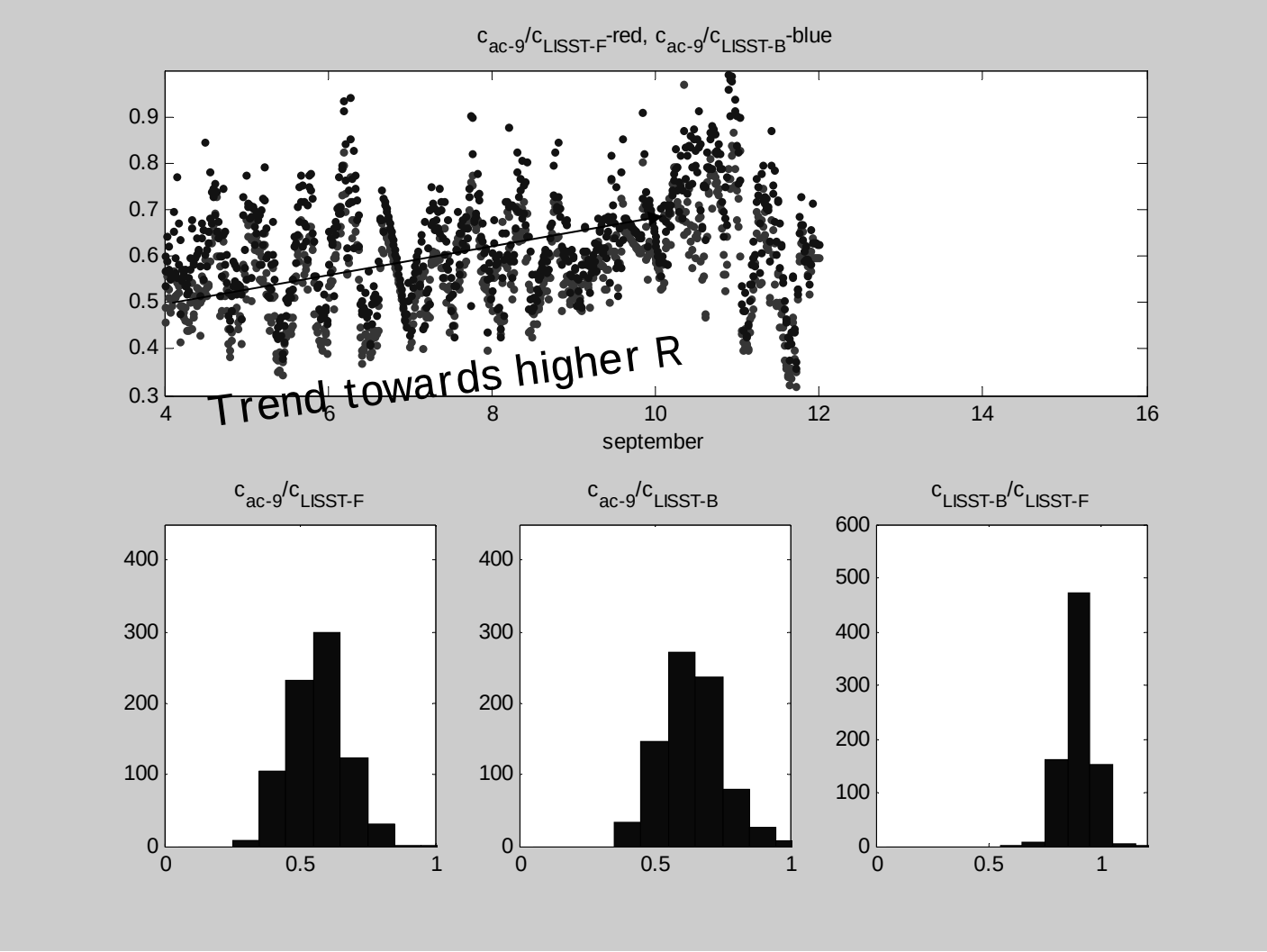
How do the beam attenuation's compare?

LISST-B&FLOC data:



Order of beam-c is consistent with acceptance angles (0.02°, 0.1°, 0.7°).
High frequency changes in beam attenuation (changes 2-7 fold in < 6 hrs).
Drift in LISST relative to ac-9 (t>12) and relative to each other (t>15).

Ac-9, LISST-B&FLOC data:



- Ratio to $c_{LISST\text{-}B}$ varies from 0.35 to 1.0 (R_{median}=0.63, to LISST-F R_{median}=0.57).
- Petzold: between 15→35% of scattering is between 0.1→0.8°.
- Diver visibility ~ 4/c. Which c?

Interesting puzzles:

Size distribution changes as turbidity increase are towards:

- Larger particles based on c_p spectrum inversion.
- Smaller particles, based on LISST inversion & ratio of c_{ac9}/c_{LISST}

Possible explanation:
Resuspended single-grain particles are larger as bottom stress increases. Macro floc break at higher shears becoming smaller.

Particlate properties cycle is ~12hr. If shear due to tidal current dominated the stress cycle would be ~6hr.

Possible explanation: cycle is driven by interaction of directional waves with the tides.

Still to process:

ABS (AQUAScat)
Sontek ADV
BB-9
A-side ac9

Issues to discuss:

- Calibration of acoustics devices.
- Depth resolution of optical properties in future deployments.