Start by creating flow charts

Need to start with processing steps, cal, extraol,

Hyperspectral and multi-spec seen as same thing one with more channels, allow processor to handle any number of bands

There are difference between the way the two types data is caled and used.
Same number of boxes to check just some of them are not checked for multi-spec data

Dick - Dicks data processing steps

Data is already has and average of 10 samples that are saved as raw data
step 1 - ingest with cal files (2 - 4 different instruments, w/ diff waves)
step 1 A - need to add quality check box for tilt etc
step 2 - Calibrate (comes out at 3 nm waves)
step 3 - wavelength interp to new waves (interp to fixed so can compare the two diff instrument at different wavelengths)
step 4 - spectral smooth (remove noise by smoothing, 21 nm band) - may not be required
step 5 - Time average (want 1 AOP measurement for 1 hr deployment) or time series plot
step 6 - E, L
step 7 - derived AOP (Lw, Es (predicted,calced), Kd, Klu,U, Rsr, nLw)

If time interval of data collect is like and hour then you need to check for stationarity

Problem is getting PI's to use the processor if it does not do the include the stuff needed by his program. In the lessons on hearding cats, the scientists will there needs met to get them to use the processor. Dick will need step 4 and 5 available (even though not needed for AOP's) so he will use the processor, other wise why would be go to the trouble, if he has to process all his data again for his project.

There are two types of Es (measured and predicted/calced)

Quality checking and graphical display need to be part steps in the processor, manual section of data

Need to specify temporal scales, for cal val exercise.

David - Steps - measurements every 15 minutes, 1 min of acquisition at 6 hz (all stored), has shuttered darks with every measurement

+4m - Es
4m - Ed, E,Lu
5 meter interval
9m - ...

Take the median of the data (works very well), produces 1 Ed, Lu...
Ed and Lu to 0-
Ku, Kl

Lw = Lu (1-l/n^2)...

One set to SeaBASS is the Ed (0-) = Es * 0.97 * Ed (9m)

Then derive R - Eu/Ed (0-), all 7 wavelengths OCI, OCR 200

Heading to hyperspectral, will keep both for comparison (hyperspectral is only Es and Lu so far).

Introduced a Es correction, 85% of time tilt is less than 10deg and 50% of the time the tilt is less than 5 deg. Es measurements corrected match very well. No tilt cor for in-water data.

Does integration time vary? David thinks so.

Need quality check for tilt etc.

Correction of fix depth Lu when shallowest depth is 1-2 meter, to get correct Lw when extrapolating to surface.

Were do every one immersion coeff, is in cal file info.

PHOTO taken

Key features

1 - SeaBASS wants raw and cal files to be able to reprocess Lu and Es
2 - SeaBASS wants AOPs calced using a standard format
3 - Stuff which needs to be included to make it useful to the scientist

MOBY (Steph)
the big difference for us is the thermal and stray light is applied then the system is calibrated. Described the measurement sequence. Correlations are affecting the data. MOBY will input Lu's etc not level 0. So a needed function would be to allow include of converted Lu data with all docmentation and processing info, cal files too just incase.

General processor

1- Ingest
2 - Calibration / Correction (tilt, time)
3 - Quality checks and graphs
4 - Wavelength cal (needed when instr with diff wavelengths are used)
5 - Needed for science - spectral smoothing
6 - Needed for science - time averaging
7 - Measured Lu, Es MOBY ingest

8 - Derived AOP

Performance Matrix and language

Better job of uncertainies are needed but are very hard

Long term measurement uncertainies and characterization uncertainies

Changes in new buoys

Bubble affects in surface arms, bubble will see more light near the surface with bubbles