**Notes on Matlab processing of WETLabs ECO FLNTU units** (chlorophyll fluorescence & turbidity) deployed in Long Bay in winter 2012.

Deployments:

LB1 -- nominally 5, 15, 30 m depth on taut-line mooring and frame (unit s/n 735, 736, 738);

LB2 -- bottom on ADCP frame (s/n 739);

LB3 -- bottom on outside of base portion of the large TRBM ADCP frame (s/n 740).

Data was imported from the tab-delimited \*.txt files generated by Charles Robertson. These had been averaged for LB1 and LB2 (avg and sd for 3 x 1 sec samples at 6 min intervals). Due to the length of the deployment at LB3 and available memory, the stored data was single 1 sec samples at 6 min intervals. Internally recorded time-stamps were in GMT and converted to Excel decimal format in \*.txt files.

Chlorophyll calibrations were checked pre- and post-deployment by suspending all units for 5+ sample cycles in the water column concurrent with the ship’s CTD/carousel and collecting water samples at that depth for lab chlorophyll analysis. The factory calibration values agreed well between units and with the samples, so the factory calibrations (on “characterization sheets” for each unit) were applied here.

Based on prior experience with the ECO FLNTU units, turbidity calculated using the factory values showed good agreement between units, and generally little drift over deployments (some apparent baseline shifts in a few cases, especially for units that had been in the field for a year or more). This was checked pre- and post-deployment (except for unit 739 post-deployment which appeared to have a failure of the shutter mechanism).

The decimal Excel date/time in the \*.txt file was converted to Matlab datenum:

mdate = datenum(’30-Dec-1899’) + Excel\_datetime

The \*.mat files include as data structures:

“Platform” information – location, name, depth, record start/end, additional notes;

“Config” information – instrument serial number, sample averaging info, cal info for chl and turbidity, variable units.

Initial Level 1 data files:

LB1\_005m\_eco\_735\_cal.mat

LB1\_015m\_eco\_736\_cal.mat

LB1\_030m\_eco\_738\_cal.mat

LB2\_075m\_eco\_739\_cal\_all.mat -- includes the entire record

LB2\_075m\_eco\_739\_cal\_trimmed.mat --data “trimmed” (not included) after shutter failure

LB3\_171m\_eco\_740\_cal.mat

**NOTE on LB2 (unit 739)** – At 02-14-2012 03:16 (data record 6049) there was a distinct positive shift in the apparent baseline for turbidity (NTU) and distinct negative shift in the baseline for chlorophyll. The shutter may have failed to open fully and/or an electronics issue. We consider the data to be compromised after this point, although a baseline correction might be attempted for turbidity. The chlorophyll record appeared to show only the higher signal samples (shifted substantially lower).