**L0 to L1 BOEM Processing Instructions**

MATLAB

1. After running the “\_load.m” functions for the instruments contained on each crate, confirm that each of the instrument’s .mat files has been created and saved to the L0processing folder.
2. The function L1\_BOEMprocessing.m inputs the deploypath from the previous load functions, deploydepth, and surfacebin. The outputs of the function are structures containing the L1 data for each of the instruments (Ex: [ADCP, RBRtri, SBE37].
   1. The function removes out of water data for the RDI, SBE37, & RBR Tridente.
   2. It specifically removes data above the water surface for the RDI by looking at the changes in echo intensities per current ensemble.
   3. The RBR Tridente and SeaBird37’s collected data is interpolated to the RDI’s current measurements to have an average measurement every 5 minutes.
   4. The RDI’s waves and spectrum data use the Hs measurements and the Vspec files to meet certain parameters to conclude if its sampling is credible.
3. Open Matlab and create or continue working on a .m file for the specified BOEM Test Deployment #. Save it to the BOEMTest\Crate# deployment folder.
4. The deployment depth of the lander is necessary for removing data while the lander is physically out of the water and being lowered down to the seabed. The variable *deploydepth* in meters is defined by the depth at which the lander is deployed minus a meter to account for tidal fluctuations.
5. The RDI’s echo intensity is the measurement of the frequency’s backscatter. The echo intensity is > 90 at the ocean floor and near the surface due to increased turbulence and turbidity. Above the sea surface, the echo intensity is normally < 90. The *surfacebin* variable is the third input to the function. It defines the bin # where the echo intensities are > 90 at the general sea surface. The bin # is calculated by dividing the *deploydepth* by the bin size (EX: 0.5 m).The numeric bin # of this variable is an important parameter for removing data above the sea surface.
6. Once the input variables have been computed, the L1\_BOEMprocessing. function can be executed in the current .m file (ex found in FuncTestBOEM.m). It will save a .mat file to the L1processing folder in the BOEMTest\Crate# folder.
7. Next, run the function plot\_L1\_QC.m with the input of deploypath and an output of L1Plots, which is the .mat filename where the figures are saved. This function serves to plot the L1 processed data from L1\_BOEMprocessing.m. The figures are saved to the L1processing folder.