

RDI WAVES - How Do I?

1. How do I measure very small waves?

Very small waves have very small orbital velocities and require a very quiet measurement. The best instrument for small waves is the 1200 kHz in shallower water. Choose a slightly larger bin size even as much as a meter. If the resulting velocity spectra do not match the pressure derived spectra very well at long wavelengths it may be beneficial to use the small wave screening frequency. This allows the pressure sensor to aid the velocity spectrum calculation for very long, very small waves. After opening a setup for playback or real-time select the advanced button and go to the Expert2 tab. The Small wave screening frequency can be set here. All frequencies lower than the chosen frequency will be aided.

2. How do I measure high frequency waves in deeper water?

In deeper water the surface track is more reliable because the beam footprint on the surface is larger. Choosing a medium bin size will optimize for the surface track. For example a 600 kHz system deployed in 40 meters of water depth using 0.75 meter bins will do an exceptional job of surface tracking out to 0.8Hz.

3. How do I measure very large waves?

Use the default setup then make sure that enough bins are being collected (WN command) to profile 3 meters past the surface even when a large wave passes. High tides should be considered as well.

4. How do I collect continuous waves in real-time?

Use the Auto Setup wizard in WavesMon to create a real-time setup that is sampling waves continuously (collect 20 minute wave bursts every 20 minutes). This will default to packets mode of data collection. If you wish to have updates more often than every 20 minutes you can setup as follows. Create a real-time setup using the Auto Setup wizard as before. Then click the Advanced button. Select the input tab and un-check the Packets mode of data collection (**warning** this will dramatically increase the amount of data collected). Then select the Processing tab and change the time between wave bursts to 2 minutes. This will allow you to process and output the most recent 20 minutes of data every 2 minutes.

5. How do I export screen images in real-time?

Configure your real-time or playback setup as desired, then select the Advanced button and go to the Expert2 tab. Select the Output Images check box. This will write the current profile view (left side of the screen) and the waves view (right side of the screen) to PNG format image files. These files have a filename that includes the date-time stamp for the images. The *.png files are compatible with browsers, and Windows software (Word, PowerPoint etc). They have good resolution and are relatively small in memory size.

6. How do I save text files.

The easiest way to save text files is to view the *.wvs file (produced by WavesMon) in WavesView. Right click the plot that you would like to save and choose save text file. To save all of the processed data to text files in batch mode use WavesMon software. Open

WavesMon and select a setup file. Then click configure-playback/real-time and Advanced. Select the Output tab and choose the output text files check box. The column of check boxes labeled save data types dictates what data will be saved to text files. A text file will be saved for each data type and each burst of waves data. The file names will have the date time stamp in them. Click OK then GO to begin processing.

7. How do I correct waves for the effects of currents?

Open a setup file, Select Advanced and choose the Expert2 tab.

Select the correct for currents button then click OK. As a rule of thumb, one should correct for currents if the currents are in excess of 0.7 m/s. If the currents are excessive you may need to set the upper-cutoff frequency to a slightly (more conservative) smaller value (see the Processing tab). How do you know if you have significant currents? After processing your data the first time. Look at the time-series of current magnitude and direction in WavesView. To do this, right-click the top time-series view and select the currents magnitude and direction time-series.

8. How do I check for data quality.

Look at the processed data(*.wvs file) in WavesView. Observe how well the three different wave height spectra match. If the surface track spectrum seems quiet and reasonable it can be used as a reference. If the velocity and the pressure spectra are offset, even at lower frequencies, then the mean water depth may be in error or the altitude (instrument height above the bottom) may be in error. See the Processing tab for corrections of the depth measurement. If the velocity and pressure derived spectra do not agree at very low frequencies (especially if the data is noisy) see 1 above.