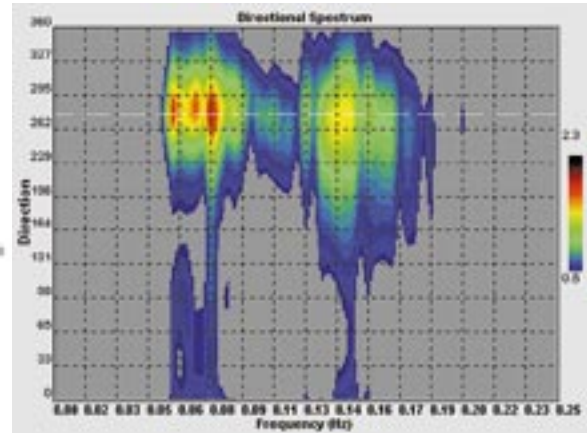
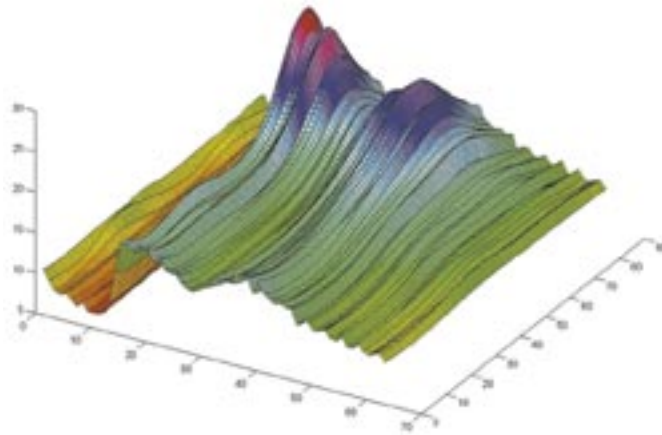
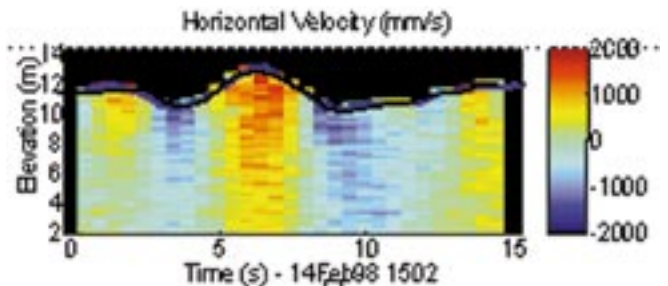
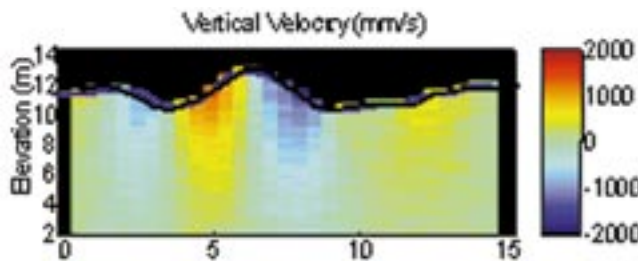


# ADCP Directional Wave Gauge

Introducing a superior approach for measuring directional spectra of surface waves...without buying a new instrument!



ADCP wave directional spectrum isolates waves arriving from different directions.



Velocity data from a bottom mounted ADCP can be used to directly measure the orbital velocities in a large wave crest. Here a time series of ADCP velocity data is phase shifted to reveal the orbital velocities in a large wave.

## Coastal Protection • Environmental Monitoring • Off-Shore Structures • Port Design and Operations

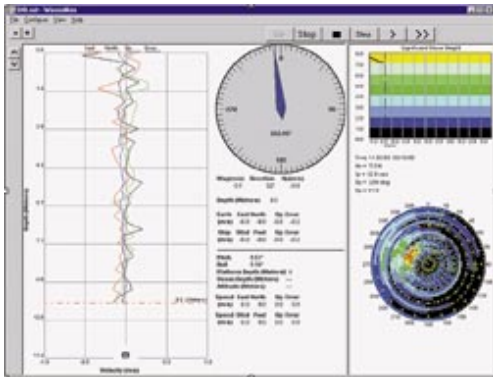
- ADCP-based wave gage
- Avoids limitations of traditional wave gauges and cost of "one-off" wave arrays
- Measure short period waves from greater depth
- Allows greater operating versatility: 3—60m
- Safer bottom-mounted deployments—protection from weather and theft
- Superior data quality: avoids mooring motion and improved sampling
- Cutting edge signal processing technique (Maximum Likelihood Method; patent pending)
- Three independent calculations of wave spectra using orbital velocity, surface detection, and pressure data
- Remote sampling allows measurements through the water column
- Convenient integrated package for measuring both waves and currents
- Saves money—one purchase buys two instruments
- Simplified deployments save time, money, and frustration
- Windows-based software is quick to learn and easy to use
- Effective and productive data analysis—immediate access to data series and processed results
- Publish impressive data displays
- Upgrade package for existing ADCPs



# “Waves Monitor” software

Set up bottom mounted instrument to record velocity and pressure data, and perform real time processing of directional wave information.

- Set up instrument to sample “bursts” of data
- Collect real time water surface time series and velocity profiles
- Calculates Hs, Tp, Dir, Directional Wave Spectra for each burst
- Real time display of directional wave data and average current profile
- Play back processing
- ASCII or binary processed parameter and raw data output to hard drive or communication port
- Wide range of configurations



Current profiles show an over all view of the water column. The dial shows the magnitude and direction of the current at a selected depth, in an easy to read form. A polar plot of wave directional spectrum shows wave direction and period, and a time history of the significant wave height allows trends to be observed.

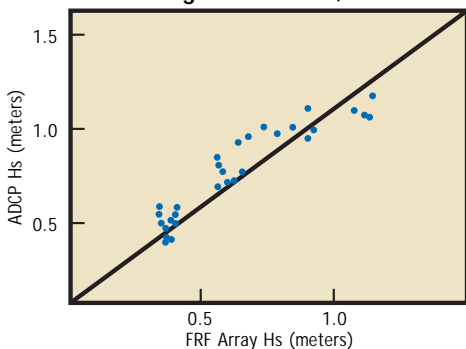
## Data Collection Specifications

- 1200 kHz or 600 kHz Workhorse or Broadband instrument with pressure sensor
- 2 Hz sampling rate
- Bottom mounted, upward facing
- Real time telemetry (self contained deployments soon)
- User defined burst duration

## Data Processing Specifications

- User defined FFT processing parameters
- Accurate spectral densities to 0.5 Hz
- Water Surface Accuracy =  $f(\text{vel. std.}, \text{depth}, \#\text{bins})$
- Wave Height Accuracy =  $f(\text{vel. std.}, \text{depth}, \#\text{bins}, \text{bin size}, \#\text{freq. bands}, \text{sample rate})$

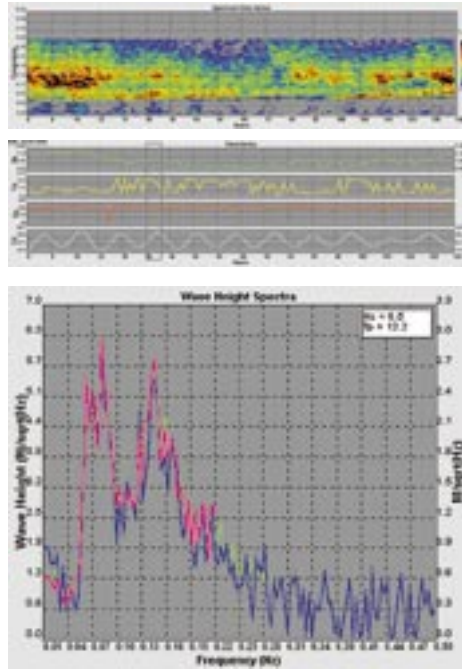
ADCP Wave Heights vs. Duck, NC Pressure Array



# “Waves View” software

Post Process data files developed by Waves Monitor. Graphically presents a variety of parameters for quick inclusion into data summary reports.

- Zoom in to a specific event
- Interpolate, and “moving average” spectral data
- Animate evolution of spectral data
- Output \*.bmp or Windows MetaFile graphic files
- Output text files suitable for input into Matlab, Excel, Qpro, etc.

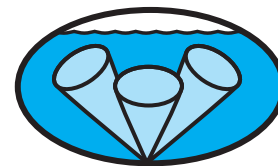


Time series of significant wave height, peak period, peak direction, tides, and height spectra, are easily smoothed, averaged or ported to other analysis tools. Large scale features and interesting events can easily be viewed and zoomed with waves view.

## Performance for Typical Deployment

Specification is valid for the following typical setup: Bottom mounted, upward facing 1200 kHz Workhorse in 12 meters of water depth, collecting .25 meter bins, using profiling mode 1. The unit samples at a 2 Hz sample rate for 17 minutes.

Frequency Resolution	0.008 Hz
Maximum measurable wave frequency (velocity spectra)	0.34 Hz
Maximum measurable wave frequency (surface echo spectra)	0.5 Hz
Maximum measurable wave frequency (pressure spectra)	0.2 Hz



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