



# Instrumentation

The HWRL has a large inventory of conventional and state-of-the art instrumentation to measure free surface, velocity, pressure, stress, turbidity, and depth. Data can be made available in near-real time via the web.

## Free Surface

- Surface-piercing resistance-type paired-wire wave gages
  - 7 8ch signal conditioners (ImTech)
  - 6 self-calibrating wave gage mounts for LWF
  - 8 self-calibrating wave gage mounts for DWB
  - 13 fixed wave gage mounts for LWF
  - 19 fixed wave gage mounts for TWB
  - 18 cantilever gage mounts
  - 26 runup gage mounts
- 9 Acoustic depth gages (0.2-2m)

## Velocity

- 17 3-D acoustic-Doppler velocimeter (Nortek Vectrino)
- 4 2-D acoustic-Doppler velocimeter probe heads
- 3D Stereo Particle Image Velocimeter system (LaVision)

## Pressure/Strain

- 15 pore pressure transducer, 5 psig (Druck PDCR81)
- 15 pressure transducers, 15 psig (Druck PDCR830)
- 4 10ch, 1 4ch signal conditioners (Vishay 2100)
- 4 50Kip, 3 20Kip pancake load cell (DeltaMetrics)
- 2 10Kip, 6 2Kip rod end load cell (DeltaMetrics)

## Turbidity

- 16 optical backscatter sensor (D&A Instr., OBS-3)

## Bathymetry

- 2 32 component ultrasonic ranging system (SeaTek)
- 4 laser range finder 0.2-200 m (Dimetix DLS-A30)
- LIDAR survey through subcontract arrangement

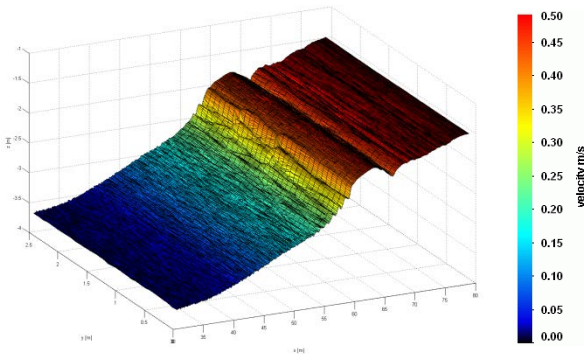


## Data Acquisition System

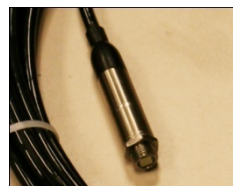
- 3 modular PXI architecture DAQ systems, each with
  - Built-in signal conditioning and anti-aliasing
  - 64 channel, 16-bit analog acquisition
  - Digital pulse generation, external device synchronization
  - Up to 16 channel RS-232 / serial communication
  - DAQs can be synched to provide 192 analog 48 digital ch
- 2 additional modular PXI architecture DAQ system with
  - Up to 16 channel RS-232 / serial communication

## Video

- PhaseSpace Motion Capture system (8 cameras)
- 6 PTZ HD 1080p cameras
- 2 submersible HD 720p underwater cameras and lights
- 6 PIX SSD-based HD video recording systems
- 6 PTZ web cameras (Axis)
- Waterproof (GoPro) and handheld (Sony) HD cameras
- ARRI stage lights at up to 2000W power



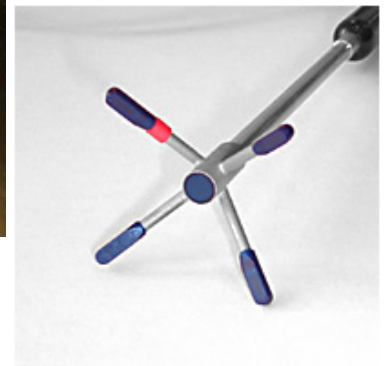
Acoustic profiler for sediment transport



Pressure Druck PDCR830



DeltaMetrics Load Cell



ADV 3D probehead