



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

- Up to 15 resistance-type wire wave gages per deployment
- 3 Acoustic depth gages (Banner Engineering, Corp) 0.2-5m
- 8 Acoustic depth gages (Senix Corp) 0.2-2m

Velocity

- 12 3-D acoustic-Doppler velocims. (Norteck Vectrino)
- 4 2-D acoustic-Doppler velocimeter probe heads
- Particle Image Velocimeter subsystem (LaVision)

Pressure/Strain

- 15 miniature pore pressure transducers (Druck PDCR81)
- 30 pressure transducers, 0-15 psig (FPG XP1063)
- 5 pressure transducers, piezo 0-8.3 psig (PCB,W106B)
- 1 Depth transducer, strain gage 0.10psig (Druck PDCR1830)
- 5-10ch 1-4ch strain gage conditioner (Vishay 2100)
- 4-50Kip, 4-20Kip strain gage pancake load cell (DeltaMetrics)
- 2-10Kip , 6-2Kip strain gage rod end load cell (DeltaMetrics)

Turbidity

- 4 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



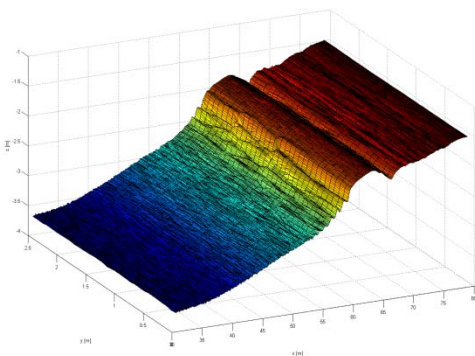
Data Acquisition System

3 Modular PXI architecture DAQ systems, each with

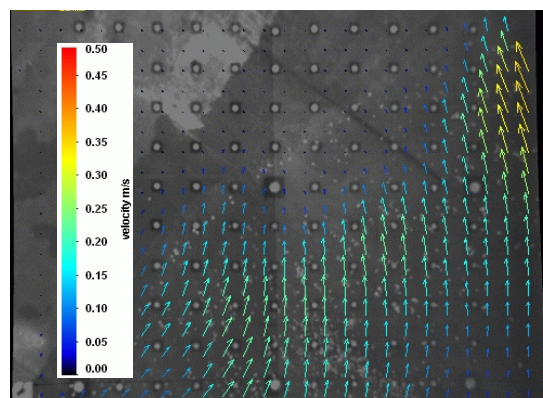
- Built-in signal conditioning and anti-aliasing
- 64 channel, 16-bit analog acquisition
- Digital pulse generation, external device synchronization
- 16 channel RS-232 / serial data recording
- DAQs can be synched to provide 192 analog 48digital ch

Video

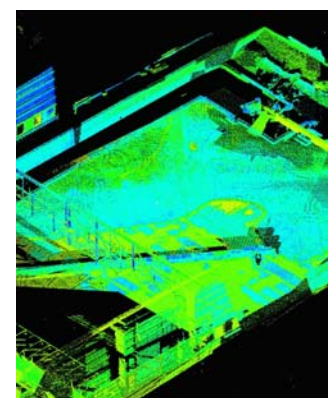
- 2 submersible cameras and lights (Deep Sea Power & Light)
- 10 web cameras (7-Axis 213-PTZ, 3-Axis 211M)
- 3 Digital video IEEE 1394a cameras (Point Grey Research)
- High resolution digital still camera (Cannon EOS 20D)
- 200fps Imperex Lynx GigE 200fps, 640x480
- ARRI Lighting System (Chimera Perfect Lighting)
- 2 Modular PXI architecture video DAQ systems, each with 3channels IEEE 1394a camera interfaces



Acoustic profiler for sediment transport



Particle Image Velocimetry



LIDAR bathymetry

