Readings for 13.998:
Principles of Oceanographic Instrumentation Systems - Sensors and Measurements

Williams & Irish Spring 2000

Data Analysis and Time Series


Digitizing Effects


A paper showing salinity spiking due to the recording system, as well as the sensor response effects.

Temperature

The International Practical Temperature Scale of 1968, Metrologia, 5(2), 52-61, 1969


Thermometrics, Edison, N.J, Technical Applications and Data

Salinity

Pressure
Paros, J.M., Digital Pressure Transducers, Measurements and Data, 10(2), ,1976.

CTD background.

General description of the development of electronic measurements of conductivity by a father of the field.

----. One page data sheet on the Neil Brown Mark III CTD system.

----. "A Precision CTD Microprofiler," IEEE Oceans-74, 2, 270-278.
The Neil Brown Mark II CTD, still the workhorse of the WOCE program.


The Neil Brown Mark V CTD now being marketed by General Oceanics of Florida and has yet to be accepted as the new standard, and may be outdated already.


The chief competitor of the Neil Brown Mark III, and a modular approach to the solution of vertical profiling which can produce as good a results in the proper hands.

System which was developed as a student project as the first internally recording CTD, and still in use nearly 15 years and two evolutions later. (Note with better planning we would be using this on our cruise.)
CTD Sensor Response

Scarlet, Richard I. "A Data Processing Method for STD Profilers." 197?.
A preprint of MODE paper. One of several papers at about the same time pointing out
the salinity spiking problem due to sensor response time mismatches.

Dantzler, H.L. Jr. “Dynamic Salinity Calibrations of Continuous

Martini, Marinna and James D. Irish. "Removing Ship's Motion Effects from CTD
Another paper showing that one must consider ship motion effects also to obtain the best
data.

Scientific Applications of Observations Discussed

Irish, J.D. and F.E. Snodgrass, “Australian-Antarctic Tides,” Antarctic OceanologyII:

Levine, M.D. and J.D. Irish, “A Statistical Description of Temperature Finestructure in

Levine, M.D., J.D. Irish, T.E. Ewart and S.A. Reynolds, “Simultaneous Spatial and
Temporal Measurements of the Interval Wave Field During MATE,” Jour. Geophys, Res,
91(C8), 9709-9719, 1986.

Gonzales, F.I. and E.N. Bernard, Deep Ocean Tsunami and Seismic Wave Observations:
Three Recent Gulf of Alaska Events, 7th U.S.-Japan Earthquake Prediction Seminar, Sept

Brown, W.S. and J.D. Irish, “The Annual Evolution of Geostrophic Flow in the Gulf of

Current Meter Background


Terry, W.E. Jr., A.J. Williams, III, “Ocean Applications of Laser Doppler Velocimetry,”

Agrawal, Y.C., W.E. Terry, Jr., and A.J. Williams, 3, “Backscatter Laser Velocity for
Energetic Bottom Boundary Layers: The Optical Signal,” IEEE Jour. Oceanic Eng., OE-


Williams, A.J., III, J.S. Tochko, R.L. Koehler, W.D. Grant, T.F. Gross, and C.V.R. Dunn,
“Measurement of Turbulence in the Oceanic Boundary Layer with Acoustic Current


Moored Bottom Pressure and Moored Temperature and Conductivity.

Optical and Acoustic Sensors

Microprocessors, Sampling, and Conditional Sampling
Bradley, A.M., The Role of the Microcontroller in Ocean Research Instruments, Oceanus, 53-60,