Underway CTD

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The Oceanscience Group

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Freshwater Products

- Riverboat

- Q-boat

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Freshwater Products

- RF modem (RS232)

- Mini PC (Wifi)

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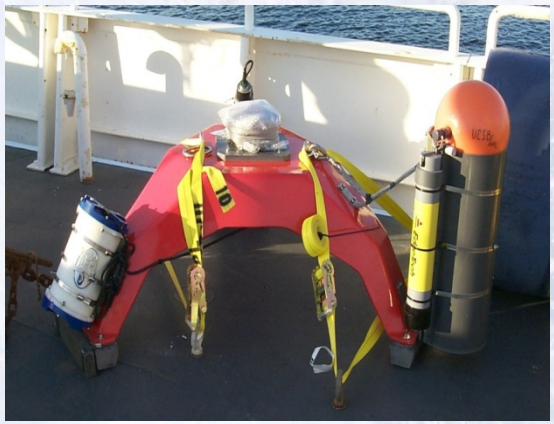
Saltwater Products

- Sea Spider



- Barnacle

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Custom Projects

- Vertical Profiler (USC)

- Energy Harvester (Teledyne)

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CTD Measurements At Sea

CTD Stations

Best data quality
Full ocean depth

Limited sampling

Towed Vehicles

Good data
Best sampling

Dedicated ship
Need specialist

Expendables

Convenient

Data processing
Only T
Not "green"

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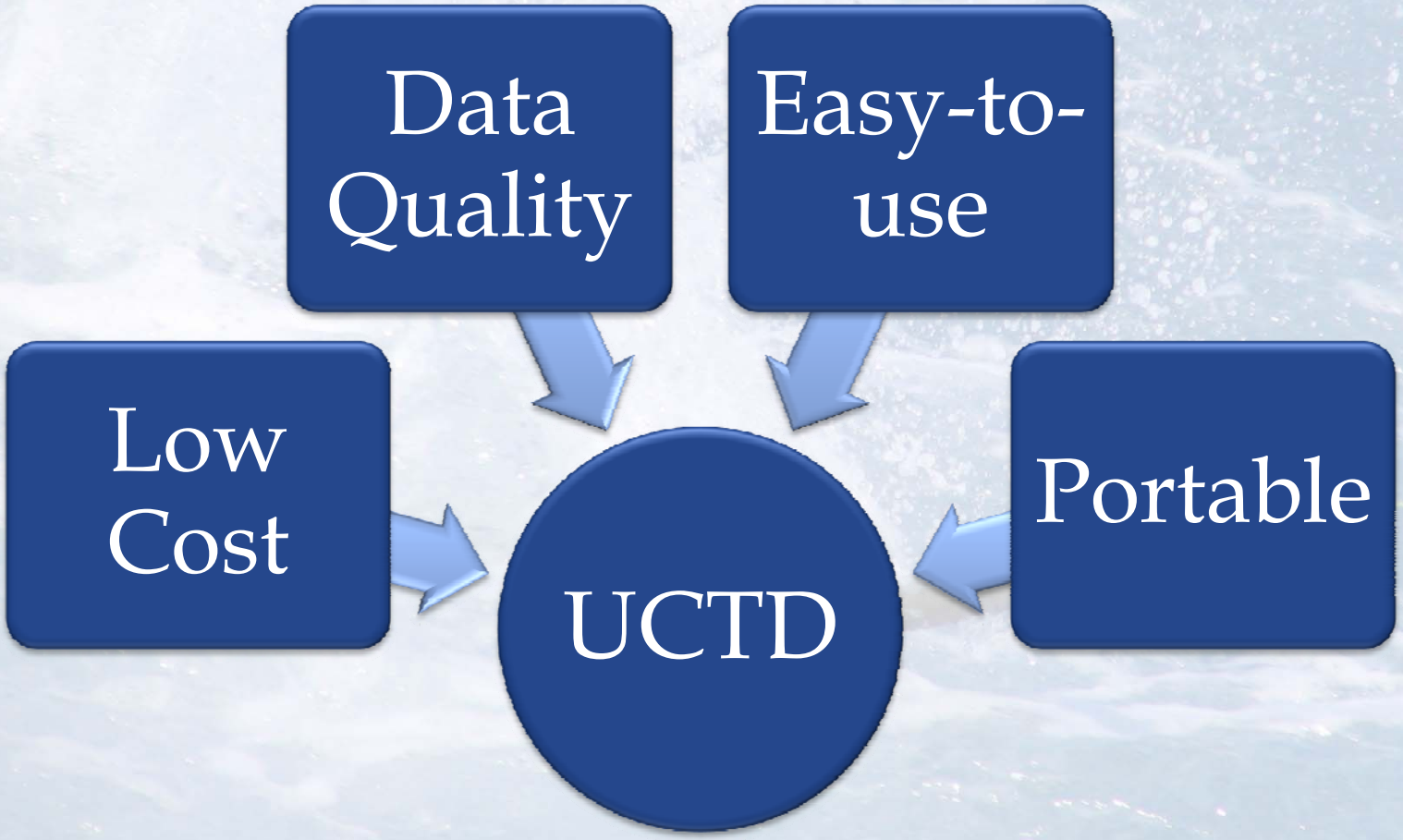
UCTD Design Goals



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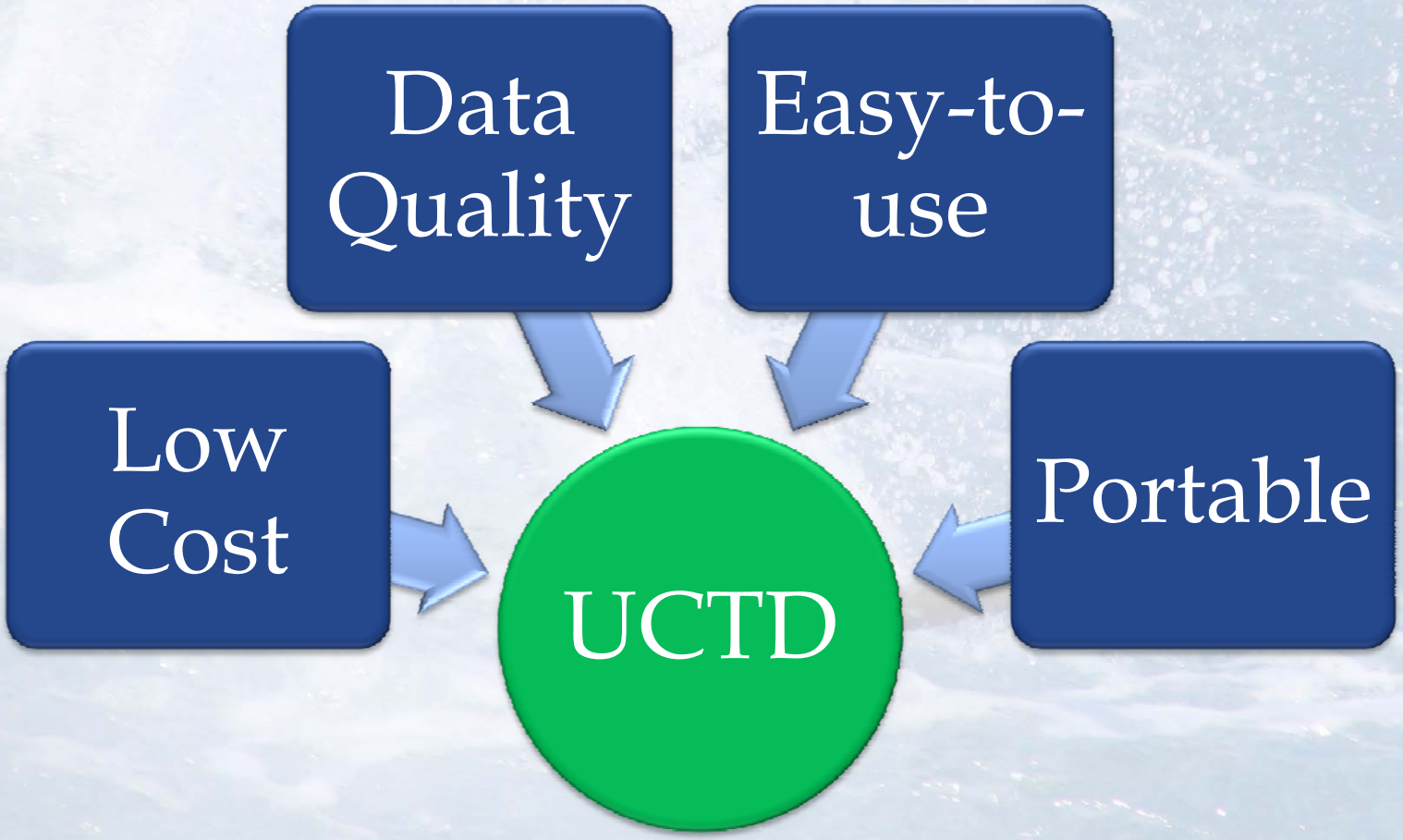
UCTD Design Goals



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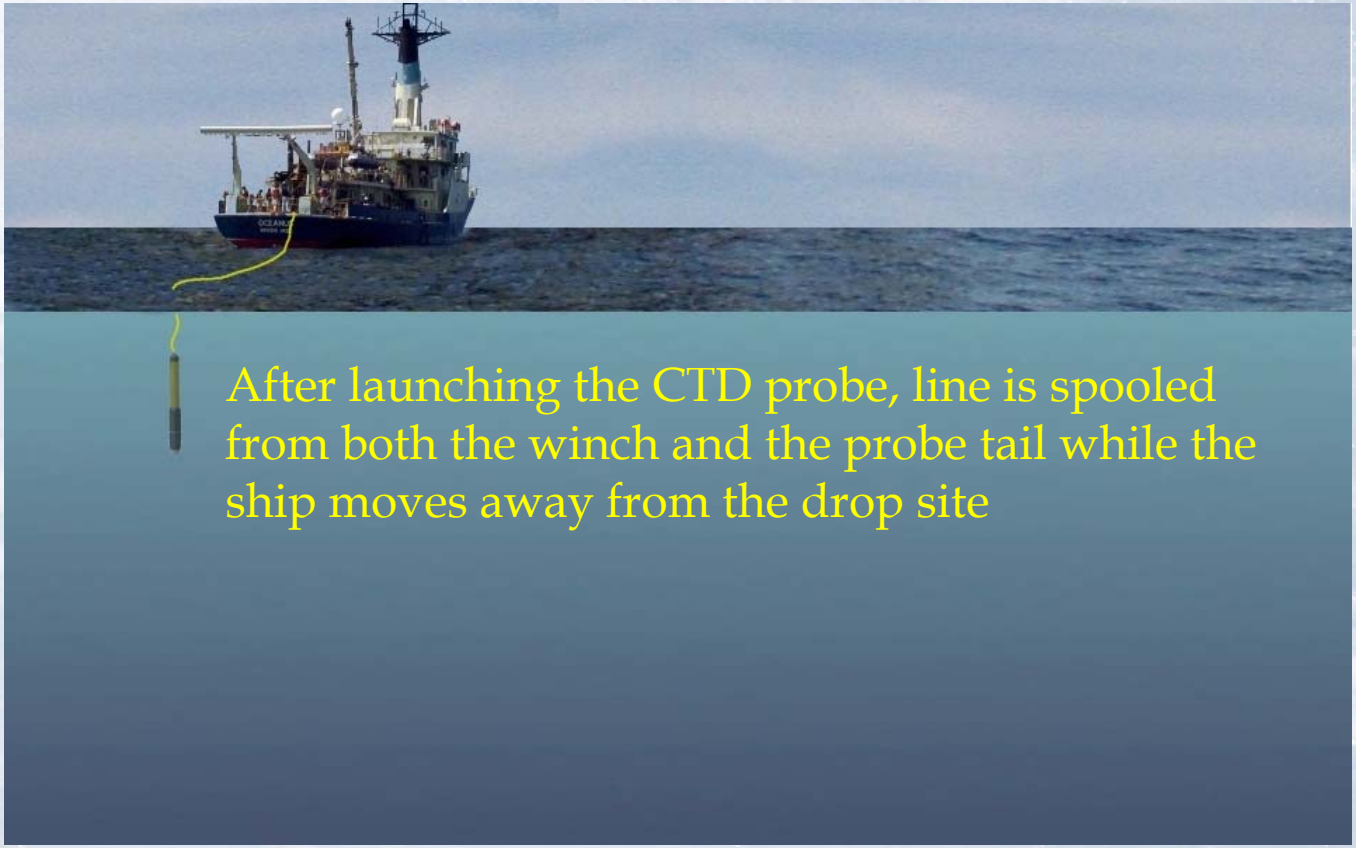
UCTD Principle



After launching the CTD probe, line is spooled from both the winch and the probe tail while the ship moves away from the drop site

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UCTD Principle

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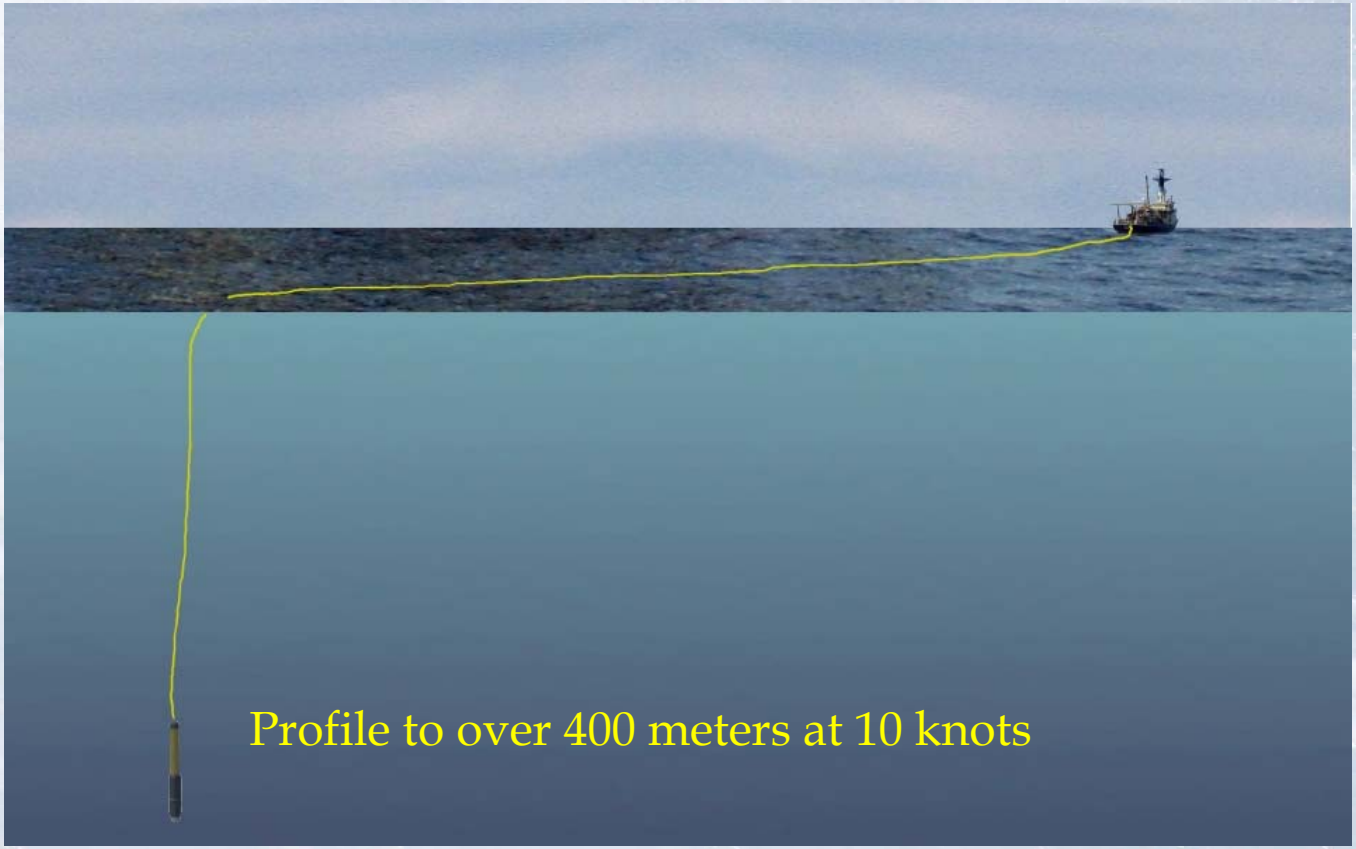
UCTD Principle



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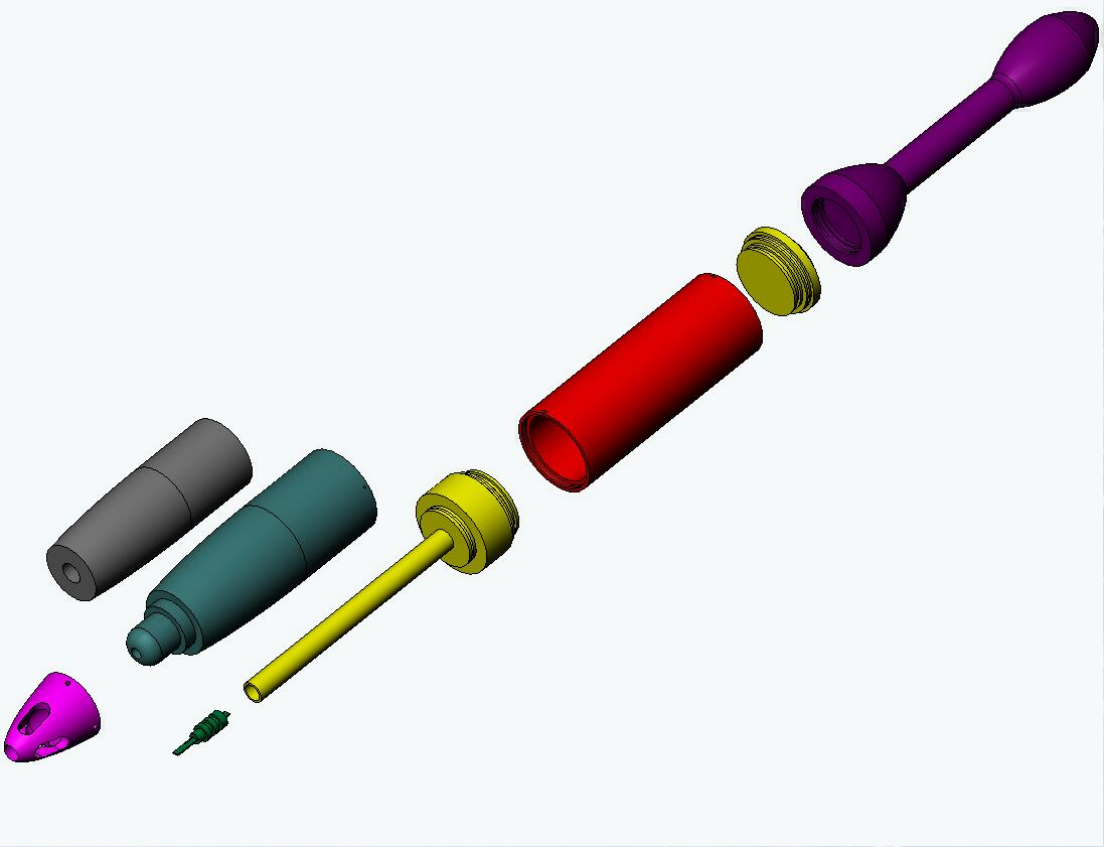
UCTD SIO Prototype



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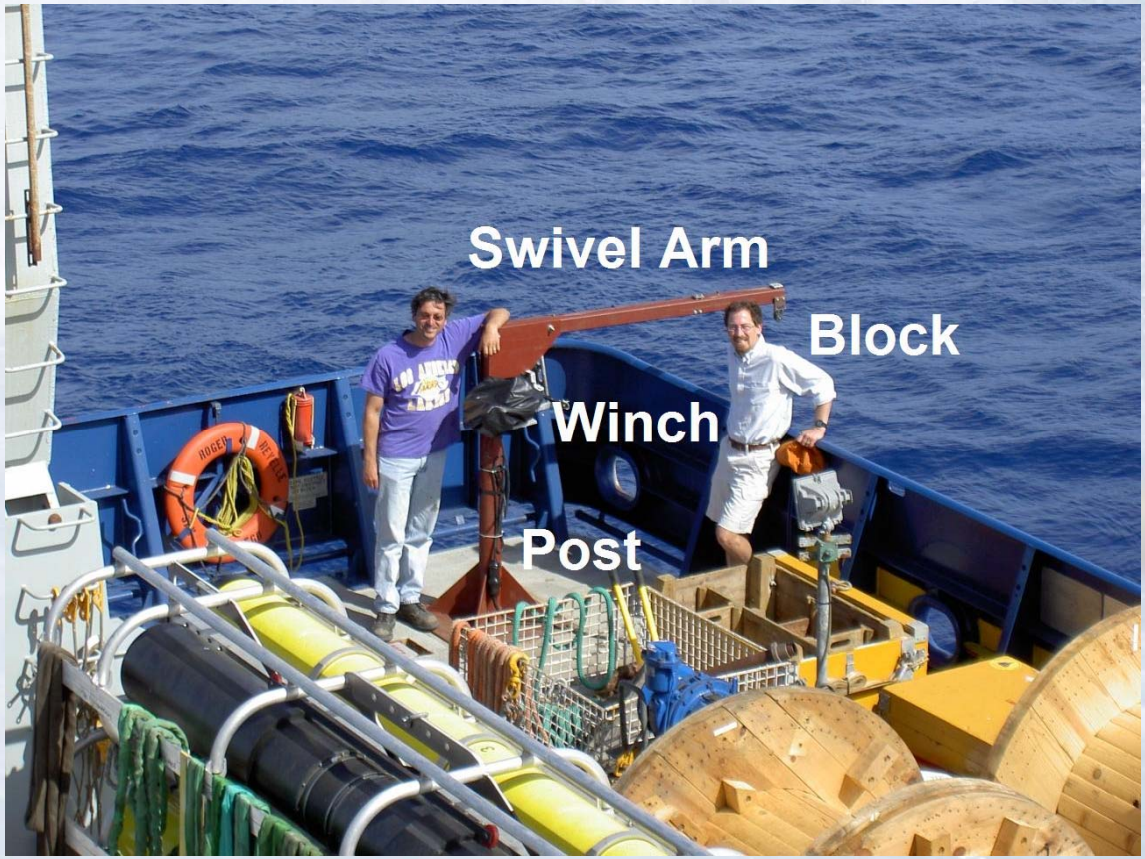
UCTD SIO Prototype



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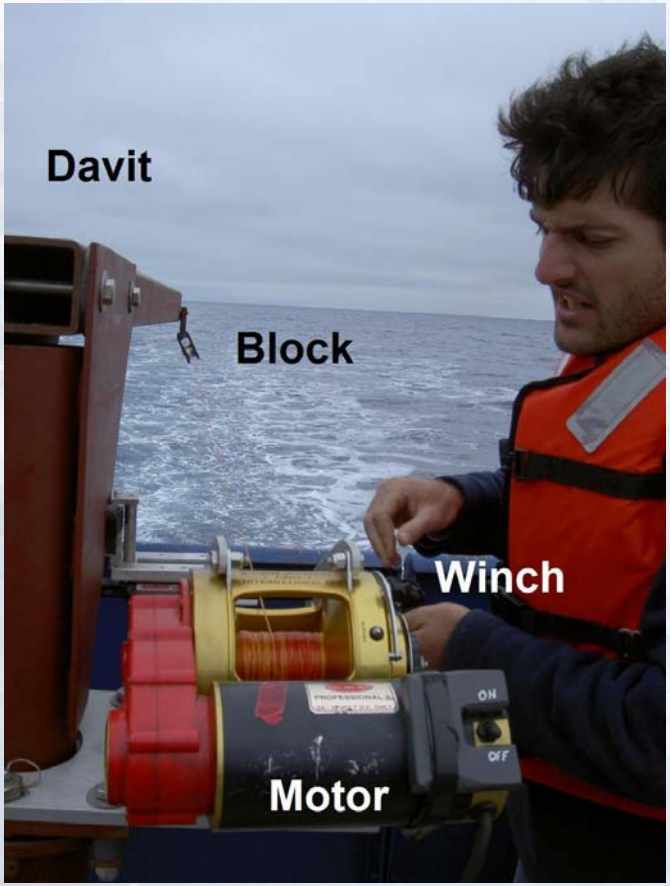
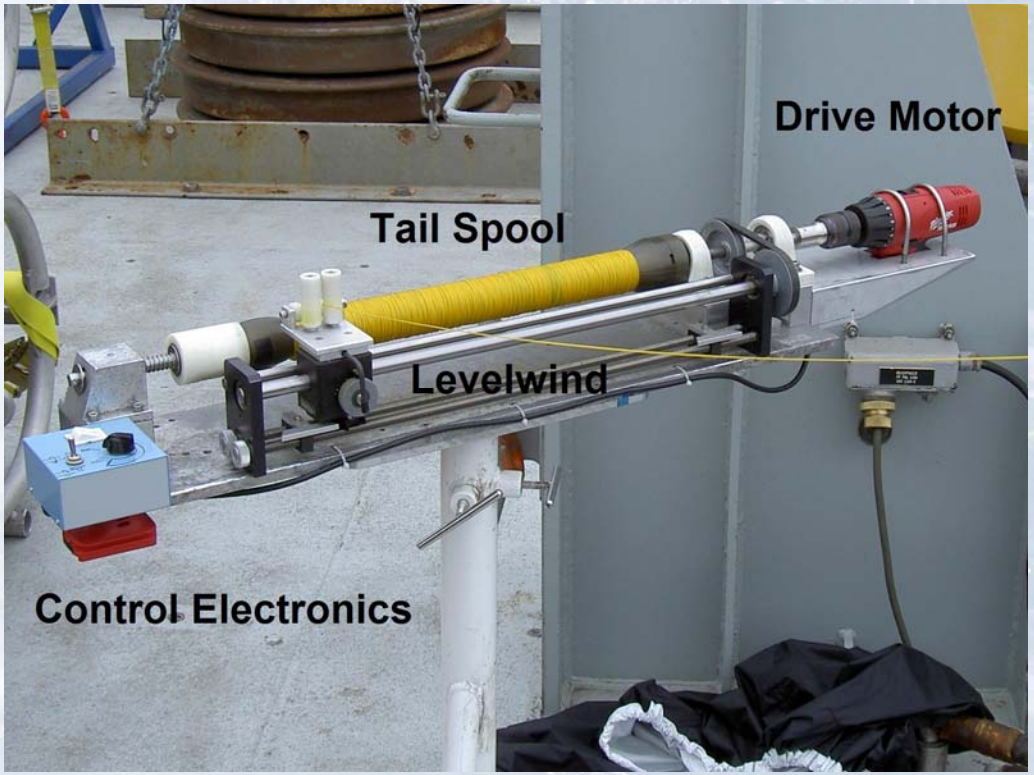
UCTD SIO Prototype





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UCTD Probe Assembly

- Custom Sea-Bird CTD
- Bluetooth Interface
- 16 Hz sampling
- Twist-and-lock connection

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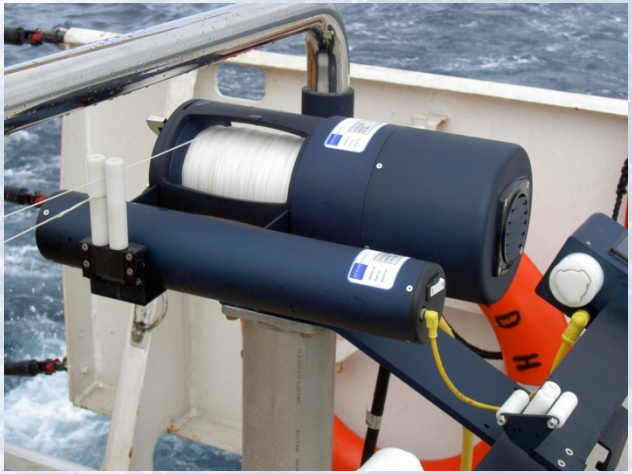
UCTD Winch



- Large capacity reel
- Motorized levelwind
- Two-speed DC drive
- High-strength Spectra line

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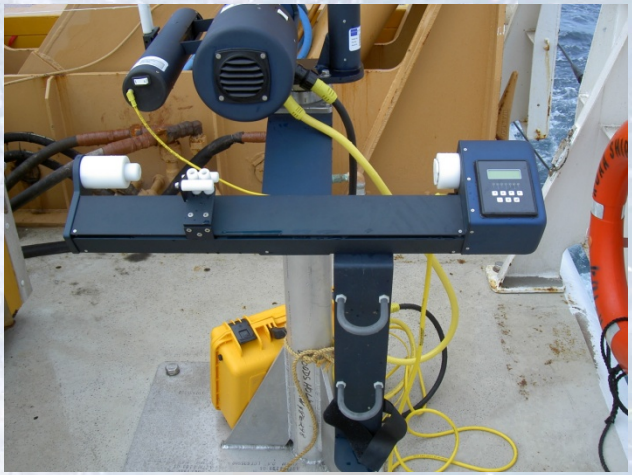
UCTD Rewinder

- Microprocessor-controlled for precise levelwind
- Fully automated for fast rewinding



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UCTD Davit

- Compact mount with probe holder
- Deck or rail mount attachment options
- Telescopic boom
- Custom block

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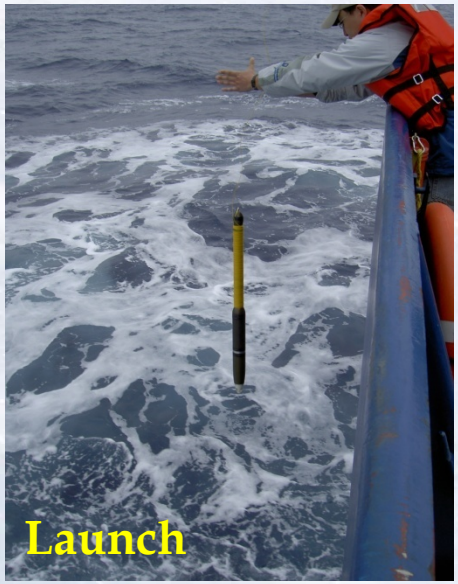
UCTD Step 1…



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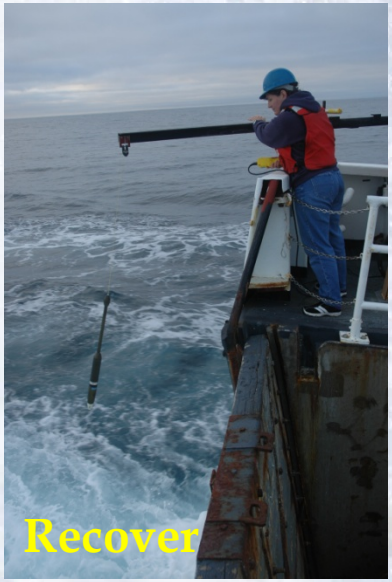
UCTD Step 2…



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UCTD Step 3

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UCTD Live…click to play

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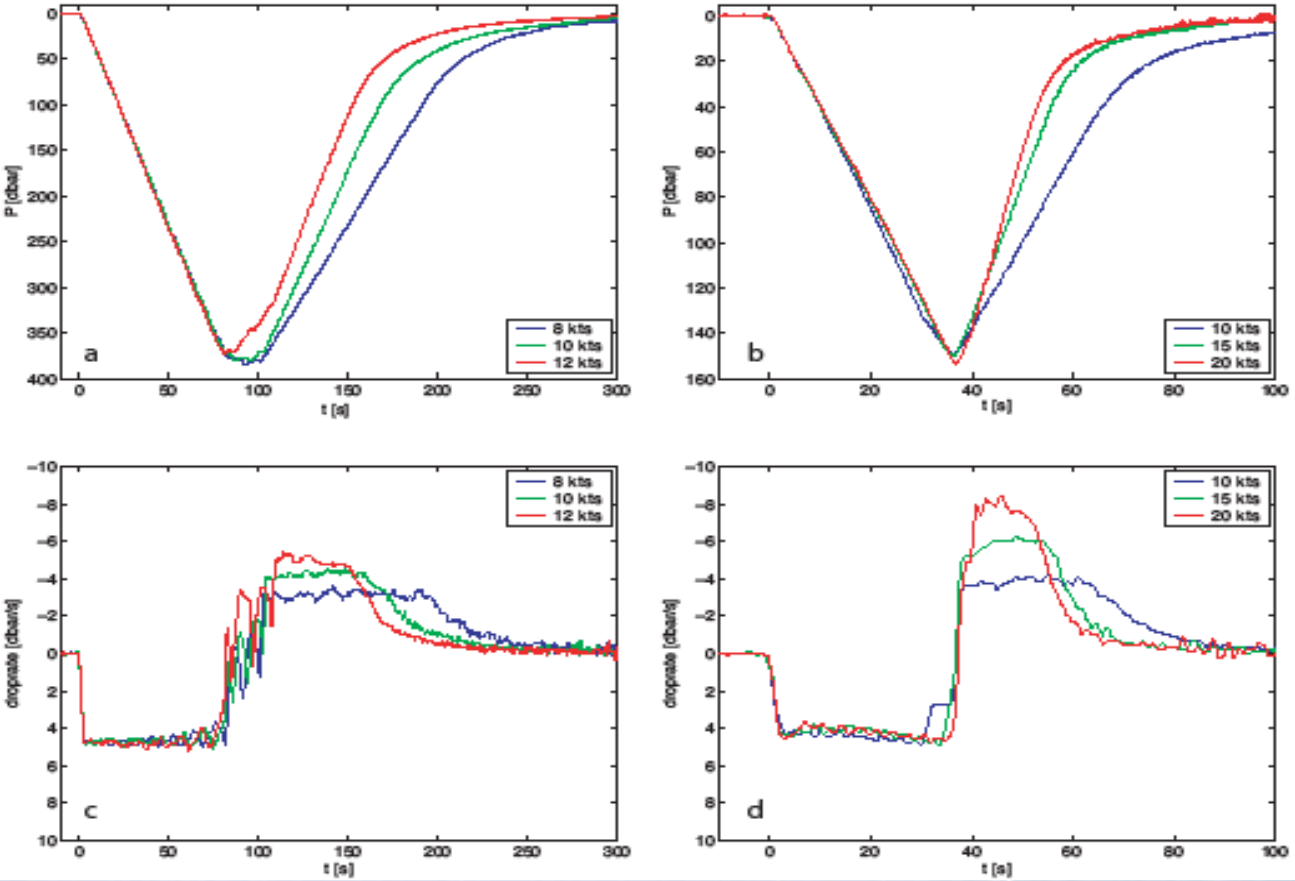
UCTD Depth vs. Time



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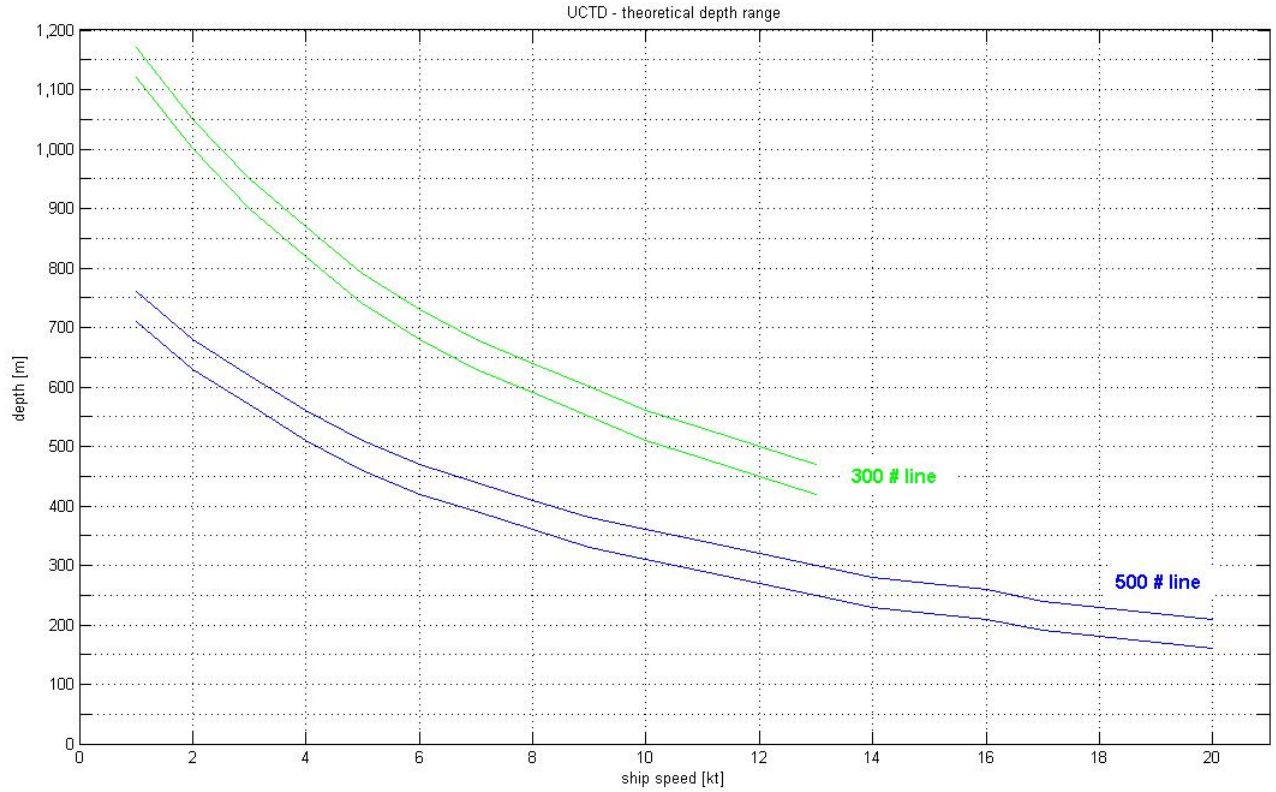
UCTD Depth Performance



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UCTD Sensor Specifications

	C [S/m]	T [°C]	D [dbar]	S [psu]
Resolution	0.0005	0.002	0.5	0.005
Raw Data Accuracy	0.03	0.01 to 0.02	4	0.3
Processed Data Accuracy	0.002 to 0.005	0.004	1	0.02 to 0.05
Range	0 to 9	-5 to 43	0 to 2000	0 to 42

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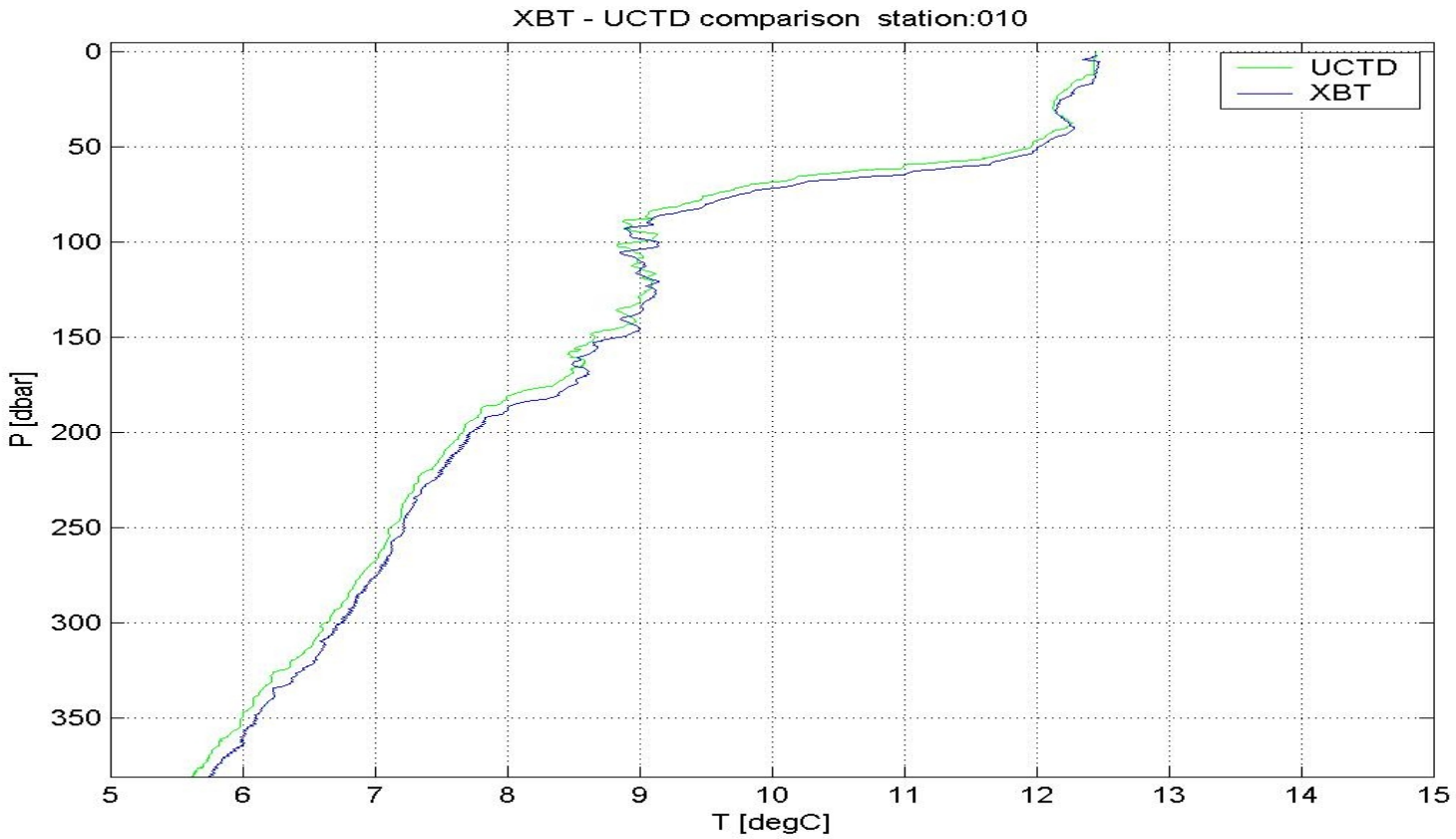
UCTD XBT Comparison



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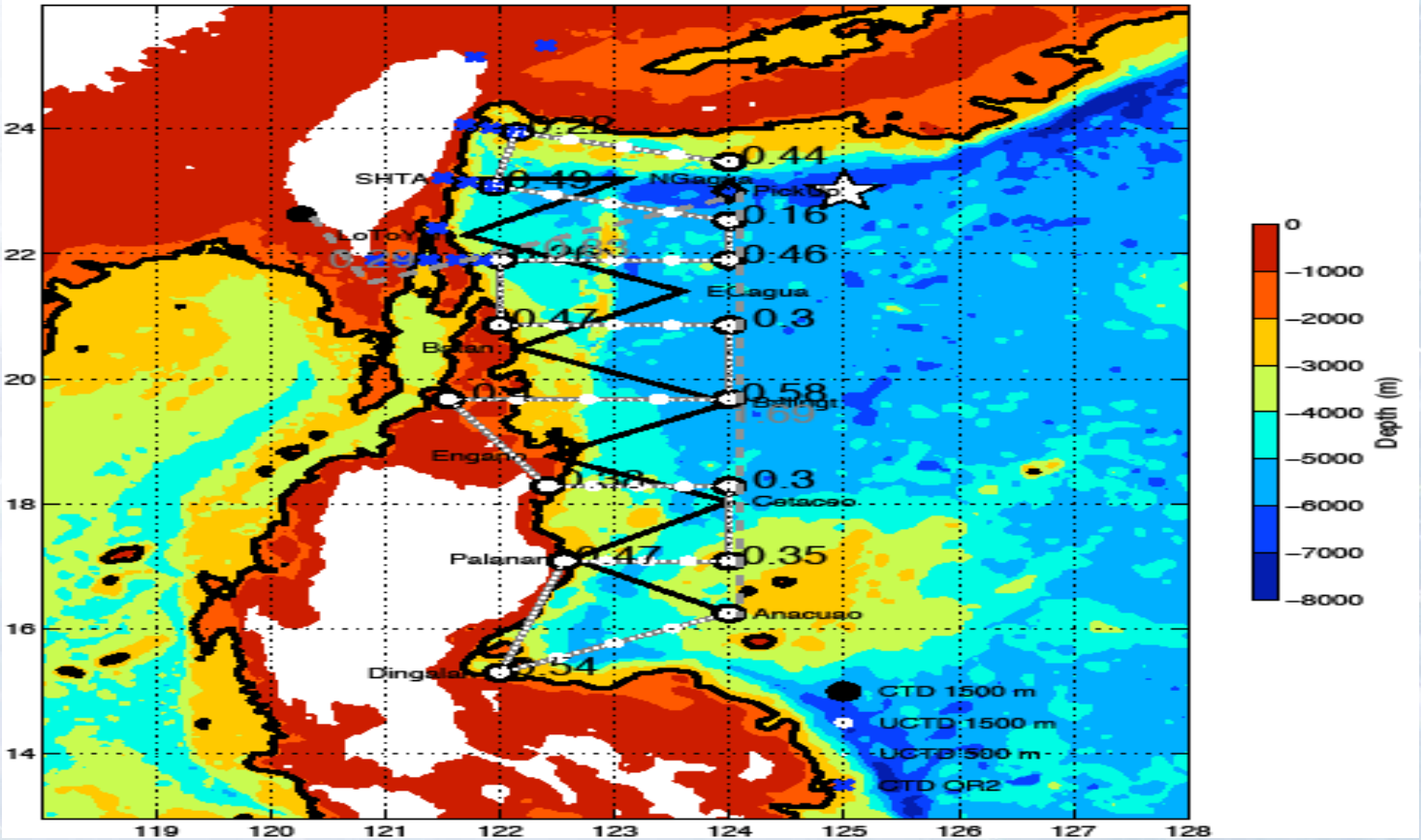
UCTD CTD Comparison



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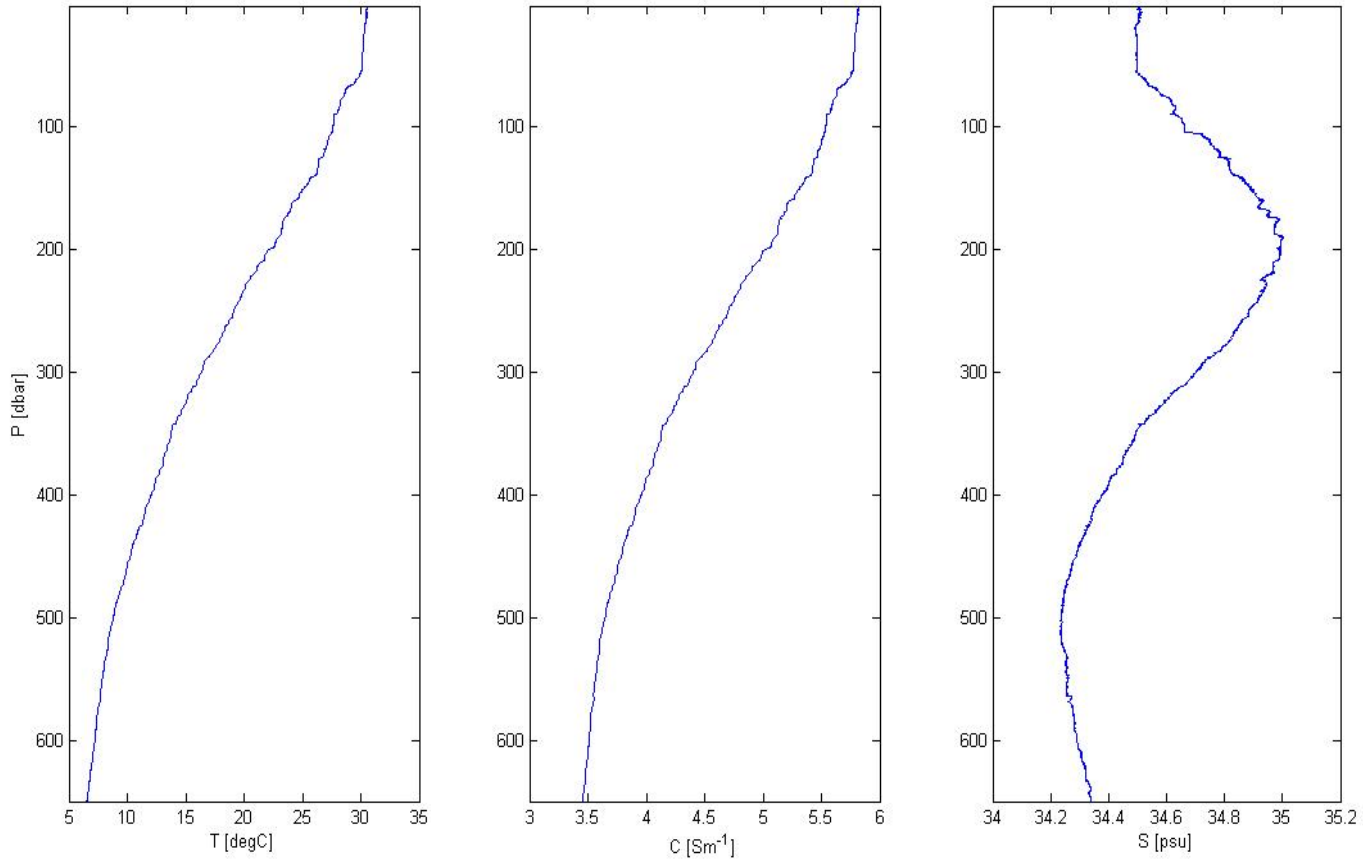
UCTD CTD Comparison II



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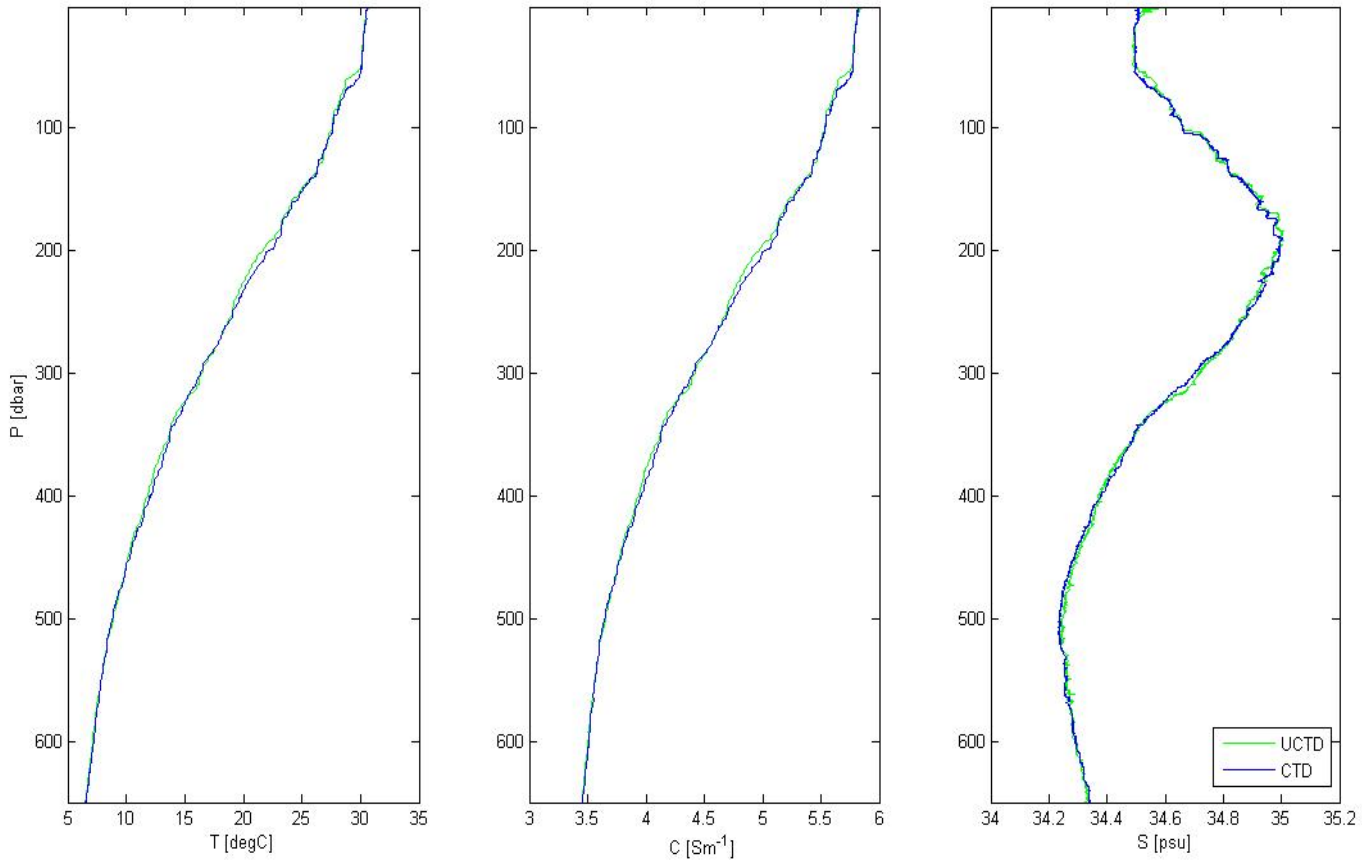
UCTD CTD Comparison III



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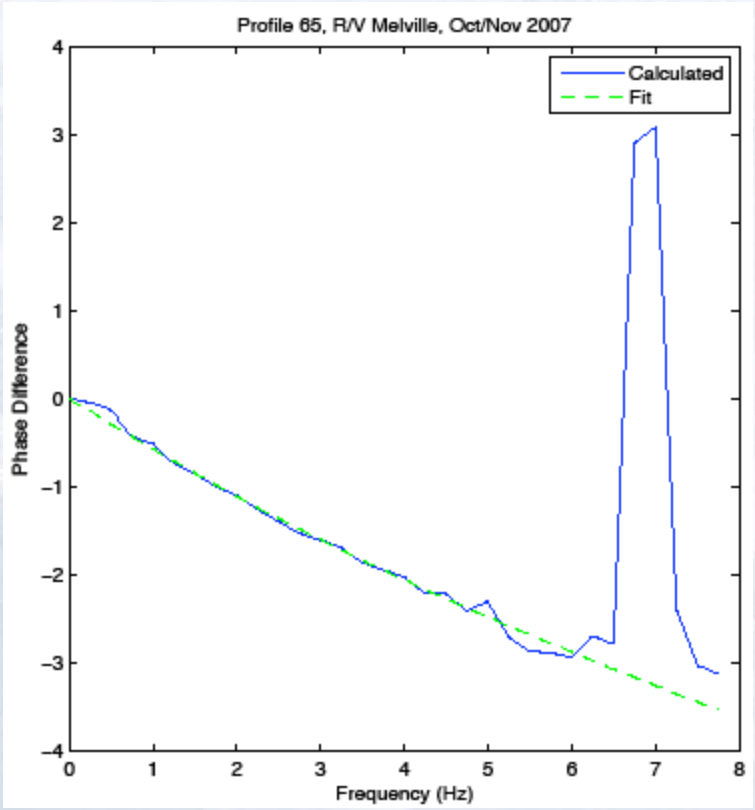
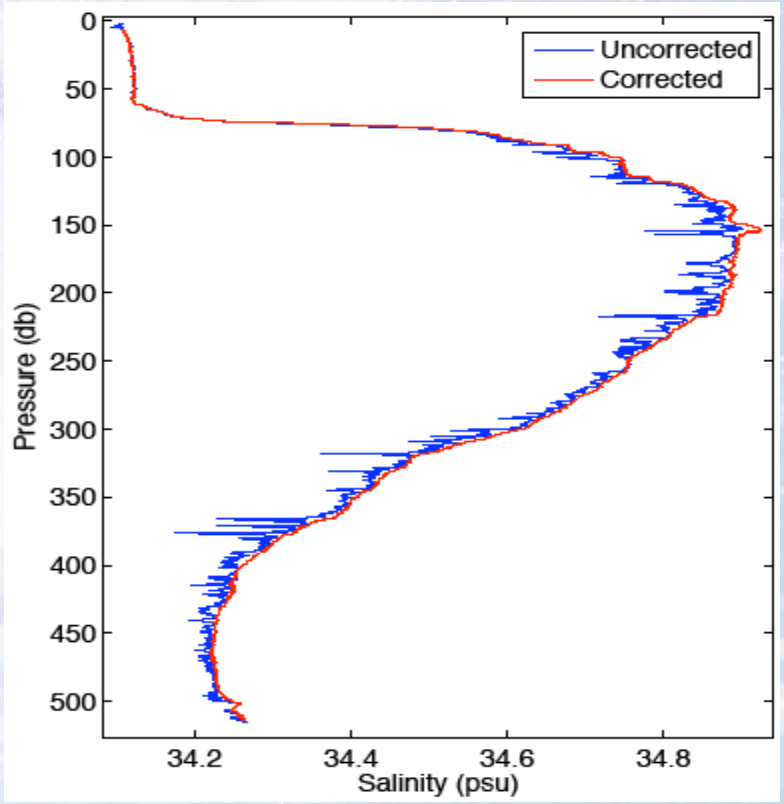
UCTD Salinity De-Spiking





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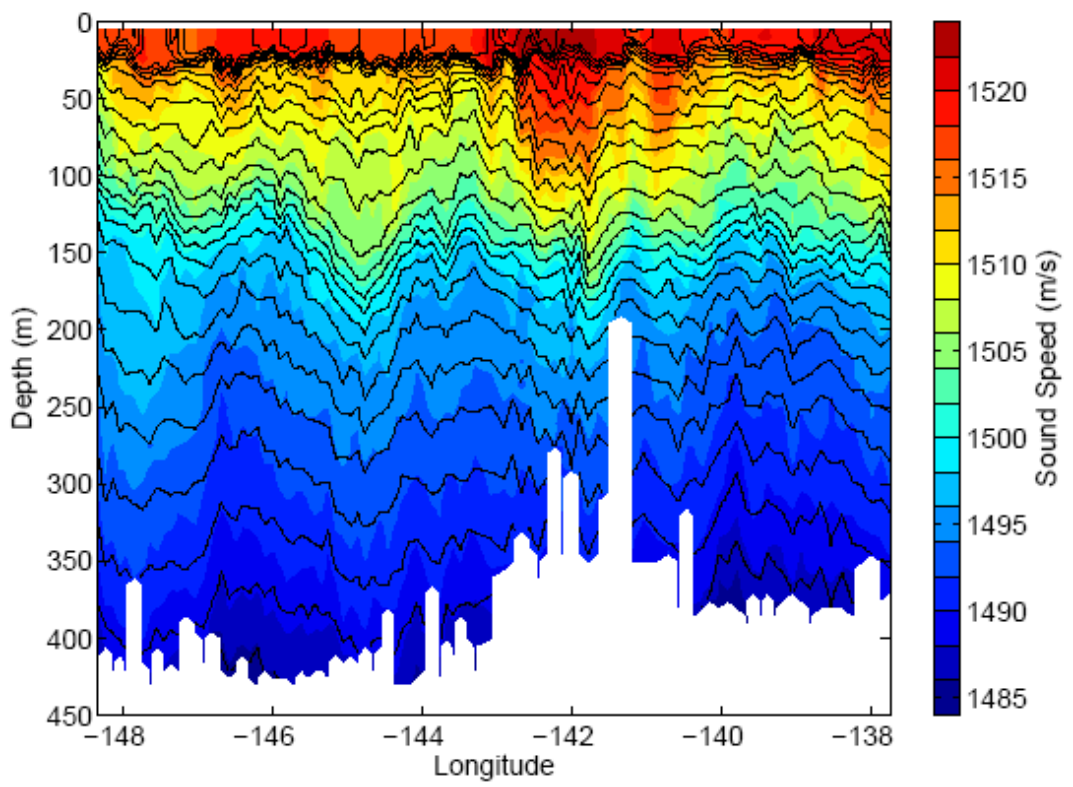
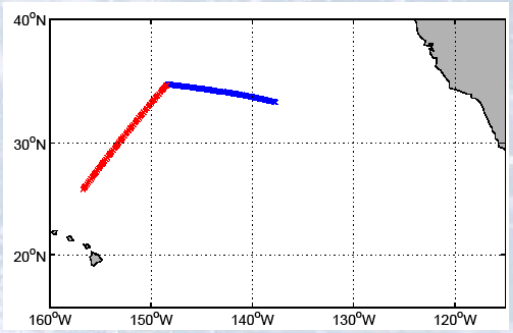
UCTD Sound Speed Transect





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UCTD Benefits

- Continuous profiling without altering ship speed
- Deployments are easy to perform
- Probe fully decoupled from ship
- Direct depth measurement via pressure sensor
- Optional post-deployment sensor calibration
- Cost-effective
- Ultra-compact and portable
- High quality data
- No pollution with waste materials

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UCTD Information

- Rudnick & Klinke (JAOT 2007)
- WHOI Technical Note (2007)
- http://www.oceanscience.com
- http://www.icess.ucsb.edu/iog/uCTD
- Field demonstration (June 2, 2008)

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