Remotely Operated Vehicle Jason

IRSO Meeting

October, 2016

Bob Houtman

Remotely Operated Vehicle Jason

Jason underwent a $2.4M upgrade in 2015 to support seafloor infrastructure for the NSF-funded Ocean Observatories Initiative, as well as other science missions

Remotely Operated Vehicle Jason

Upgrades:

- New cable tether with break strength (BS) of 70,000 lb. compared to previous 42,000 lb
- New Active Heave Compensated winch to accommodate the new cable
- New Launch and Recovery System (LARS) to accommodate the increased payload, 15,000 lb
- New vehicle frame capable of withstanding 4000 lb. loads
- New swappable heavy lift tool skid that will be used for these lift operations
- New science tool skid with increased space and payload for scientific equipment
- Additional flotation to accommodate the increase in weight of the new frame

Ocean Observatories Initiative Update

Bob Houtman

OOI is deployed throughout the World's Ocean

Unprecedented diverse data flowing from the ocean, in total 83 platforms carrying over 830 instruments providing over 100,000 scientific and engineering data products.

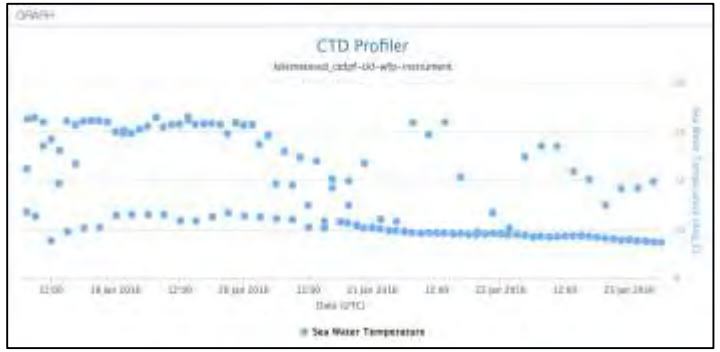
Science community engagement events are invigorating new interest in collaborative research and proposals

- Workshops to explore OOI Data
- Staff Consultations in preparation for proposal submissions
- Subject Matter Expert volunteer efforts
- Community Developed tools to explore OOI data

Streaming data has to date captured two major deep sea Earthquakes, several nor'Easters, and is recording the current historically strong El Nino in the Pacific

Ocean temperatures from blizzard on 1/23/2016 at Pioneer Array

Digital stills from methane hydrate field



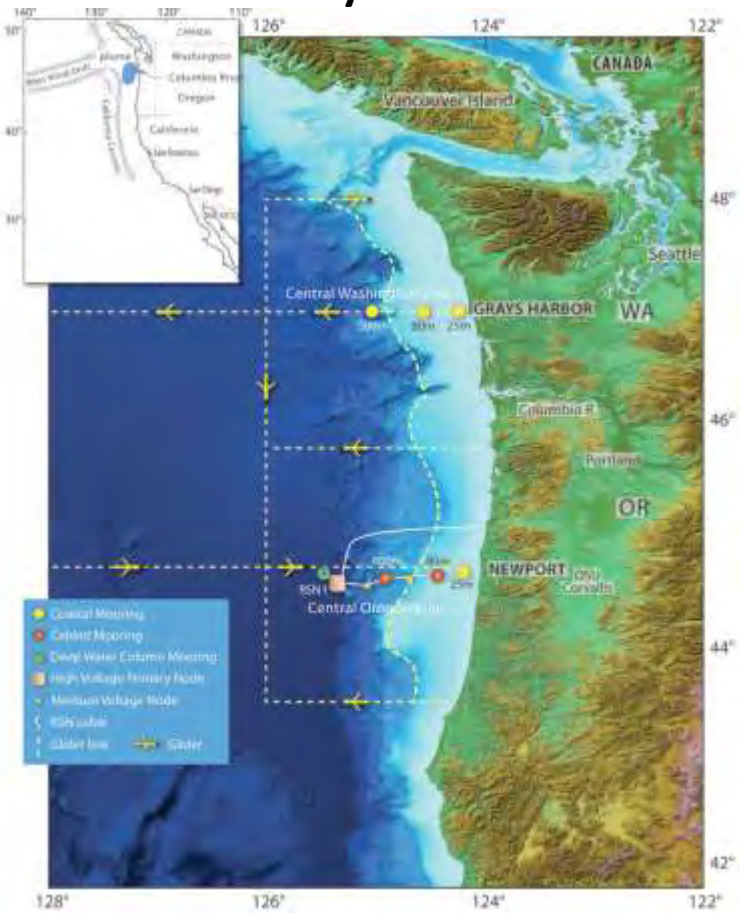
Cabled Array

A combination of fiber-optic and electrical cables provide unprecedented power, bandwidth, and two-way communication to seafloor and water column instrumentation, enabling monitoring of volcanic activity, methane seeps, vent communities, and ocean processes on the Juan de Fuca plate.

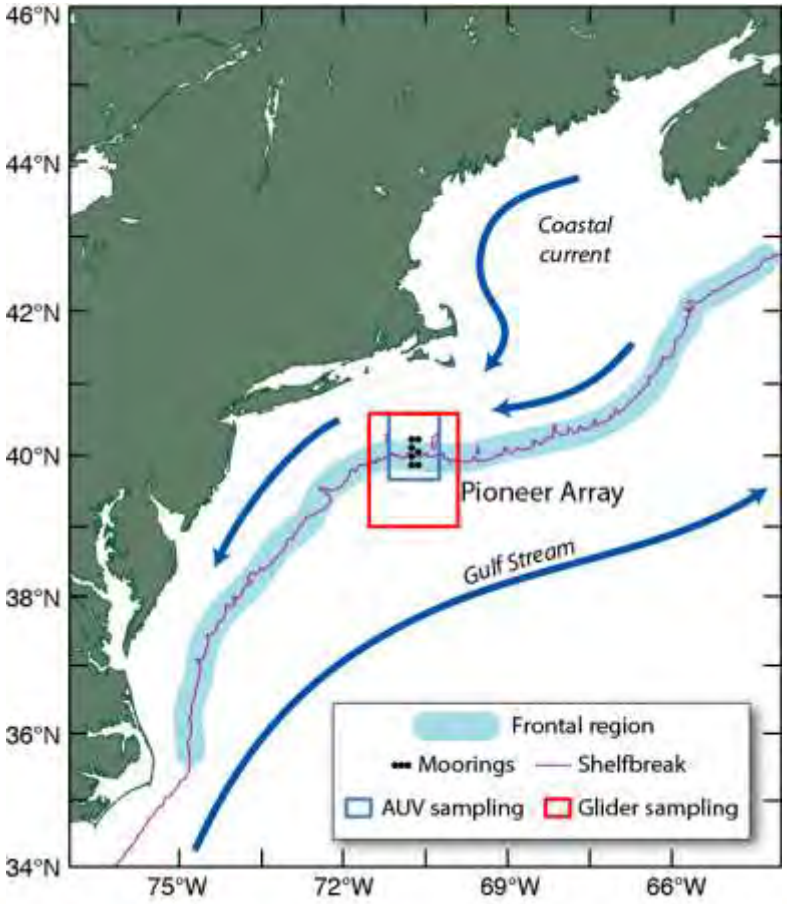
Coastal Arrays

Cross-shelf moored arrays and mobile assets observe the dynamic coastal environment enabling examination of upwelling, shelf break fronts, and cross-shelf exchanges.

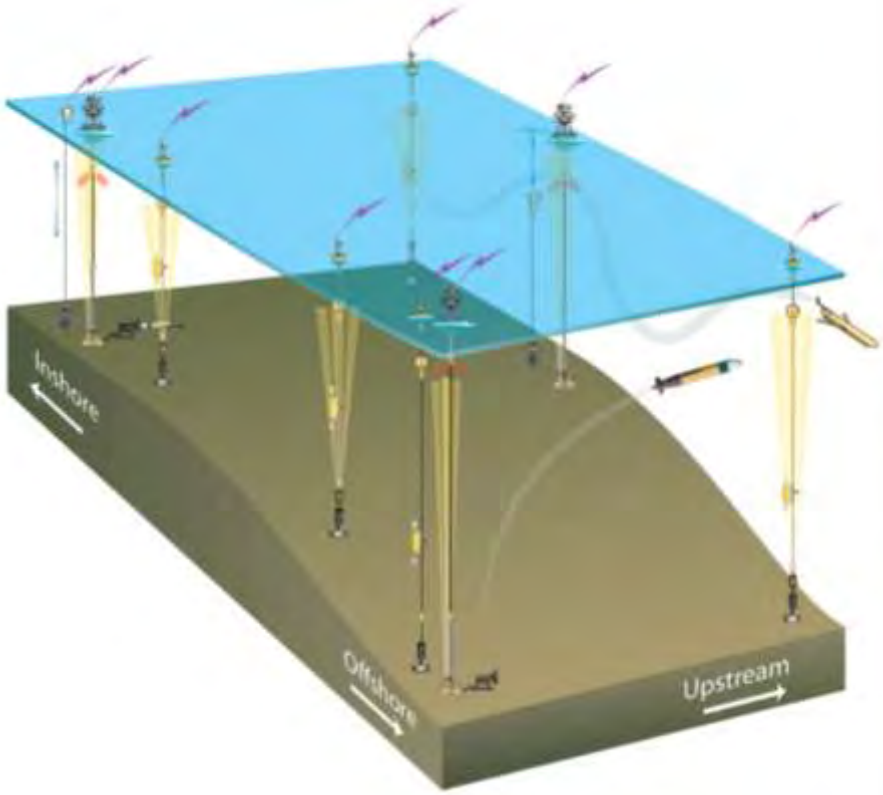
Endurance Array – OR & WA



Pioneer Array – New England



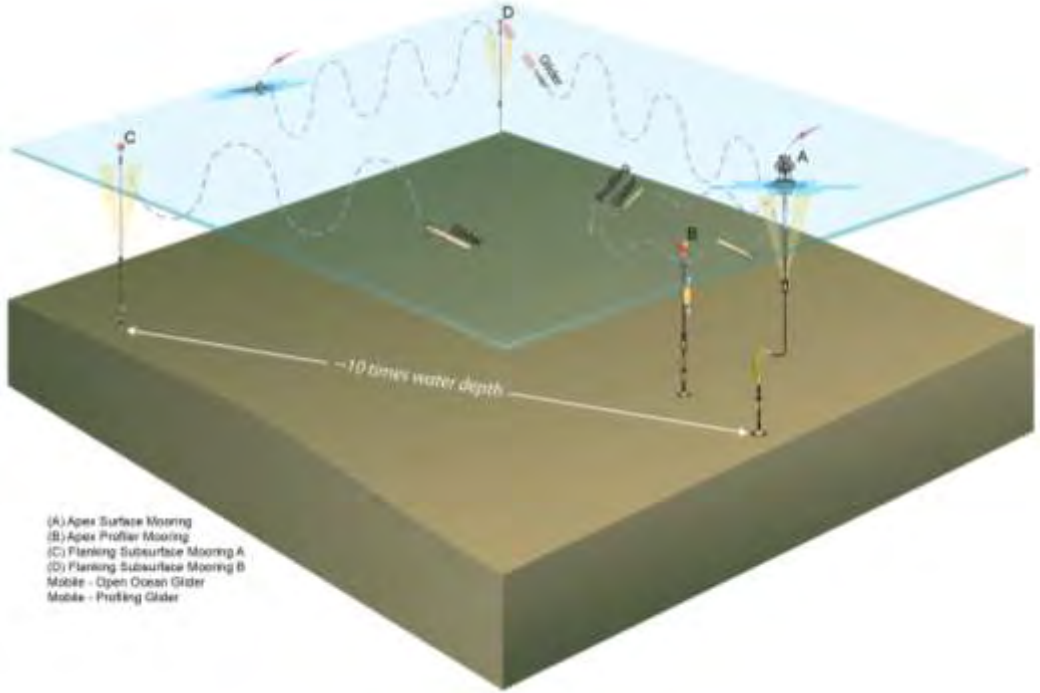
Schematic of Pioneer Array Infrastructure



Plueddemann 2014, Illustration by Jack Cook

Global Arrays

Moored arrays and mobile assets provide a combination of time-series observations and mesoscale spatial sampling at four sparsely sampled, high-latitude regions critical to our understanding of climate and ocean circulation.



Ocean Education Portal

Tools in the Ocean Education Portal provide easy access for the development of educational data visualizations and translation of OOI science into pedagogical resources such as concept maps and online lessons.

Visualize Data

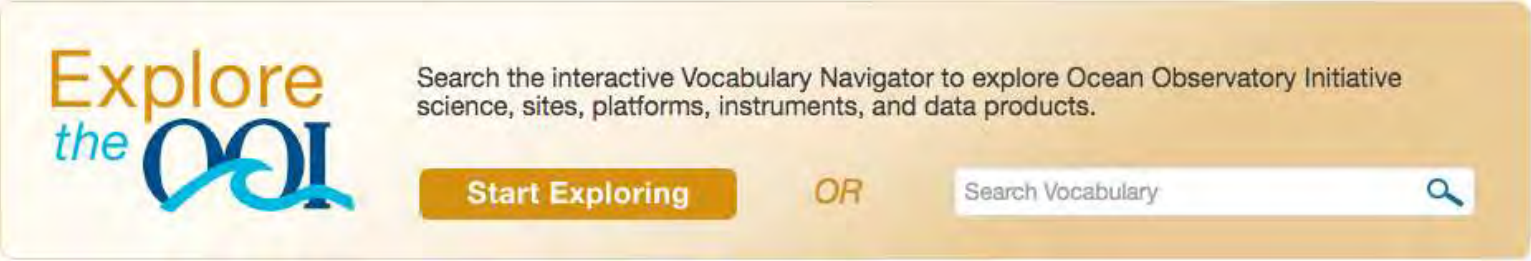
Students explore and analyze real-time or archived ocean data from the OOI.

Connect Concepts

Students illustrate how ocean data and themes are tied to what they are learning in the classroom.

Create Investigations

Teachers walk through creating and sharing their own online investigations using OOI data.



Upcoming OOI Activities

OOI 2016 UNOLS Ship Days (inclusive of DAS, mob/demob) - May 2016 Update

Array	Ship Class	Ship	Dates	# Days
Atlantic				
Pioneer Array - Spring	Global + ROV	R/V Armstrong	May 10 - June 4	26
Pioneer Array - Fall	Global + ROV	R/V Armstrong	Sept 29 - Oct 25	27
Irminger Sea	Global	R/V Armstrong	June 27 - July 30	34
Argentine Basin	Global	ARSV Palmer	Oct 18 - Nov 16	26
Pacific				
Endurance Array - Spring	Global	R/V Thompson	May 4 - 22	19
Endurance Array - Fall	Global	R/V Atlantis	Sept 17 - Oct 5	19
Cabled Array	Global + ROV	R/V Sikuliag	July 8 - Aug 15	39
Station Papa	Global	NOAA Ron Brown	June 20 - July 9	20
55° South	Global	ARSV Palmer	Nov 16 - Dec 19	26
			Total Days	**236**

Ship Totals	Armstrong	87
	Atlantis	19
	Brown	20
	Palmer	52
	Sikuliag	39
	Thompson	19

Other 2016 OOI Highlights and Issues

- R/V NEIL ARMSTRONG first operational cruise in support of WHOI Pioneer 6 Deployment
  - Retrieved drifting Upstream Inshore Profiler Mooring (PMUI) Surface Buoy on 04 Apr
- R/V SIKULIAQ and (improved) Jason ROV support for upcoming Cabled Array Deployment
- Ongoing issues with OOI glider fleet

Questions?

For more information please check out the website:

www.oceanobservatories.org

Visit the OOI Data Portal

Data Portal - ooinet.oceanobservatories.org

Ask the **Experts**

Ask the Help Desk – help@oceanobservatories.org

Regional Class Research Vessel (RCRV)

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Bob Houtman

Regional Class Research Vessel (RCRV)

- RFI Released – May, 2016
  - 14 respondents, including 7 shipyards
  - Responses posted: http://ceoas.oregonstate.edu/ships/rcrv/procurement/
- RFP Released – August 15, 2016
  - Up to 3 RCRVs possible, actual number depends upon appropriation language
- Final Design Review (PDR) – November, 2016
- Operator Selection Solicitation – Mid-2017
  - Additional operators selected if more than one RCRV constructed (OSU to operate RCRV-1)
- Construction – Potential start in 2017, delivery in 2020/2022 (depending on #)

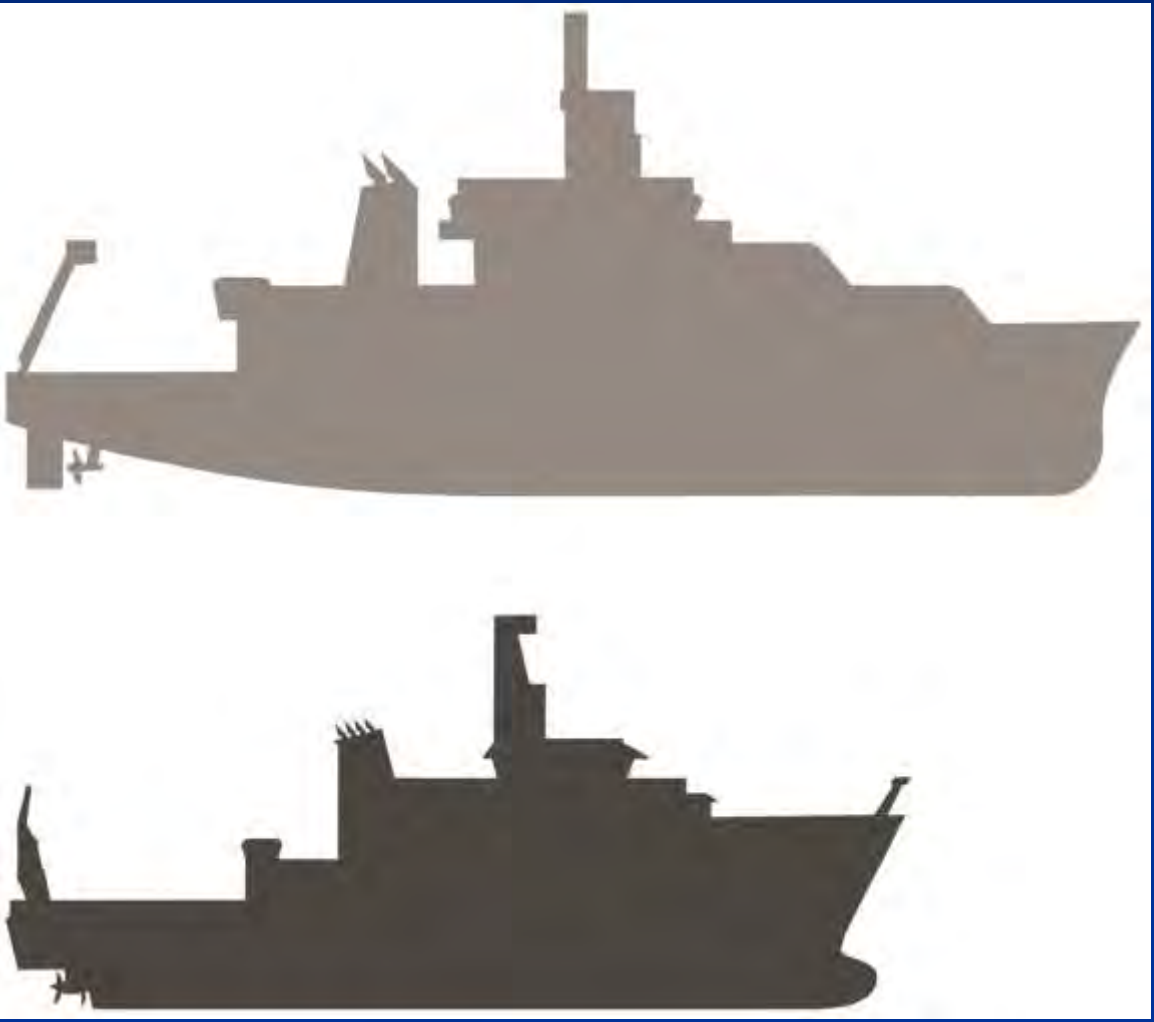
RCRV: Science Justification

Sea Change, 2015–2025 Decadal Survey of Ocean Sciences: Science Priorities

- ✓ Sea level change
- ✓ Coastal and estuarine oceans
- ✓ Ocean and climate variability
- ✓ Biodiversity and marine ecosystems
- ✓ Marine food webs
- ✓ Ocean basin formation and evolution
- ✓ Geohazards
- ✓ Subseafloor environment

Comparison of Ocean Class to RCRV

- Ocean Class (OCRV)
  - 238 ft.
  - ~3000 tons displacement
- RCRV
  - 193 ft.
  - ~1500 tons displacement



Principal Characteristics

Length Overall	193' – 0"
Length on Design Waterline	178' – 0"
Beam	41' – 0"
Depth, Baseline to Main Deck	19' – 0"
Design Draft	12' – 6"
Total Installed Power, Continuous	2,685 bkW
Propulsion	(2) dual propeller Z-Drives
Bow Thrusters	350 kW flush mounted, 280 kW retractable azimuthing thruster
Sustained Speed, Calm Water	12 knots
Estimated Maximum Speed, Calm Water	12.5 knots
Range, Sustained Speed	5,400 nm
Endurance	25 days
Displacement at Design Draft	1,492 LT
Lightship Weight (estimated)	1,183 LT
Science Payload & Portable Outfit Items	66 LT
Ice Classification	ABS C0
Main Lab	510 ft^2
Wet Lab	385 ft^2
Computer Lab	175 ft^2
Datapresence Center	215 ft^2
Main Deck (aft of the house)	1,930 ft^2
Main Deck (including side deck)	2,160 ft^2
Side Deck Length	70 ft
01 Deck (working area)	600 ft^2
Accessible Science Berth	1 Double Stateroom
Marine Technician Berth	1 Double Stateroom
Total Science Berths (with Accessible & Marine Technician Berths)	8 Double Staterooms
Crew Berths	7 Single Berths, 3 Double Berths
Total Compliment	16 Scientists/Marine Technicians, 12 Crew

Tank Capacities

Diesel Fuel at 95%	52,820 gallons
Ballast Water at 100%	71,550 gallons
Potable Water at 100%	6,800 gallons
Graywater Holding at 100%	6,200 gallons
Blackwater at 100%	700 gallons
Diesel Exhaust Fluid at 100%	3,550 gallons