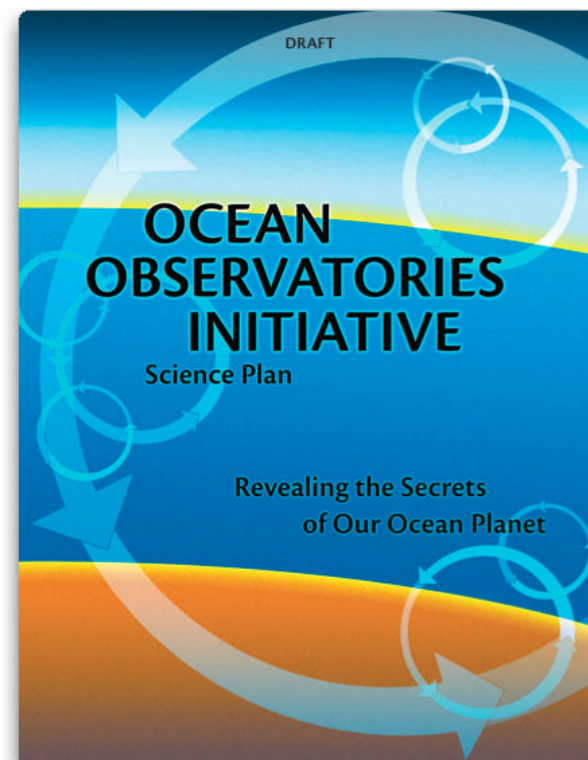




ORION/OOI Update for DESSC



OOI in FY2007 NSF budget as a new start in the MREFC account

MREFC Account Funding

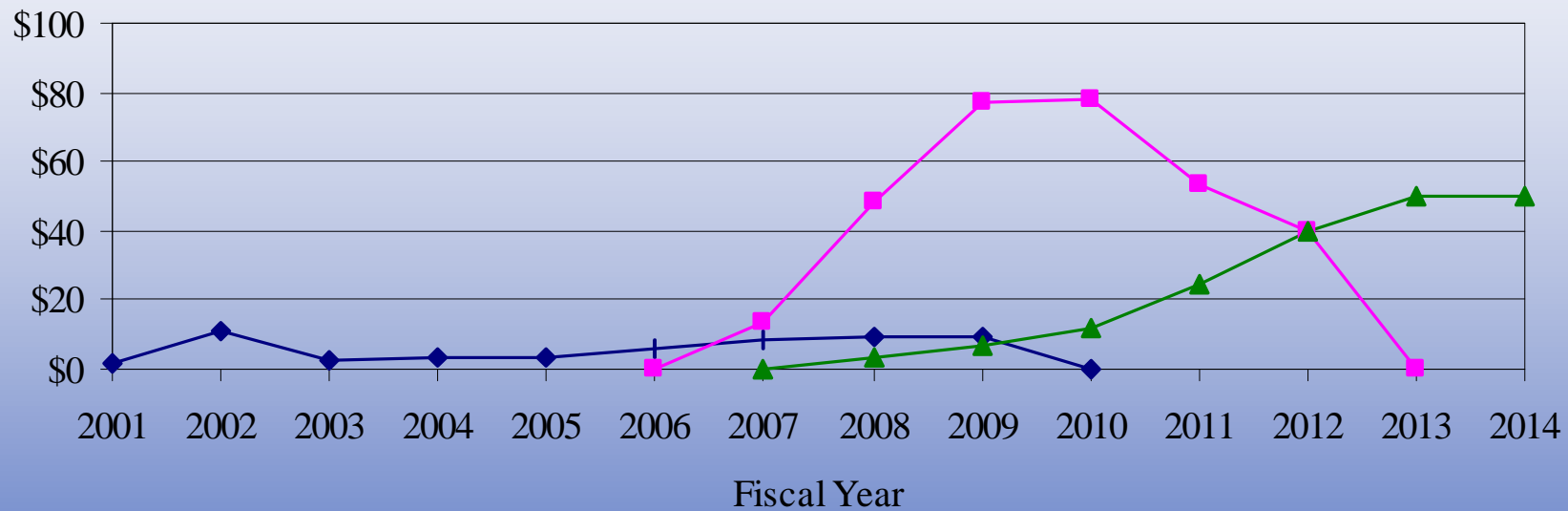
(Dollars in Millions)

	FY 2005 Actual	FY 2006 ¹ Current Plan	FY 2007 Request	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate
Ongoing Projects								
ALMA	49.30	45.14	47.89	47.07	37.37	20.98		
EarthScope	44.80	46.40	27.40					
IceCube	48.10	46.25	28.65	22.38	11.33	0.95		
NEON			12.00	12.00	20.00	30.00	26.00	
SODV	6.08	53.09	42.88					
SPSM	16.86		9.13					
DOJ Judgment			3.00					
New Starts								
ARRV			56.00	42.00				
AdvLIGO			-	28.48	42.81	46.31	36.25	22.90
Totals	\$165.14	\$190.88	\$240.45	\$199.93	\$188.51	\$176.24	\$115.25	\$62.90

Totals may not add due to rounding. Estimates for FY 2008 and beyond do not reflect policy decisions and are presented for planning purposes only.
¹The FY 2006 Current Plan excludes \$45.68 million carried forward from previous years. This includes an unobligated balance of \$14.88 million from FY 2005 distributed pro rata among ALMA, EarthScope, IceCube and SODV; and an additional carryover of \$2.17 million for EarthScope, \$6.59 million for IceCube, \$8.80 million for SODV, and \$13.17 million for SPSM.

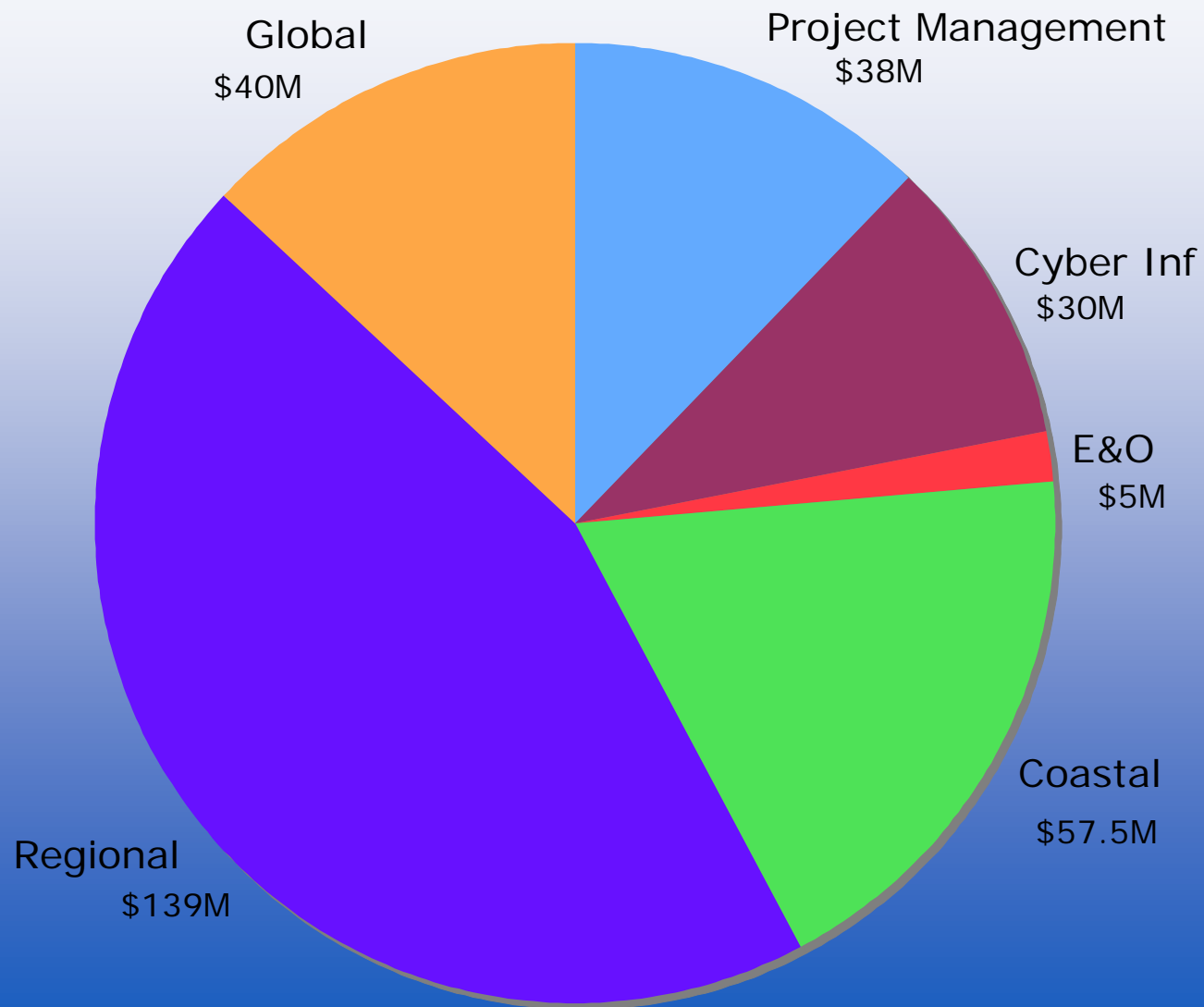
\$ Millions

OOI Funding, by Phase



◆ Concept/ Development ■ Implementation ▲ Operations & Maintenance

0 0I Budget



OOI/ORION Activities

- Staffing the Project Office and establishment of Implementing Organizations (IOs),
- Preparation of Conceptual Network Design based on input from RFA and previous workshops and planning documents
- Design and Implementation Workshop,
- Preparation of preliminary PEP
- “Blue Ribbon Panel” review of ORION science objectives and CNR
- Conceptual Design Review of proposed OOI infrastructure

ORION Project Office

- Kendra Daly hired as permanent, full-time ORION Program Director,
- Stu Williams - hired as OOI Project Director
- Rosie Lunde hired as OOI Systems Engineer
- On-going search for additional office staff
- JOI/ODP to provide expertise in Project Management Control Systems/Earned Value Management and Cyberinfrastructure; JPL hired to provide independent cost estimates

Implementing Organizations

In 2006 the ORI ON Program Office will be soliciting proposals for Implementing Organizations (IOs) for management of the procurement and installation of observatory networks for the NSF-funded Ocean Observatories Initiative leading to the operation of these facilities for the ORI ON Program

An IO may consist of an academic institution, a consortia of academic institutions or an academic-industry partnership

Separate IOs may be chosen for the coastal, RCO and global components of the OOI, as well as cyberinfrastructure

OOI/ORION Activities

- Staffing the Project Office and establishment of Implementing Organizations (IOs),
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Request for Assistance Response

Total number of investigators involved = 549

137 Academic Instit., Gov. Labs, and Companies

35 states, 4 Canadian Provinces, Japan, and France

Total Proposals = 48

24 Coastal, 15 Regional, 9 global



DESIGN & IMPLEMENTATION WORKSHOP

Salt Lake City, Utah 27-30 March 2006 Marriott Downtown

Come to the ORION D&I Workshop and provide input to the final design of the Ocean Observatories Initiative Infrastructure.

This workshop will present to the ocean research community the preliminary design of the global, regional and coastal ocean research observatory networks to be implemented under the ORION Program. The preliminary design is being developed based on the ideas submitted in the Request for Assistance Proposals, previous workshop reports and advice from ORION's scientific, technical and engineering advisory committees.

The workshop will also provide an opportunity for collaborative groups to begin developing integrated research projects. This effort will lead to the realization of the Ocean Observatories Initiative, the National Science Foundation's ambitious plan to develop and deploy observatory infrastructure in the oceans to enable novel research and expand educational opportunities. We strongly encourage participation in implementing these community facilities.

ORGANIZING COMMITTEE

- Kendra Daly (chair), USF
- Mark Moline (co-chair), CalPoly
- Keith Raybould (co-chair), MBARI
- Bob Detrick, WHOI
- Rick Jahnke, SkIO
- Doug Luther, UHawaii
- George Matsumoto, MBARI
- Larry Mayer, UNH

For more information visit the ORION website

www.orionprogram.org

or contact:

oriondi@jolscience.org

Partial travel funds will be available for eligible participants

Electronic registration will be available on the ORION website in early December 2005





DESIGN & IMPLEMENTATION WORKSHOP

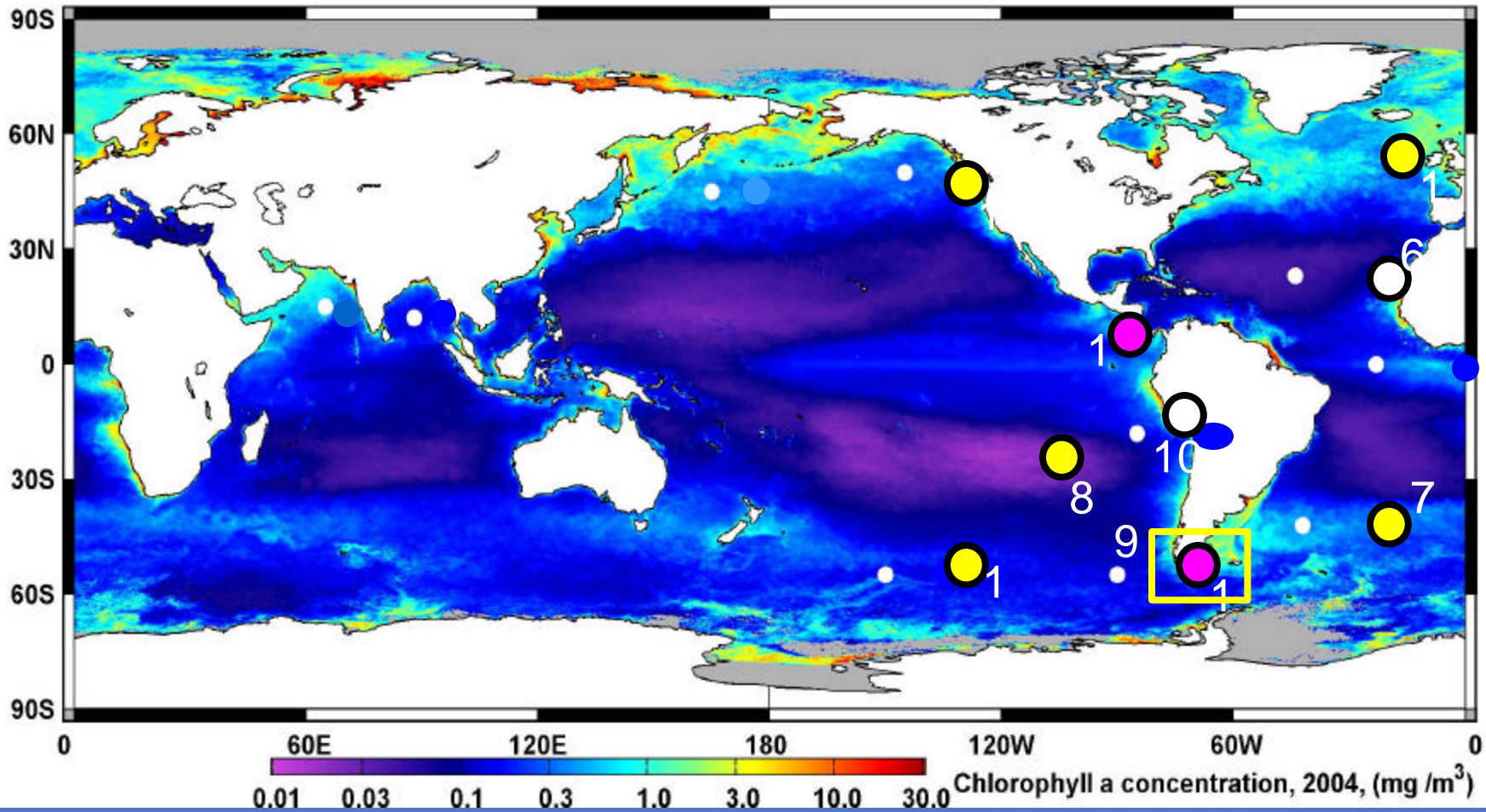
DRAFT

Overview: Conceptual Network Design for ORION's Ocean Observatory Initiative (OOI)

Issued by the
ORION Program Office
March 15, 2006



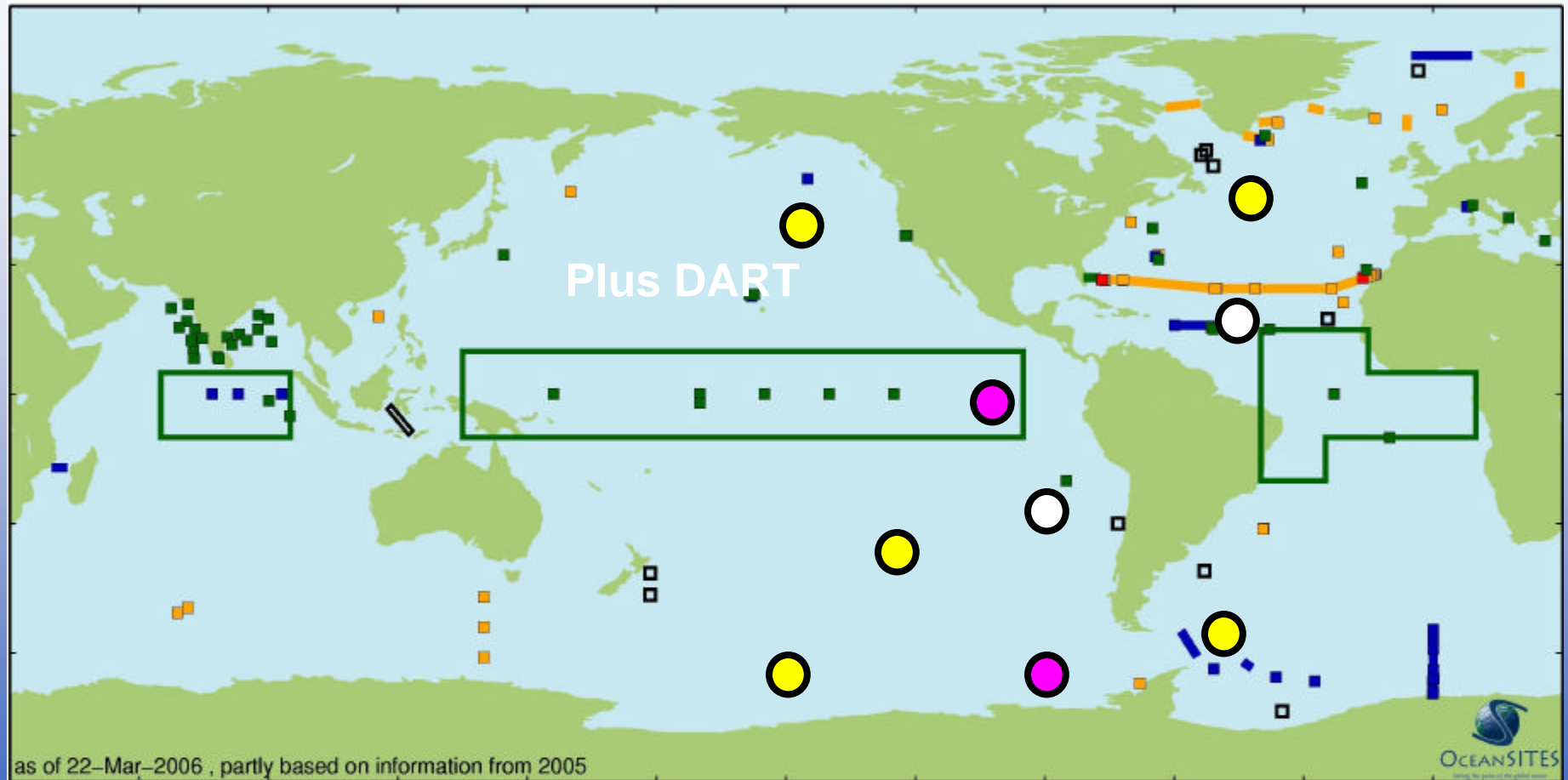
OOI Global CND



Emphasis on high-lat sites (4 of 5 highest priority sites, 5 out of 9 total, all at sites without long-term infrastructure, all have multi-community support).
Emphasis on sites in high CO₂ uptake, and ecosystem regimes contrasting high/low productivity, dust/nodust input, and geophysical synergy.

Synergy with OTHER ocean observatory systems (IOOS, DART, equatorial arrays, international networks...)

OceanSITES near-term



all data public

- | | |
|--|---|
| ■ partially realtime, data available | ■ delayed mode only, data available |
| ■ partially realtime, data not yet available | ■ delayed mode only, data not yet available |
| ■ TAO / TRITON, PIRATA, Indian Ocean Array | □ data policy to be determined |

RCO STAGE II-SCENARIO 0 2 WORKING MODEL

1750 km Backbone

6 Science Nodes

5 Branching Units

9 Water column moorings

TASKS AHEAD

Finish costing S extension

Cost/risk N5- N8 connection

Complete N1, N6 coastal

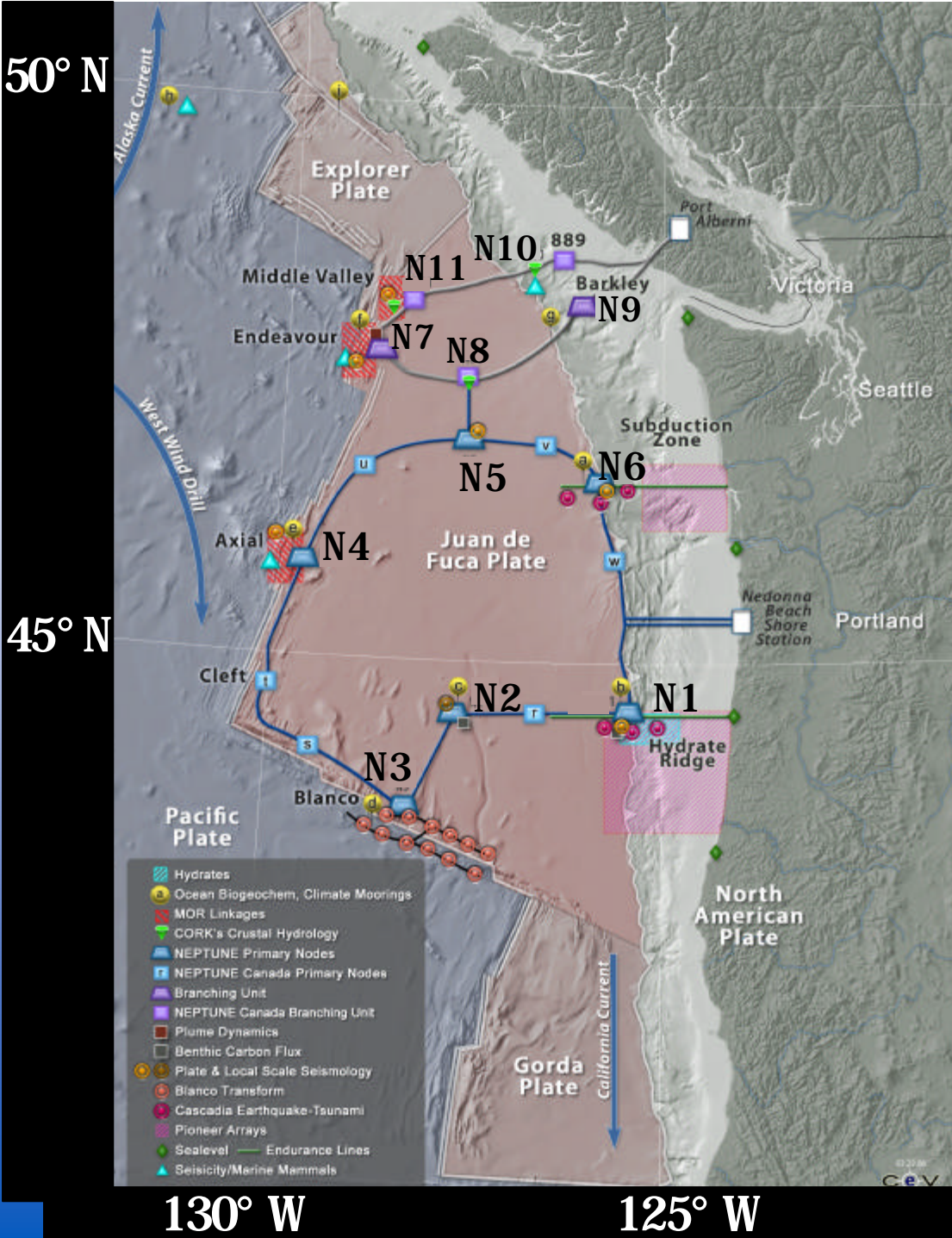
Finalize O&M all sites

Target to \$90 M

- Remove secondary infrastructure (Stage 1 & 2)

- N9 \$4 M mooring

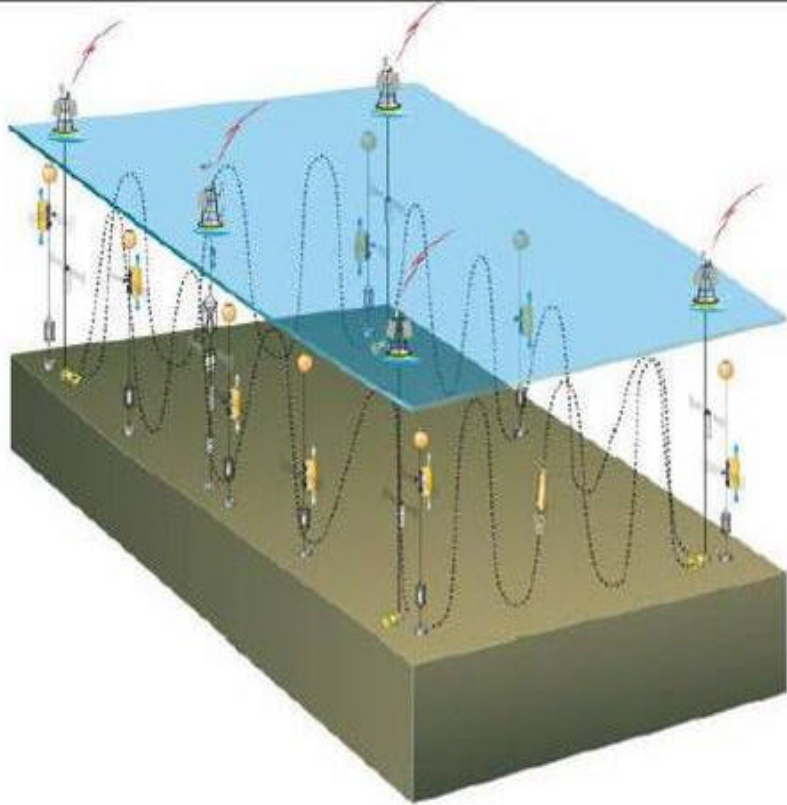
- branching units (install later)



O OI Coastal CN D

- Pioneer Array, moveable every 5 years
 - First deployment at MAB shelfbreak
 - Follow-up locations determined by competition
- PN W/ West Coast endurance observatory
 - Strongly recommend shelf extension of RCO cable to enable hi-power & bandwidth benthic studies
- One East Coast cabled endurance observatory
 - SAB if NSF- Navy tower agreement reached in 1 yr
 - G o M otherwise

M A B Shelfbreak Pioneer Array



Science questions:

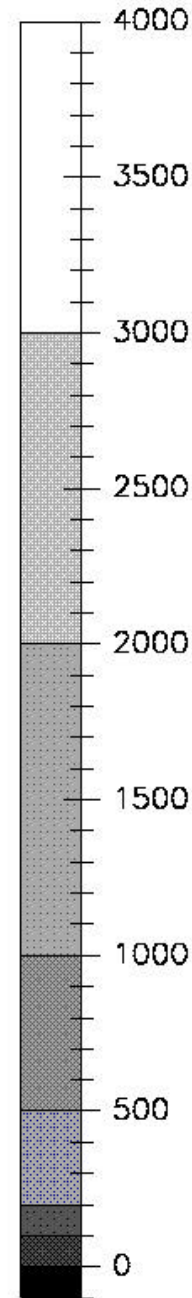
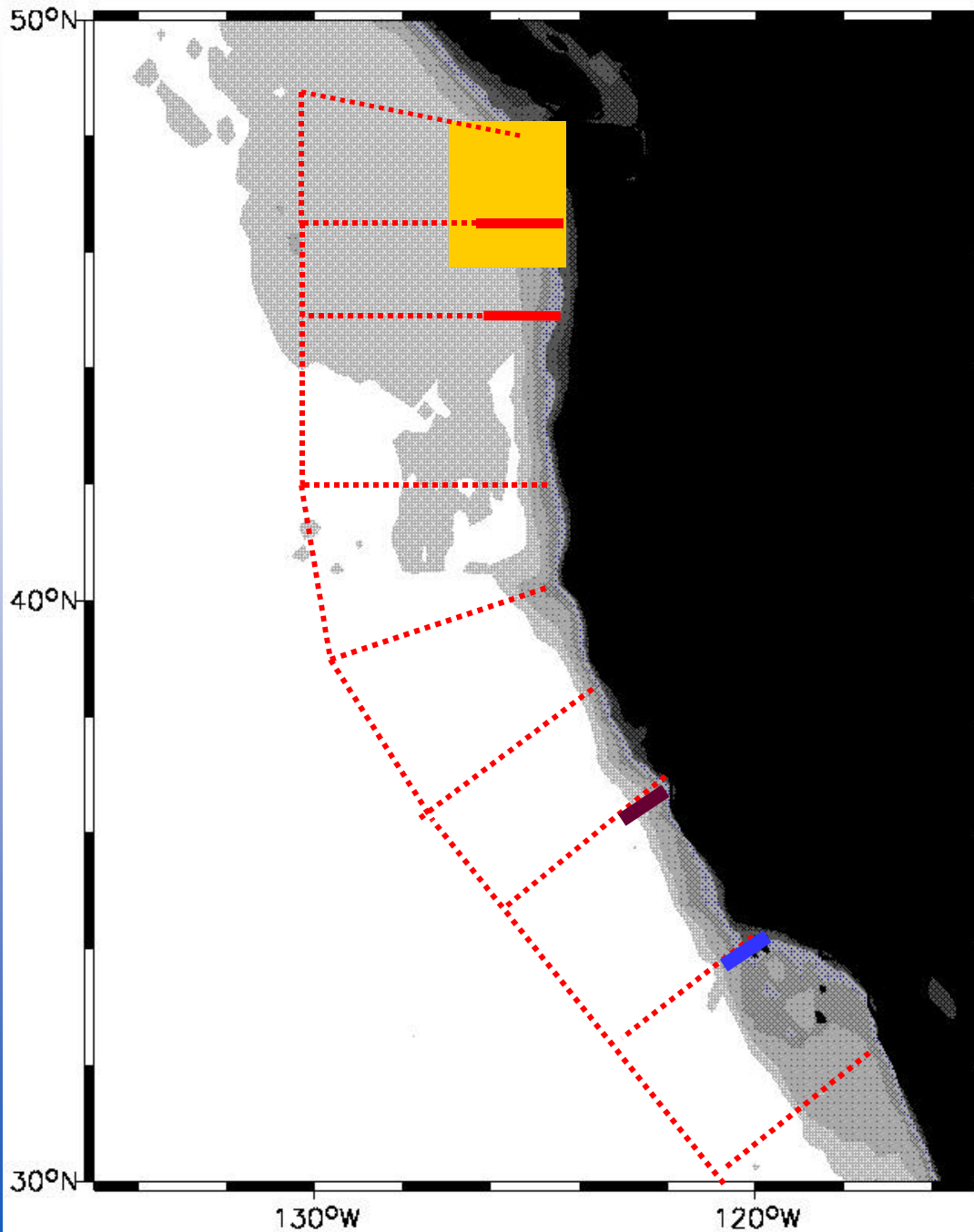
- Processes of shelf-ocean exchange
- Relationships between jet structure & phytoplankton distributions
- Carbon processes

Regional considerations:

- Shelfbreak front
- Forcing by remote WBC
- MVCO

OOI infrastructure:

- Profiling moorings
- AUVs and docking stations
- gliders



West Coast System

(March 30, 2006)

Top Priority

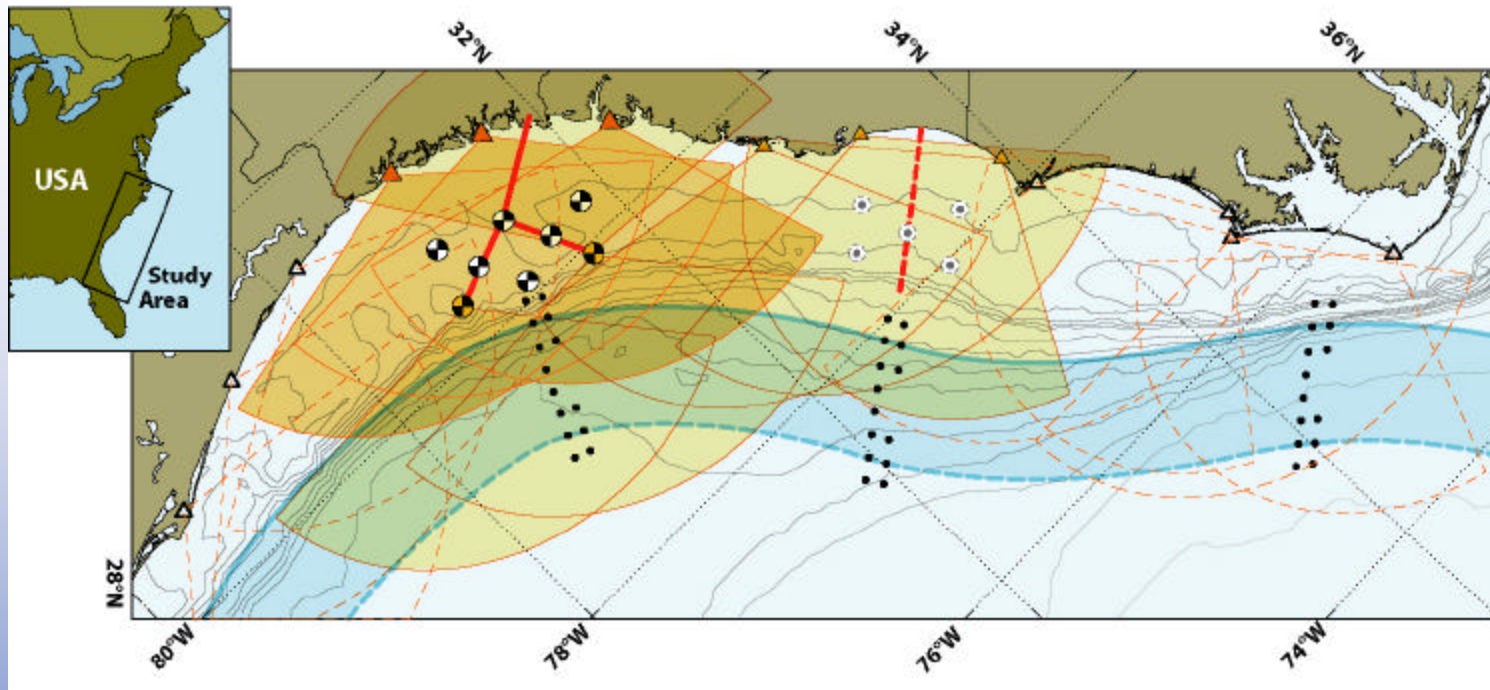
- ⋯ Glider lines
- 5-station profiler line
- Augmented MARS line
- 2-station profiler line
- HF radar

Also important

Consideration of an additional 2-station vertical profiler line to fill the mid-region gap (e.g., Cape Blanco)

Process

SAB Cabled Endurance Array



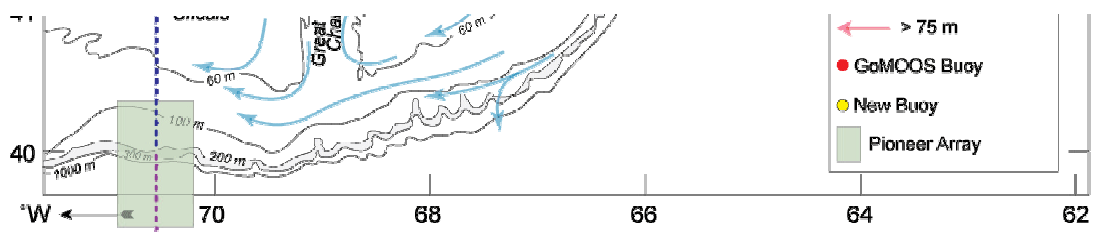
Selected science questions:

- Direct impact of WBC on shelf
- Air-sea-benthic interactions
- Extreme events
- Carbon dynamics
- Population connectivity

OOI infrastructure:

- 1 cabled line
- CPIES
- HF radars
- gliders

Regional considerations: WBC and SABSOON towers



OOI/ORION Activities

- Staffing the Project Office and establishment of Implementing Organizations (IOs),
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OOI/ORION Timeline



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2005					RFA proposals submitted				RFA Panel	Development of IMP			
						Preparation of Preliminary PEP							
2006	RFP for RCO and CI IOs					RCO and CI IO Selection							
			D&I Workshop			RFP for Global and Coastal IOs					IO Selection		
	Prep of Prelim. PEP								CDR	Revise PEP			
2007	Global and Coastal IO Selection			EA / EIS									
	Revise PEP	PEP to NSF	FDR/PDR			NSB Prep.	NSB Approval	Award Negotiation			Construction Phase		
	EA / EIS								Construction Phase				
2008	EA / EIS								Construction Phase				

CDR – Conceptual Design Review
PDR - Preliminary Design Review
D&I – Design and Implementation Workshop
IMP - Internal Management Plan
IO – Implementing Organization
FDR – Final Design Review

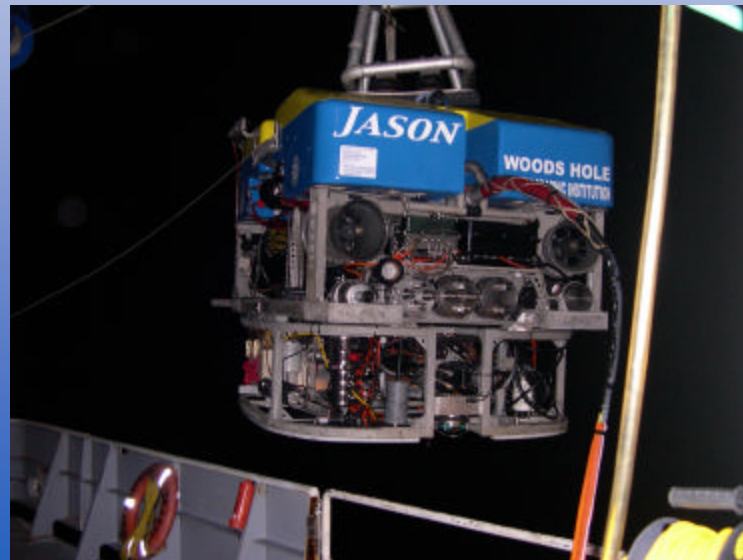


MBARI



ROPOS

OPERATIONS & MAINTENANCE
Seattle April 26-27



W H O I-Jason 2

OPERATIONS & MAINTENANCE

Seattle April 26-27

Issues

- Engineers developing technical specifications for OOI infrastructure should be talking more with vehicle operators in the academic community, as well as in industry
- DESSC should work with ORION Office and funding agencies to define the future role of NDSF in OOI (installation, O&M science support)
- DESSC should encourage the NDSF operator to ensure present and future systems actively incorporate OOI related capabilities and technologies
- DESSC should have a formal liaison from the ORION program

<http://www.orionprogram.org/>



A screenshot of a web browser displaying the ORION website. The browser's address bar shows "http://www.orionprogram.org/". The website has a green and blue color scheme. At the top left is the ORION logo and the text "Ocean Research Interactive Observatory Networks". A navigation menu on the left lists: "What is the OOI?", "Office Information", "OOI Capabilities", "News & Announcements", "Documents & Glossary", "Links", "San Juan Workshop", "Request for Assistance", and "Contact Us". The main content area has a "Welcome" section with a paragraph of text and an image of a cabled network of sensors on the seafloor. Below this is a "News & Announcements" section with a post dated Jan. 31, 2005, titled "ORION Project Office RFA". The post text describes a Request for Assistance for Conceptual Science Experiments of the OOI Infrastructure. A smaller ORION logo is located in the bottom right corner of the page content.

Welcome

The Ocean Research Interactive Observatory Networks (ORION) is a program that focuses the science, technology, education and outreach of an emerging network of science driven ocean observing systems. Building on the heritage of the ship-based expeditionary era of the last century, oceanography is commencing a new phase in which research scientists increasingly seek continuous interaction with the ocean environment to adaptively observe the earth-ocean-atmosphere system. Such approaches are crucial to resolving the full range of episodicity and temporal change central to so many ocean processes that directly impact human society, our climate and the incredible range of natural phenomena found in the largest ecosystem of the planet.



One element of the ocean observatories actively being planned for is a cabled network of linked sensors and submersibles spread out over the sea floor.

The ORION initiative is managed through an award made by the National Science Foundation to the 1201 Group LLC, an entity jointly owned by Joint Oceanographic Institutions (JOI) and the Consortium for Oceanographic Research and Education (CORE) on behalf of their member universities and academic organizations.

News & Announcements

Posted: Jan. 31, 2005

ORION Project Office RFA

The ORION Project Office announces a Request for Assistance in the form of a call for proposals in support of Conceptual Science Experiments of the OOI Infrastructure. The RFA may be downloaded [here](#) (PDF, 178 KB). Persons interested in this RFA are asked to check the RFA web pages periodically for additional information

[More about the OOI Science RFA...](#)

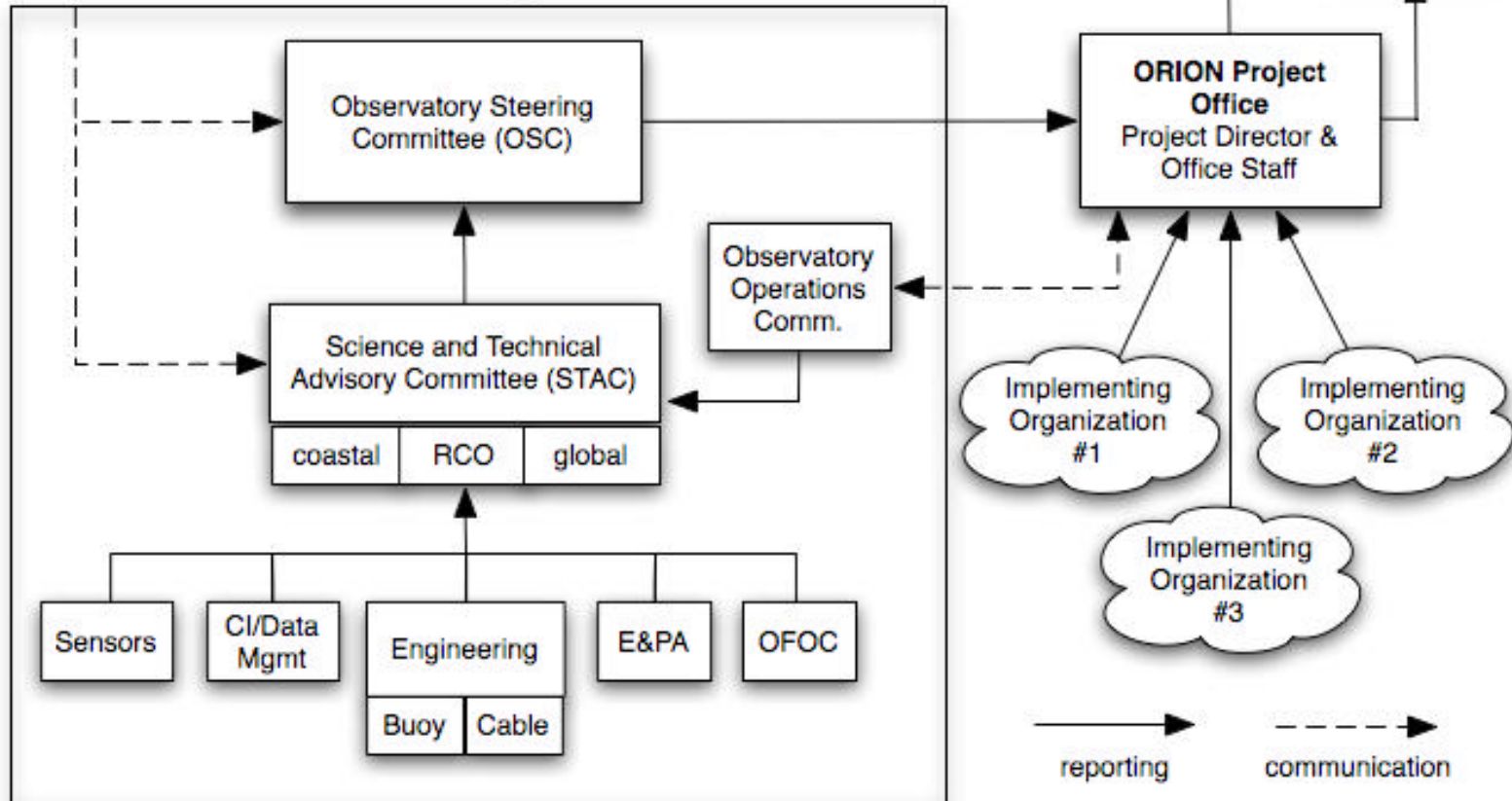






Int'l
observatory
partners

ORION Advisory Structure





ORION Advisory Committees

- **Observatory Steering Committee - Chair, R. Detrick (WHOI)**
- **Science and Technical Advisory Committee - Chair, D. Luther (Hawaii)**
- **Engineering Committee - Chair, K. Raybould (MBARI)**
- **Cyberinfrastructure Committee - Chair, L. Mayer (New Hampshire)**
- **Sensors Committee - Chair, K. Daly (South Florida)**
- **Education & Public Awareness Committee - Chair, G. Matsumoto (MBARI)**

OOI Funding Profile

OOI Funding Profile

(Obligated Dollars and Estimates in Millions)

	Concept/ Development		Implementation		Operations & Maintenance		Totals		Grand
	R&RA	MREFC	R&RA	MREFC	R&RA	MREFC	R&RA	MREFC	Total
FY 2004 & Earlier	35.72						\$35.72	-	\$35.72
FY 2005	3.20						\$3.20	-	\$3.20
FY 2006 Current Plan	5.20						\$5.20	-	\$5.20
FY 2007 Request	8.30			13.50			\$8.30	\$13.50	\$21.80
FY 2008 Estimate				48.00	3.00		\$3.00	\$48.00	\$51.00
FY 2009 Estimate				77.00	7.00		\$7.00	\$77.00	\$84.00
FY 2010 Estimate				78.00	12.00		\$12.00	\$78.00	\$90.00
FY 2011 Estimate				53.00	25.00		\$25.00	\$53.00	\$78.00
FY 2012 Estimate				40.00	40.00		\$40.00	\$40.00	\$80.00
FY 2013 Estimate					50.00		\$50.00	-	\$50.00
FY 2014 Estimate					50.00		\$50.00	-	\$50.00
Subtotal, R&RA	\$52.42		-		\$187.00		\$239.42		
Subtotal, MREFC		-		\$309.50		-		\$309.50	
Total, Each Stage		\$52.42		\$309.50		\$187.00			\$548.92

NOTE: A steady state of about \$50.0 million in operations support is expected to occur in or about FY 2013. The expected operational lifespan of this project is 30 years, beginning in FY 2011. Operations estimates for FY 2008 and beyond are developed strictly for planning purposes and are based on current cost profiles. They will be updated as new information becomes available.

0 0I Budget Breakdown

	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	TOTAL
	\$13.50	\$48.00	\$77.00	\$78.00	\$53.00	\$40.00	\$309.50
Project Office	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$15.00
Cyber Inf	\$4.00	\$6.00	\$6.00	\$5.00	\$4.50	\$4.50	\$30.00
E&O	\$0.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$5.00
<i>Remaining</i>	\$7.00	\$38.50	\$67.50	\$69.50	\$45.00	\$32.00	\$259.50
Coastal	\$3.50	\$20.40	\$23.00	\$1.00	\$3.50	\$12.10	\$63.50
Regional	\$2.50	\$8.60	\$34.50	\$63.00	\$35.50	\$5.90	\$150.00
Global	\$1.00	\$9.50	\$10.00	\$5.50	\$6.00	\$14.00	\$46.00
<i>Total Remaining</i>	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

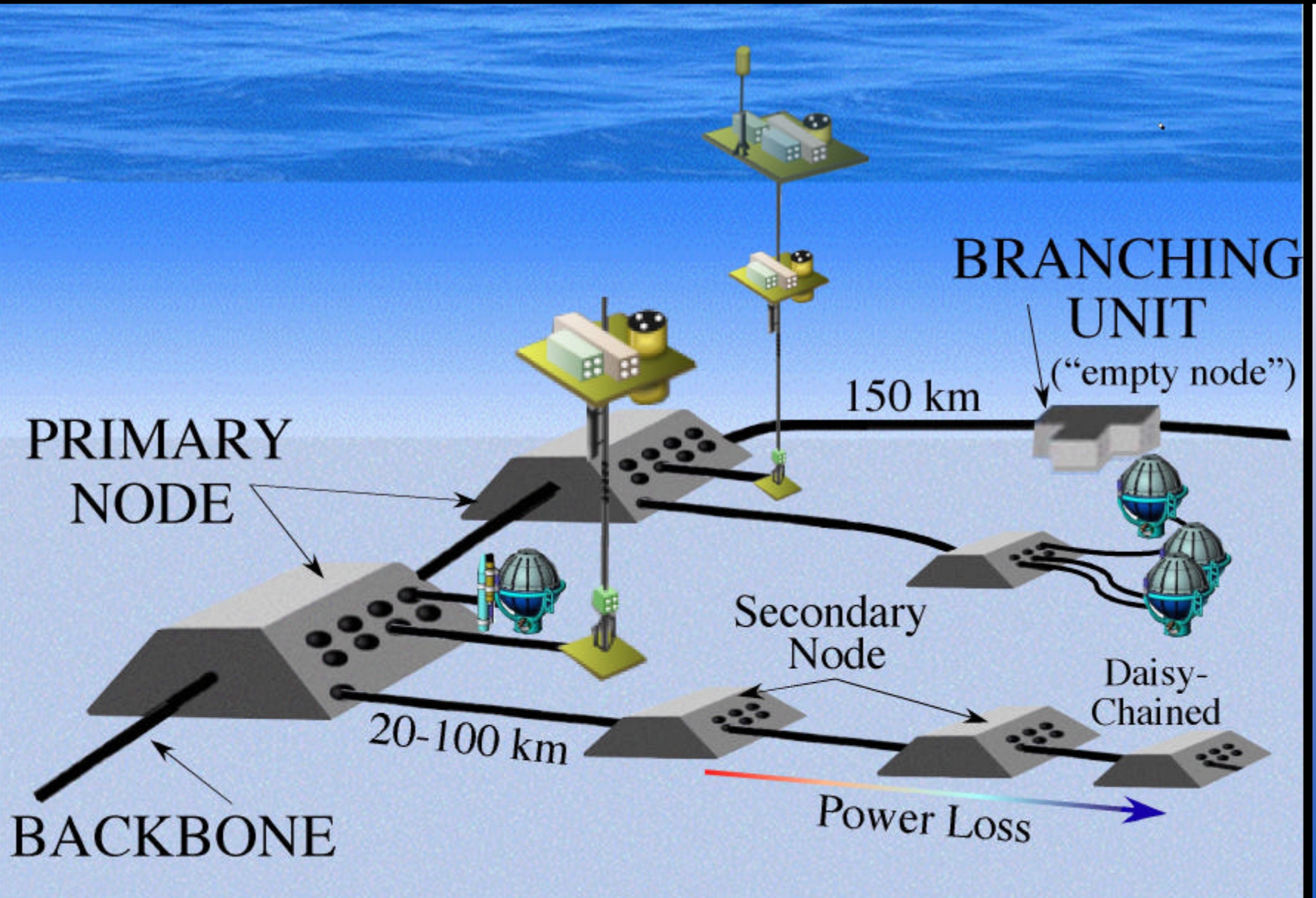
Coastal

	\$3.50	\$20.40	\$23.00	\$1.00	\$3.50	\$12.10	\$63.50
Project management (10%)	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$6.00
Contingency (20%)	\$0.00	\$3.38	\$4.40	\$0.00	\$0.00	\$2.22	\$10.00
EIS	\$1.00	\$1.00	\$0.00	\$0.00	\$1.00	\$0.00	\$3.00
Surveying	\$1.50	\$1.50	\$0.00	\$0.00	\$1.50	\$0.00	\$4.50
Development	\$0.00	tbd	tbd	\$0.00	\$0.00	\$0.00	\$0.00
Fixed Platforms	\$0.00	tbd	tbd	\$0.00	\$0.00	tbd	\$0.00
Mobile Platforms	\$0.00	tbd	tbd	\$0.00	\$0.00	tbd	\$0.00
Instrumentation	\$0.00	tbd	tbd	\$0.00	\$0.00	tbd	\$0.00
Total	\$3.50	\$6.88	\$5.40	\$1.00	\$3.50	\$3.22	\$23.50
Remaining	\$0.00	\$13.52	\$17.60	\$0.00	\$0.00	\$8.88	\$40.00



	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	TOTAL
Project Office	\$13.50	\$48.00	\$77.00	\$78.00	\$53.00	\$40.00	\$309.50
Cyber Inf	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$15.00
E&O	\$5.00	\$5.50	\$5.50	\$5.00	\$4.50	\$4.50	\$30.00
Remaining	\$0.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$5.00
Coastal	\$6.00	\$39.00	\$68.00	\$69.50	\$45.00	\$32.00	\$259.50
Regional	\$3.70	\$19.00	\$3.00	\$4.00	\$21.00	\$13.00	\$63.70
Global	\$1.50	\$10.50	\$62.00	\$63.00	\$8.00	\$5.00	\$150.00
Total Remaining	\$0.80	\$9.50	\$3.00	\$2.50	\$16.00	\$14.00	\$45.80
Total Remaining	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Coastal							
Project management (10%)	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$6.00
Contingency (20%)	\$0.00	\$3.60	\$0.00	\$0.00	\$4.00	\$2.40	\$10.00
EIS	\$1.20	\$0.00	\$0.00	\$1.20	\$1.00	\$0.30	\$3.70
Surveying	\$1.50	\$0.00	\$0.00	\$1.50	\$1.00	\$0.30	\$4.30
Development	\$0.00		\$0.00	\$0.00			\$0.00
Fixed Platforms	\$0.00		\$0.00	\$0.00			\$0.00
Mobile Platforms	\$0.00		\$0.00	\$0.00			\$0.00
Instrumentation	\$0.00		\$0.00	\$0.00			\$0.00
Total	\$3.70	\$4.60	\$1.00	\$3.70	\$7.00	\$4.00	\$24.00
Remaining	\$0.00	\$14.40	\$2.00	\$0.30	\$14.00	\$9.00	\$39.70
Regional							
Project management (10%)	\$1.50	\$1.50	\$2.50	\$2.00	\$2.00	\$2.00	\$11.50
Contingency (20%)	\$0.00	\$1.80	\$11.90	\$12.20	\$1.20	\$0.60	\$27.70
EIS	\$0.00	\$2.00	\$0.50	\$0.00	\$0.00	\$0.00	\$2.50
Surveying	\$0.00	\$1.80	\$0.50	\$0.00	\$0.00	\$0.00	\$2.30
Development	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00
Cable (\$8 per m)	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00
Cable Laying	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00
Nodes (@ \$1.0 M each)	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00
Shore Station	\$0.00	\$3.40	\$7.00	\$0.00	\$0.00	\$0.00	\$10.40
Extension Cables	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00
Moorings (@ \$1.0 m each)	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00
Fixed Platforms	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00
Mobile Platforms	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00
Instrumentation	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00
Comissioning	\$0.00	\$0.00	\$0.00	\$0.00	\$3.20	\$0.80	\$4.00
Total	\$1.50	\$10.50	\$22.40	\$14.20	\$6.40	\$3.40	\$58.40
Remaining	\$0.00	\$0.00	\$39.60	\$48.80	\$1.60	\$1.60	\$91.60
Global							
Project management (10%)	\$0.80	\$0.80	\$0.80	\$0.80	\$0.80	\$0.80	\$4.80
Contingency (20%)	\$0.00	\$1.74	\$0.00	\$0.00	\$3.04	\$2.64	\$7.42
EIS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Surveying	\$0.00	\$1.00	\$0.00	\$0.60	\$1.00	\$1.00	\$3.60
Development	\$0.00		\$0.00	\$0.00			\$0.00
Fixed Platforms	\$0.00		\$0.00	\$0.00			\$0.00
Mobile Platforms	\$0.00		\$0.00	\$0.00			\$0.00
Instrumentation	\$0.00		\$0.00	\$0.00			\$0.00
Total	\$0.80	\$3.54	\$0.80	\$1.40	\$4.84	\$4.44	\$15.82
Remaining	\$0.00	\$5.96	\$2.20	\$1.10	\$11.16	\$9.56	\$29.98

CABLE COMPONENTS



RCO Moorings

