

Green jobs in a blue world: Measuring change and managing opportunity in the world oceans

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The oceanographic community is ready to transform how the public and how science sees the oceans, via the *Ocean Observatories Initiative* (OOI) – an initiative that will create new jobs, spur new enterprises and technological innovation, and launch a new era of science in the environment.

The OOI will extend the Internet to the sea floor. This communication advance will allow thousands of chemical, physical, and biological sensors to stream enormous volumes of data back to shore. As a result, all of us – whether school children or scientists – will be able to see what is happening in the ocean all the time, at the instant when changes occur.



The OOI addresses the critical role of the ocean in climate variation, the changing and growing impacts of that variability on society, the detection and mitigation of ocean-generated hazards, and the exploration of deep ocean ecosystems that have significant biotechnology and pharmaceutical applications. The technology of the OOI will be innovative, and provide long-term infrastructure in critical portions of the global ocean. The cyber infrastructure of the project will increase public engagement, allow scientists and students to observe and sample interactively, and provide unprecedented access to ocean observations – a unique capability. The OOI is a contribution to the national Integrated Ocean Observing System under the Major Research Equipment Facilities Construction account at the National Science Foundation.



The innovative designs of the OOI have the attention of a broad community that seeks to engage and participate. Industrial developers and manufacturers of the sensors, electronics, autonomous underwater vehicles, moored platforms, cables, and cyber infrastructure are ready to gear up and participate. Businesses and local authorities that must do ocean observations in support of developing new ocean activities, such as wind- or wave-driven power generation, are ready to participate. Their plans for environmental monitoring infrastructure will benefit from that being designed for the OOI. International ocean observing programs that are part of the global climate observing system also look to the OOI and would likely source parts of their systems from vendors supporting the OOI.

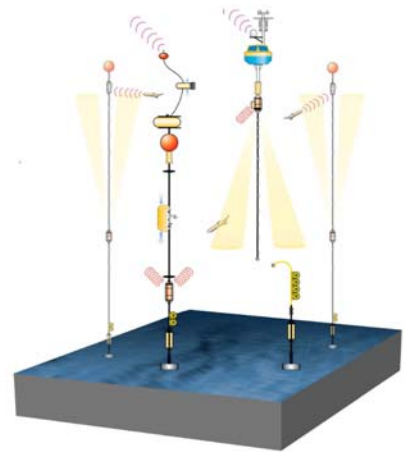
¹ For the most current version of this essay, as well as related essays, visit <http://www.cra.org/ccf/initiatives>

Rooted in a decade of scientific and technological planning, the OOI has been through a comprehensive three-stage vetting process overseen by NSF officials using panels of expert examiners. This process involved a three-day Conceptual Design Review (2006), a three-day Preliminary Design Review (2007), and a five-day Final Design Review (November 2008) by a team of 20 panelists drawn from industry, government, and academia. The panel reported:

- The intellectual merits of the program are outstanding
- The scientific goals, requirements, and interfaces are mature; and
- OOI is ready to begin construction after some minor adjustments to the project baseline.

At present, however, construction is not scheduled to begin for 18 months. Launching construction in advance of this scheduled 2010 start would reduce overall costs, help retire early risk, expand new capabilities, and provide green jobs immediately. Advanced funding would secure early industry participation in the largest investment of the program – laying the fiber-optic cable in the northeast Pacific – allowing us to fix prices under favorable terms, retire contingencies associated with this large single investment, and avoid inflationary escalators on a large portion of the investment.

The cost for the initial two years totals \$180M while an additional \$50M would allow moving high risk investments earlier in the program thereby mitigating risk, reducing costs and allowing an earlier completion of the full observatory program. Direct economic impacts include support for 130 high technology science and engineering jobs and more than one hundred additional jobs for ship captains and crews, shore support, material transport, educators, and information technology specialists, as well as materials such as electro-optical cable, steel, and modern electronics. In addition, through the early engagement with vendors and providers who will service the broader ocean observing needs, the advanced funding for the OOI would stimulate the industries developing, manufacturing, and servicing this new cutting-edge infrastructure.



At a time when observing and understanding the ocean is essential if society is to cope with global warming, sea level rise, droughts, ocean acidification and its impacts on fisheries and ocean health, ocean observing is essential, and this funding moves to establish US ocean science and industry to be fully engaged and competitive.

In short, by providing stimulus funds for this program, science will be advanced, jobs will be created, innovative approaches to climate change research will be stimulated, inflation will have less of an impact on the program, risks to the program success will be reduced, and US leadership in critical research associated with ocean science and novel technologies will be achieved more rapidly.

Supporting documentation for the OOI: http://www.oceanleadership.org/ocean_observing