An Interview with Dr. John Marburger

Oceanography is grateful for the opportunity to interview Dr. John Marburger, Science Advisor to the President and Director of the Office of Science and Technology Policy, Office of the President of the United States. Below are *Oceanography's* questions to Dr. Marburger and his responses.

Broadly speaking, what do you consider to be the most pressing science and technology issues for the United States? What about the most pressing ocean science issues?

Getting resources to the scientists in fields most likely to have long-term impacts on our national goals in energy, health, security, and economic competitiveness and innovation. Making sure we have the human capital to maintain our leadership in science and technology. Making sure funds allocated for science are used wisely. These are the high-level issues. The government's role is to advance fundamental scientific discovery; strengthen science, mathematics, and engineering education; and ensure a scientifically literate population and a supply of qualified technical personnel commensurate with national need.

Ocean science is getting increasing attention, especially efforts to improve understanding and responses to climate change and other global environmental issues in which the ocean plays a role. We have better tools now for observing, analyzing, and simulating ocean-related phenomena, and we are increasingly aware of how important they are for many national objectives.

The Bush Administration has been criticized for not listening to the scientific community. What role do you and your staff at OSTP [Office of Science and Technology Policy] play in setting budget priorities or Administration positions regarding science in general and ocean science in particular?

I can assure you the Administration values scientific information in policy development and strongly encourages research relevant to policy-making. Abundant evidence for this gets lost in the emotional and highly politicized advocacy on issues such as stem cell research or climate change. I must say I am greatly impressed by the power of the media on these issues, but they very often misrepresent the Administration positions. In general, the Administration's positions and actions on these high-profile issues are not well understood.

OSTP and an important interagency coordinating body called the National Science and Technology Council (NSTC), which OSTP manages, work across agencies and with the broader science community to stay in touch with the current state of science. We identify gaps, work out which agencies should cover them, and help get funding to the right places. This process leads, among other things, to an annual R&D priorities guidance memo, jointly issued by OSTP and the Office of Management and Budget (OMB). (The memo and the many NSTC reports can be found on our Web site: http://ostp.gov.) The priorities memo carries weight as OMB reviews the various agency budget submissions and develops a consolidated budget request for the President's consideration. OSTP interacts with OMB and the other White House policy offices on issues that have a science or technology dimension. The President's FY09 budget request included several ocean science and technology initiatives that were identified through the NSTC Joint Subcommittee on Ocean Science Technology (JSOST).

After the United States Commission on Ocean Policy issued its report in 2004, your office helped lead the establishment of a new governance structure for ocean research in the United States. What has been the result of that activity?

In December 2004, President Bush signed Executive Order 13366 establishing the Committee on Ocean Policy and released his Administration's Ocean Action Plan. These actions created a coordinated ocean governance structure among the federal agencies with ocean-related responsibilities and

activities. To support the work of the cabinet-level Committee on Ocean Policy, the Ocean Action Plan created a deputies committee, the Interagency Committee on Ocean Science and Resource Management Integration (ICOSRMI), at the Undersecretary/Assistant Secretary level. Two subcommittees at the Deputy Assistant Secretary level were also established: the Subcommittee on Integrated Management of Ocean Resources (SIMOR) and the Joint Subcommittee on Ocean Science and Technology (JSOST). And a Committee on the Marine Transportation System was established to address coordination of the federal agencies with maritime-related responsibilities and activities. It sounds like a lot of bureaucracy, but it's all necessary to accommodate the large number and diversity of agency stakeholders for ocean affairs.

What has been this Administration's major accomplishment in ocean science and technology?

First and foremost, to work with all stakeholders to develop and communicate a clear message that ocean science and technology are important to society. The 2007 NSTC report *Charting the Course for Ocean Science in the United States for the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy* put forward some concrete funding priorities that reflect that importance. We have also worked with Congress to get funding for the Integrated Ocean Observing System—necessary for collecting indispensable information about the ocean.

The Joint Ocean Commission Initiative (JOCI, http://www.jointoceancommission.org) gave the Administration a grade of "D" for ocean research/science/education in 2005, a grade of "D+" in 2006, and a grade of "C-" in 2007. How do you feel about these grades?

You cannot fix these problems overnight, but the improvements are very real. This Administration believes in peer evaluations and report cards, and I appreciate the continued efforts of JOCI and its chairs, Admiral James D. Watkins (U.S. Navy, Ret.) and The Honorable Leon E. Panetta. They are making sure the recommendations of the U.S. Commission on Ocean Policy and the Pew Oceans Commission remain visible and effective. JOCI has praised Administration efforts when praise was due—especially on working with the broader ocean science and policy community to set meaningful research priorities and communicate the value of ocean science to society. The development and release of *Charting the Course for Ocean Science* is an example. The Administration looks forward to working with Congress to secure adequate funding to support the priority areas established in that report.

What advice would you give to the oceanographic community regarding engagement with policy developers such as yourself?

The oceanographic community has come together to establish some clear and meaningful priorities and has communicated them in a variety of ways. Policy development and budget development are a lot easier when a community as diverse as the ocean scientists can speak with one voice. I think continuing to stress the importance of basic research in ocean science and the crucial value of scientific information to support policy-making should be high priorities. Continued efforts to work as a community to set and emphasize priorities is the best strategy for competing for limited federal resources. Individual scientists need to do what they do best, namely scientific research. But a critical mass also needs to participate in the national affairs of their professional organizations.

Last year the Administration issued the first National Ocean Research Priorities Plan (ORPP) under your signature. How important is ORPP in the overall national research agenda?

You are referring to the NSTC report *Charting the Course for Ocean Science,* which I've already mentioned several times. Produced by the Joint Subcommittee on Ocean Science and Technology in cooperation with the broader community, and reviewed twice by the National Academy of Sciences, the report has had a significant impact in the development of the national research agenda. Federal agencies are already making efforts to address its research priorities. The Administration sees *Charting the Course for Ocean Science* as the guide for agency priorities and further ocean policy development.

The ORPP places a lot of weight on ocean observing, yet that will require considerable additional resources for facilities and infrastructure. How do you see those resources materializing?

The most compelling argument for an earth observing system, particularly an ocean observing system, is that its deployment cost will be recouped by reducing the impact of ineffective or ill-informed decision making at all levels. That said, the sky is not the limit here. We need to have priorities so the available funds have the greatest impact, and that guidance needs to

come from the community as it did in *Charting the Course for Ocean Science*. This and future Administrations will face significant challenges as we attempt to balance needs for satellites, surface ships, and various in situ sensor systems, as well as the operational and maintenance costs associated with them.

Can you shed some light on the status of spaced-based sensors to support ocean observing? There was a lot of concern about climate sensors, but some key data streams for ocean science seem to have been overlooked in the efforts of your office to get earth observing from space back on track. Specifically, it appears that space-based information on ocean vector winds, ocean color, and sea-surface altimetry are all in jeopardy. Can you share some insights into how those concerns will be addressed?

While the United States Group on Earth Observations (USGEO) process is ongoing, the Administration has already taken or is considering steps to address the three data records you mention. The President's FY09 Budget would provide funds to develop alternatives for collecting ocean surface vector wind observations following NASA's QuikSCAT mission. NOAA is also working with international partners in Europe, India, and China to share data that they will collect on ocean surface vector winds. The National Polar-orbiting Operational Environmental Satellite System (NPOESS) Preparatory Project (NPP) will have a sensor (VIIRS, Visible Infrared Imager/Radiometer Suites) that measures ocean color and the plan is to improve the capability on later missions. Finally, the US serves as the primary mission operation center for *Jason-2*, an international satellite that is scheduled to launch in 2008 and will satisfy the requirements of the science community for sea-surface altimetry.

Another area emphasized in the ORPP is "ocean and climate." What is your position regarding climate change? Is the Administration taking steps to understand the impact climate change may have on the ocean and coasts, both worldwide and in the United States, as well as the ocean's role in climate?

Last year's IPCC reports leave little doubt about the reality of recent climate change and human contributions to it. We still have trouble forecasting regional impacts, but we can make good guesses about where they will occur. The real problem with anthropogenic climate change is preventing it from getting continually worse, which ultimately means producing and using energy in ways that release little or no carbon dioxide to the atmosphere. That is a very tall order, given that China is building coal-fired electric power capacity each year equal to the entire electricity production of France. Climate change mitigation is primarily about international energy technology, which at present is extremely climate-unfriendly.

There's no question that CO_2 emissions are already affecting the ocean through acidification and ice-melting, and these effects will continue for some time. This is certainly a high priority for environmental research.

Along a similar line, much attention is being paid, both domestically and internationally, to changes in the Arctic. Is the Administration aware of these changes and, if so, what steps is it taking to address them?

How could anyone not be aware of the changes in the Arctic? The National Security Council, with the cooperation of the Department of State, is currently leading an effort to review our nation's Arctic policy in the face of these changes. This is a big deal.

What is your advice for your successor?

Presidential Advisors work at a policy level within government whose players change very substantially from one Administration to the next. My successor will have to deal with an entirely new set of actors, from the President through the top layers of all the federal departments and agencies. Personal styles, priorities, and processes will all change. So I doubt that lessons I learned in this Administration will be of much value to my successor. There is one thing though—in this job you have to work with all those actors if you want to get anything done.