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OCEANS: U.S. begins planning for nationwide marine biodiversity monitoring system

(ClimateWire,, 10/8/2014) Niina Heikkinen, E&E reporter

A trio of U.S. federal agencies are supporting three demonstration projects that could pave the way for the creation of a national network to monitor marine biodiversity.

The National Oceanic and Atmospheric Administration, NASA and the Interior Department's Bureau of Ocean Energy Management (BOEM) are working with the projects, which could eventually help scientists better track marine health as well as the effects of pollution and climate change on a wide range of ocean life.

"There's been a lot of investment in biodiversity monitoring, but to date, there hasn't been a lot of coordination," said Gabrielle Canonico, the NOAA coordinator for the Biodiversity Observation Network (BON). "We want to build on existing long-term monitoring so we don't recreate the wheel."

The five-year projects will be centered in four locations: the Florida Keys, Monterey Bay and the Santa Barbara Channel in California and the continental shelf in the Chukchi Sea in Alaska. They are expected to receive about $17 million in funding over the course of the research.

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WATER POLLUTION: EPA allows hundreds of hazardous chemicals to pass through treatment plants unnoticed -- IG report

(E&E News PM, 9/29/2014) Annie Snider, E&E reporter

Hundreds of different types of hazardous chemicals are passing through sewage treatment plants and into the country's rivers and streams unnoticed, according to a new report from U.S. EPA's inspector general.

A report [www.epa.gov/oig/reports/2014/20140929-14-P-0363.pdf] released today by the IG's office found that EPA's systems for monitoring and limiting hazardous chemicals sent into the sewer systems by industrial and commercial sources and through wastewater plants have major flaws and are "not always effective."

Hazardous wastes are regulated by EPA under the Resource Conservation and Recovery Act (RCRA), but when those wastes are flushed into the sewer system, they fall under the purview of the Clean Water Act. That 1972 law requires industrial users to comply with pretreatment standards. Sewage treatment plants then have requirements to monitor -- and, if it's written into their permit, limit -- chemicals that come to them.

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Inside This Issue…

TRANSPORTATION: Department adding to NEPA exclusion list

(Greenwire, 10/6/2014) Sean Reilly, E&E reporter

The Transportation Department is expanding the types of highway and transit projects that may qualify for "categorical exclusion" from National Environmental Policy Act reviews, under a final rule [www.gpo.gov/fdsys/pkg/FR-2014-10-06/pdf/2014-23660.pdf] published in today's *Federal Register*.

For the Federal Highway Administration, the new excluded activities will include highway resurfacing, rehabilitation of ferry vessels and construction of stormwater treatment systems for existing transportation facilities, according to the rule, set to take effect Nov. 5. For the Federal Transit Administration, new exclusions will apply to such activities as bridge removal projects, preventive maintenance to culverts and channels, and soil sampling test bores.

Placement on the categorical exclusion list generally means that the activity is deemed to have no significant environmental impact and thus does not require an environmental assessment or environmental impact statement. Among the project types already covered under that umbrella are construction of bicycle and pedestrian paths, railroad track maintenance and installation of noise barriers.

MAP-21, the 2012 transportation policy and funding law, required DOT officials to report on the use of categorical exclusions since 2005 and to seek requests for other types of projects that could be similarly exempted from NEPA reviews.

After the notice of proposed rulemaking [www.gpo.gov/fdsys/pkg/FR-2013-09-19/pdf/2013-22675.pdf] was published in September 2013, environmental and historic preservation advocacy groups raised only mild concerns. In comments filed last November, for example, attorneys for the Southern Environmental Law Center said the proposal sought to strike a balance between "allowing NEPA to be implemented swiftly where appropriate without running the risk of violating its important requirements."

But in its comments submitted around the same time, the American Association of State Highway and Transportation Officials objected that the draft rule included "only a handful of the new CEs" proposed by transportation agencies in response to a DOT survey.

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The **NAEP *National Desk*** coordinator is Ron Lamb (ronaldlamb@comcast.net). NAEP members interested in serving as a future **NAEP *National Desk*** coordinator or deputy coordinator should contact Ron Lamb or Tim Bower (naep@naep.org).

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RESEARCH: Conflicting ocean studies renew a scientific argument over a warming 'pause'

(ClimateWire, 10/7/2014) Gayathri Vaidyanathan, E&E reporter

When British Capt. James Cook undertook his second voyage in the Southern Ocean in 1772, scientists on board measured the temperature 183 meters below the surface. It was colder than at the surface.

Scientists have since graduated to vastly improved technologies for measuring the ocean's temperatures. By 2004, they had launched Argo ("swift" in Greek), a network of 3,000 floating devices spread out throughout the world. The devices record the temperatures down to 6,500 feet, where only the deepest divers, like sperm whales and great white sharks, visit.

Scientists are decoding the oceans using these instruments. The oceans are major players in the climate system, absorbing about 90 percent of the heat of global warming. To understand global warming, scientists must first understand the oceans.

"When we think about global warming, what we should really thinking about, to be honest, is ocean warming," said Paul Durack, a climate modeler at Lawrence Livermore National Laboratory (LLNL).

Improved data about the oceans from the Argo floats caused a splash this week as two studies in *Nature Climate Change* challenged conventional thinking.

Durack and his colleagues at LLNL found that the Southern Hemisphere's oceans have warmed at a higher rate over the past 35 years than previously thought.

If that is true, the repercussions would be huge. It would mean that scientists have missed accounting for a portion of the heat resulting from human emissions. Scientists have calculated that a doubling of carbon dioxide concentrations would warm the planet by 1.5 to 4.5 degrees Celsius. Durack's results would place the planet's sensitivity to CO2 toward the higher end of this range.

A second study, also published in *Nature Climate Change*, found that the deepest parts of the ocean, beyond 6,500 feet, have not warmed by very much in the past decade. Much of global warming's impacts are playing out closest to the surface, said Joshua Willis, a scientist at NASA's Jet Propulsion Laboratory and co-author of the study.

The study set off a furious debate among scientists and oceanographers studying climate change. The world's surface temperatures have risen at a slower rate over the past 15 years than at any time since 1951, according to the Intergovernmental Panel on Climate Change. Some scientists have tied the phenomenon, called the global warming "pause," to the deep oceans' taking up more heat. But the NASA study suggests that may not be the case.

Resolving the reasons for the "pause" would require even better measurements. Scientists are on the case and the Argo devices are plunging to ever greater depths and surfacing with new information.

"We are getting better equipment, better instruments, more of them," Willis said. "Both of these studies are looking at how [ocean temperature] is changing over time. And the more we can learn about what happened in the past, the better we'll be able to predict what is going to happen in the future."

The puzzle of the missing heat

One way to think about global warming is as an imbalance of energy. Solar energy enters the planet and, due to the greenhouse effect, gets trapped within the atmosphere instead of being reflected back into space.

Scientists estimate that every square meter of the planet has received between 0.5 to 1 watt (an average light bulb emits 60 watts of heat) of excess energy in the last few decades. And more than 90 percent of that energy has entered the oceans and warmed them.

The oceans contain 252 billion billion gallons of water, and the energy imbalance caused by climate change is so huge that it affects this vast system. If water is warm, the oceans expand and rises. The

energy has contributed to a global sea-level rise of 3.2 millimeters every year since 1993. Sea levels have also risen due to melting glaciers and ice sheets at the poles.

Scientists have been measuring the heat in the warming upper layers since the 1970s, but these measurements have not been very accurate. The Southern Hemisphere's oceans, especially, have been a dark spot.

So to cross-check the heating of the oceans, Durack of LLNL and his colleagues took a roundabout route. They first verified that climate models are accurate using real-world satellite data of sea-level rise. Then they used the climate models to simulate by how much ocean heat content has risen since the 1970s.

Their simulations did not agree with measurements of ocean heat made by scientists since the 1970s, particularly in the Southern Hemisphere. Prior to the Argo initiative, very few measurements were taken in the south, said John Abraham, a professor at the University of St. Thomas in St. Paul, Minn., who was not involved in the study.

"They find the warming of the ocean since 1970 is biased low," he said, "which means there really was more warming than we've thought."

Since the advent of the Argo project, the measurements have improved and the ocean's heat content has matched the predictions of climate models, Durack said.

An argument over the 'nitty-gritty'

The Durack paper suggests that the upper oceans have been warming much more rapidly over the past 35 years than previously thought.

A second paper, by Willis and his colleagues, suggests that the deeper oceans' warming has not contributed to global sea-level rise in the last 10 years. Sea-level rise occurs due to glacier melt and thermal expansion of warming water.

The scientists used data from the Argo floats to figure out by how much the upper oceans have warmed and expanded. They also knew from satellite data the amount of water added to the oceans from glacier melt.

The two measurements, plus warming of the deep ocean, would equal the global sea-level rise of 2.78 millimeters over the last decade. So, through the process of elimination, they figured out the contribution of deep-ocean warming to the observed sea-level rise.

It was negligible.

The study was called "deeply flawed" by Kevin Trenberth, a climatologist at the National Center for Atmospheric Research. He faulted the authors' choice of data and sampling methodology.

The challenge goes to a key problem in climate science today. Sea surface temperatures over the last decade have essentially been at a standstill, which is a problem, since the ocean warms from the top down. So, it would appear, global warming has "paused."

Trenbeth and others have used simulation-based studies to suggest that the ocean is continuing to warm, but the deeper layers have been warming up more in the last decade.

Willis' study suggests this is not the case. That's not to say Willis believes global warming has paused; he does not. He simply thinks other mechanisms are likely to account for it.

"Global warming is still happening; there is still sea-level rise; we are still sucking up more heat than spitting back out to space," Willis said. "What we are arguing about is the nitty-gritty."

The arguments will eventually be resolved by better data, some of which will come from the "Deep Argo" project, by which ocean temperatures will be sampled down to 19,700 feet. The first two floats were launched off the coast of New Zealand in June this year.

TRANSPORTATION: Texas DOT set to take over most environmental reviews

(Greenwire, 10/10/2014) Sean Reilly, E&E reporter

The Federal Highway Administration is poised to give Texas sweeping environmental review authority for most of its highway program.

Under a draft memorandum of understanding announced [www.gpo.gov/fdsys/pkg/FR-2014-10-10/pdf/2014-24327.pdf] in today's *Federal Register*, the Texas Department of Transportation will assume responsibility for implementation of National Environmental Policy Act requirements, as well as review and consultation duties under the Clean Air Act, the Endangered Species Act, and more than 30 other laws and executive orders.

"We see it as a big milestone," Carlos Swonke, director of the Texas DOT's environmental affairs division, said by phone today, adding that he hopes the final MOU can be signed by year's end. The state had submitted its application in May. Discussions over the terms had gone as high as the White House Council on Environmental Quality, Swonke said.

As part of the handoff, the state DOT has committed to furnishing enough money and staffing to carry out those responsibilities; it also agreed to accept Federal Highway Administration monitoring to ensure compliance. For the first two years after the agreement takes effect, FHWA will conduct semiannual audits, followed by an annual audit in both the third and fourth years. The highway administration is seeking public comment on the terms of the draft memo through Nov. 10.

Three large projects, including a proposed Dallas toll road and a planned bridge over the Corpus Christi Ship Channel, are partially exempted from the agreement, with the federal government retaining responsibility for conducting environmental impact statements and reaching a record of decision.

The Texas DOT, which awarded close to $6 billion in construction projects last year, is the first state transportation agency to seek NEPA responsibilities under a provision in the 2012 transportation law dubbed MAP-21 (short for Moving Ahead for Progress in the 21st Century Act), although California is participating in a similar pilot program authorized by an earlier law, an FHWA spokesman said.

Under a separate agreement concluded in February, Texas has already taken on the job of determining whether projects qualify for "categorical exclusion" from NEPA review requirements. In an audit [www.fhwa.dot.gov/txdiv/txdot-ce-mou-final08122014.pdf] released two months ago, FHWA recommended some changes but found the state to be in "substantial compliance" so far with the terms of that agreement.

AIR POLLUTION: EPA unveils new model to measure transportation emissions

(E&E News PM, 10/7/2014) Amanda Peterka, E&E reporter

U.S. EPA today made available to states an updated computer model to measure different types of air pollution stemming from the transportation sector.

The new model will be available for use in all states but California, which uses its own computer program to quantify transportation emissions. EPA said states should start using the new model to shape required Clean Air Act pollution control plans, and in two years, the agency plans to require it for certain types of air quality analyses.

EPA first released information about the update in July, but officially made the new model available and started the clock ticking on the two-year grace period today in a *Federal Register* notice

[www.federalregister.gov/articles/2014/10/07/2014-23258/official-release-of-the-moves2014-motor-vehicle-emissions-model-for-sips-and-transportation].

"It represents the agency's most up-to-date assessment of on-road mobile source emissions," EPA said.

EPA said the new model also represents its best tool for measuring greenhouse gas emissions from the transportation sector.

The Motor Vehicle Emission Simulator, first released in 2009 and last revised in 2010, is based on millions of emission test results, according to EPA. The latest revision takes into account new data on light- and heavy-duty vehicles, exhaust emissions and various fuel effects, including the air impact of adding ethanol to gasoline. It also incorporates new emissions standards, including EPA's greenhouse gas standards for heavy- and light-duty vehicles, and the agency's Tier 3 vehicle standards.

Compared to the older 2010 model, the new one generally shows greater decreases over time of volatile organic compounds, nitrogen oxides, particulate matter and carbon monoxide emissions from the transportation sector, according to EPA. Particulate matter concentrations, on the other hand, vary depending on the area of the country.

The two-year grace period applies to the use of the model for analyzing carbon monoxide, coarse particle and fine particle pollution hot spots. At the end of the grace period, MOVES14 will also be required for the regional emissions analyses done by states to show that highway and transit projects are consistent with air quality goals.

EPA said states should start using the model as soon as possible in their state implementation plans written to meet the federal ozone, carbon monoxide, particulate matter and nitrogen oxide standards. The Clean Air Act requires states to use the most up-to-date information and models in developing those plans, and the failure to use the new model to quantify transportation emissions could result in EPA finding states out of compliance with the statute.

But EPA also said it would give states that have done significant work in developing pollution control plans under the old model leeway to continue using the old model.

Oceans *continued from page 1…*

The long-term goal of the network is to take all the marine biodiversity research in the United States from different federal agencies, universities and the private sector and integrate it into a single resource. The network would combine remotely collected sea-surface data from NASA, NOAA and U.S. Geological Survey satellites with observational research in the oceans and in laboratories.

"Satellites are very good for seeing patterns, but we also want to understand the processes that driving these patterns," said Woody Turner, the manager of NASA's Biodiversity Research Program. "To really understand ocean ecosystems, you have to combine satellite data with in situ information about where organisms are and what they are doing."

Combining the data could also provide a clearer picture of how human activity, including that related to climate change, is affecting various species and the health of the ocean.

"The idea of having a national picture of species distribution could alert us to look for anthropogenic changes in the environment," Canonico said.

Each of the three projects focuses on a somewhat different element of marine biodiversity research.

The project in the Chukchi Sea will integrate data on Arctic warming and is funded in part by Royal Dutch Shell PLC. The Santa Barbara Channel project will include a lot of satellite research, and the studies in the Florida Keys and Monterey Bay focus on how to integrate the needs of national marine sanctuaries into the network, according to Turner.

BOEM, which conducts and oversees research for developing energy and mineral policies, will also be providing some funding to the Santa Barbara Channel and Alaska projects.

"BOEM is pleased to continue its long history of monitoring offshore areas as part of a mission to assess environmental risk and develop mitigation measures to protect coastal and marine ecosystems," acting Director Walter Cruickshank said in a statement.

In the demonstration projects, researchers will explore issues including whether certain methods of monitoring are better than others and whether there are specific gaps in existing research that need to be corrected. The projects will also help figure out what form the network might take.

Agencies like NOAA had been talking about creating a coordinated network for the past several years, but no one had figured out how to go about managing all the collected data, according to Canonico.

Integrating the data will be challenging because different projects work in varying spatial and temporal scales, according to Turner. There is also the social challenge of gathering the research from so many different sources.

"The goal by the end of the five years is to have a clear idea of what our resource needs are to support this," Canonico said.

Turner said he was excited about the development projects and the eventual creation of a national observation network.

"We hope it works," he said. "We hope these marine BONs can do a better job of understanding the big picture of the oceans and the life in them."

The projects are sponsored under the National Oceanographic Partnership Program.

Water Pollution *continued from page 1…*

The Clean Water Act included a list of priority pollutants and required that any chemicals on that list trigger permit limitations, but that requirement seems to have narrowed EPA's focus to *just* that list, the inspector general's report found.

There are several problems with that.

First of all, the priority pollutants list has not been updated since 1981, despite major changes in industries over that time.

Secondly, it is hardly comprehensive. There are nearly 400 chemicals on the RCRA list, but only 86 of them appear on the priority pollutant list.

While some EPA staff knew that they had the authority to regulate other chemicals when necessary, the IG found that others believed that chemicals can only be included in a discharge permit if they were on the list of 126 priority pollutants.

The IG's office also found that the number of pollutants that sewage treatment plants monitor for annual reports varies widely. EPA's Region 9 had the most comprehensive approach, requiring an average of more than 104 chemicals to be monitored per plant, while other regions within the agency required an average of fewer than four chemicals per plant.

This all makes it difficult for EPA to know about dangerous chemicals passing through sewage treatment plants, let alone go after them, the report found. Chemical discharges are only a violation if the sewage treatment plant's permit sets a specific limit on that chemical.

"Without monitoring or limits in place, certain pollutants may be discharged by the sewage treatment plant and potentially harm human health and the environment," the report states.

How bad is all of this? The IG's office attempted to get a handle on the situation by looking at chemical releases that occurred in 2011 and were reported through the Toxics Release Inventory. The office narrowed that list of 731 discharges of hazardous chemicals down to 207 larger discharges, then looked at which of those chemicals were being monitored for at the sewage treatments plant that received them.

The answer: few. Of the 207 discharges, only 28 of them -- 14 percent -- were chemicals monitored on the sewage treatment plants' discharge permits.

Then the IG took a closer look at a subset of those treatment plants that were receiving the heftiest discharges according to the TRI.

Those plants did not monitor for 36 of the 50 chemicals identified, nearly three-quarters. Those 50 chemicals included some acute hazardous chemicals, the IG said.

The report recommended that EPA take a number of steps to update its monitoring and procedures, and the Office of Water resolved all of the recommendations.

Click here [www.epa.gov/oig/reports/2014/20140929-14-P-0363.pdf] for the report.