

CREM Materials As Requested by SAB Panel
Noha Gaber
to:
Angela Nugent
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Show Details

Hi Angela,

As requested by the SAB Panel in response to my comment, please find some supporting material below.

My Comment:

Your report mentions a number of issues that are of specific relevance to the EPA's Council for Regulatory Environmental Modeling. We have over the

past few years been working to further develop this council to serve as a knowledge network and an institutional mechanism for coordination. We have also developed a new area of activity over the past 5 years that focuses on adopting a more integrated systems thinking approach to our modeling to inform integrated decision making and so help staff to think outside the bounds of single media programs. As your draft report identifies, there are resource constraints that impede the effective implementation of institutional mechanisms that promote integration. Would you please elaborate on what would be the requirements for "well-developed science policy councils", such as the CREM, so that they can serve as effective institutional mechanisms that promote integration? What would these "well-developed science policy councils" look like, what would their role be?

About the CREM:

Given the crucial role that models play in informing regulatory decision making, the EPA established the Council for Regulatory Environmental Modeling (CREM) in 2000 in an effort to improve the quality, consistency and transparency of the models for environmental decision making. The CREM is a cross-Agency council of senior managers charged with developing practices to ensure that EPA's use of environmental models is consistent and defensible. The CREM reports to the Science Advisor (<http://www.epa.gov/osa/>) and the Science and Technology Policy Council (<http://www.epa.gov/stpc/>).

The CREM has developed its Strategy and Action Plan (2009-2011) for Advancing Modeling Science and Technology to Support Decision Making. The CREM has established twelve project plans that will work towards the following strategic goals:

Strategic Goal 1: Advancing Modeling Science and Application to Ensure Model Quality

Strategic Goal 2: Improving Inter and Intra-Agency Coordination

Strategic Goal 3: Reinforcing a Culture of Transparency in Modeling

Strategic Goal 4: Enhancing Integrated Modeling for Integrated Environmental Decision Making

CREM Integrated Modeling Program:

The need to better understand complex dynamic environmental processes is a driver for integrated modeling. It has become increasingly evident that environmental systems are complex and interconnected. A complete understanding of environmental systems will help support decision-making to achieve the greatest reduction of risk at the lowest cost, as opposed to a piecemeal approach that treats each environmental issue separately and may result in unwittingly creating or exacerbating other environmental problems. Integrated multimedia and multidisciplinary approaches are increasingly needed to address our most pressing environmental challenges.

In 2006, the Council on Regulatory Environmental Modeling initiated a series of EPA activities focusing on the use of integrated modeling analyses to strengthen our capacity to address existing and emerging environmental problems and place EPA in a leadership position to advance and benefit from integrated modeling technologies.

The CREM Integrated Modeling Program (<http://www.epa.gov/crem/integrated-modeling.html>) continues to be an active area for the CREM.

White Paper on Integrated Modeling for Integrated Environmental Decision Making

Status: Published November 2008

Content: The White Paper outlines the need for and value of integrated modeling for EPA science and decision-making; analyzes the state of the art and practice of integrated modeling and includes examples of how this approach has been successfully applied and the lessons learned; and identifies the science, IT and organizational challenges to more fully implementing this approach in the future. It also stresses the need for an organization-level solution (i.e. EPA-wide) to promote consistency and repeatability of analyses, overcome barriers to collaboration and coordination and capture and widely share lessons learned.

The white paper proposed a working definition of integrated modeling as follow: "Fundamentally, integrated modeling is a systems analysis-based approach to environmental assessment. It includes a set of interdependent science based components (models, data, and assessment methods) that together form the basis for constructing an appropriate modeling system. The constructed modeling system is capable of simulating the environmental stressor-response relationships relevant to a well specified problem statement."

Development and Review: The White Paper was developed with contributions from across the Agency. After review and approval by the EPA Science Policy Council in December 2007, the Office of the Science Advisor requested the National Advisory Council for Environmental Policy and Technology's (NACEPT) critical review of the White Paper. NACEPT delivered their review in the form of an advice letter to the Agency in

September 2008. NACEPT endorsed the White Paper on Integrated Modeling for Integrated Environmental Decision Making and had focused their review on providing recommendations for the Agency to move forward with the action plan in the White Paper. The Agency response to NACEPT (letter signed by Administrator Jackson on April 21, 2009) outlined the CREM activities on Integrated Modeling.

White Paper:

NACEPT advice letter:

Agency Response:

Integrated Modeling Forum

The CREM developed the "Integrated Modeling Forum" as a new facilitation activity to create a cross-Agency forum for coordination and exchange of information on modeling activities related to high priority science and technology issues that are relevant to the use of integrated modeling in policy formulation and environmental decision making. This Integrated Modeling Forum facilitates discussions and analysis of current integrated modeling activities so that the common challenges and lessons learned from these experiences are documented and widely-shared. The Integrated Modeling Forum also serves a mechanism to identify more opportunities for cross-Agency collaboration in ongoing integrated modeling projects.

To date the following activities have been organized under the Integrated Modeling Forum:

Integrated Modeling for Large Aquatic Ecosystems

(<http://www.epa.gov/crem/2010-symposium.htm>)

Integrated Modeling to Characterize Climate Change Impacts and Support Decision Making (<http://www.epa.gov/crem/2011climate.html>)

Community of Practice for Integrated Environmental Modeling (CIEM)

The CREM is pioneering the development of the international Community of Practice for Integrated Environmental Modeling (CIEM). The mission of the

CIEM is to facilitate communication, collaboration and coordination to foster learning and knowledge sharing and spark innovation in the field of

integrated environmental modeling. The CIEM will promote integrated modeling as a means of achieving better management decisions, so that resources are more sustainably exploited and impacts are better understood.

The CREM also launched in 2010, the iemHUB, a resource and strong

scientific collaboration tool for the international environmental modeling community. The iemHUB is designed to facilitate knowledge sharing, discussion and collaboration on models and tools that support multimedia and multidisciplinary analysis. The iemHUB provides a unique environment for model access, simulation, and teaching and learning about environmental modeling.

Link: <http://www.iemhub.org>

The CREM also co-hosted the International Summit on Integrated Environmental Modeling (December 7-9, 2010, USGS Headquarters in Reston, VA). The Summit brought together 57 scientists and managers from 10 US Federal agencies, and leading academic and nongovernmental organizations, European agencies, universities and companies and International organizations

As a result of this hugely successful summit, ORD and OSA scientists continue to work with a large group of international collaborators to develop a roadmap to advance the science, technology and application of integrated environmental modeling worldwide. In addition, 16 collaborative project proposals and work plans were developed. All summit

materials and discussions are archived on the iemHUB.

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"Collaboration: When a collection of brilliant minds, hearts and talents come together ... expect a masterpiece."