

**US IOOS Coastal and Ocean Modeling Testbed
Terms of Reference
DRAFT – September 14, 2012**

This document will define the US IOOS Coastal and Ocean Modeling Testbed (COMT), including defining the Testbed goals, organization and management plan.

Introduction

The COMT will serve as a conduit between the federal operational and research communities and allow sharing of numerical models, observations and software tools. These tools are needed to elucidate, prioritize, and resolve federal operational coastal ocean issues associated with a range of existing and emerging coastal oceanic, hydrologic, and ecological models. These models provide 1) information used to predict the fate of natural resources, 2) guidance for resource management or 3) information for a spectrum of spatial and temporal conditions.

Mission of the COMT

The mission is to use targeted research and development to accelerate the transition of scientific and technical advances from the coastal and ocean modeling research community to improve identified operational ocean products and services (i.e. via research to operations and also operations to research).

Indicators for model improvements may include results that are more timely, more reliable or accurate, show decreased uncertainty over time or are less expensive (in computational costs or financial).

Structure

The COMT is supported by multiple federal agencies and led by the U.S. Integrated Ocean Observing System (IOOS) Program Office in collaboration with the community of IOOS Regional Associations (RA). The COMT is to be executed by a non-profit entity, such as the Southeastern University Research Association (SURA), but anchored through infrastructure and transitional processes by one or more participating Federal Operational Centers (e.g., National Centers for Environmental Prediction) where Testbed tasks of testing, evaluation and demonstration of operational feasibility are conducted in an operational environment.

NOAA partners for the COMT include the National Weather Service's Environmental Modeling Center, Ocean Prediction Center and Central Operations of the National Centers for Environmental Prediction (NCEP), the National Ocean Service's Coast Survey Development Laboratory (CSDL), National Centers for Coastal Ocean Science (NCCOS), the Center for Operational Oceanographic Products and Services (CO-OPS), and National Marine Fisheries Service (NMFS). Key to the success of this COMT is the inclusion of strong partnerships among other U.S. agencies that have missions or applications in ocean and coastal environmental prediction, natural hazard mitigation, biologically relevant physical indices that impact on primary, secondary and fisheries production, or environmental resource stewardship. Partner

agencies may include, but are not limited to, the US Geological Survey (USGS), US Coast Guard (USCG), US Army Corps of Engineers (USACE), US Navy, National Aeronautics and Space Administration (NASA) and the Environmental Protection Agency (EPA). The goal of this synergism is to fully exploit observational data (satellite and in situ oceanic) for both research and operational applications. An important near term outcome for the American public will be more accurate forecasts for coastal oceanographic events, such as Coastal Inundation, Harmful Algal Blooms, Hypoxia, and fate and transport of pollutants in the water column, including oil spills. This effort would also support improvement of the prediction of weather and related hydrologic events, as identified in the NWS strategic plan.

Organization

The COMT will comprise an Executive Oversight Board (EOB), a Technical Steering Group (TSG), and a Transition Management Group (TMG) led by the COMT Program Manager (CPM). Membership for each group will be determined through a collaborative process that involves discussion between the multiple agencies who agree to be involved in the COMT. During the EOB meetings, budget needs and resourcing will also be addressed. As the program evolves, positions may be added or removed commensurate with program responsibilities and budget availability.

Executive Oversight Board (EOB)

The primary role of the EOB is to provide executive oversight on strategic directions and priorities of the COMT, articulate the essential roles of the COMT approach in accomplishing the missions of respective agencies or institutions, and advocate for COMT resources within respective agencies or institutions.

A. The EOB has the following responsibilities

1. Liaises to their respective agencies' senior leadership concerning strategic direction, high level priorities of the COMT, including resource contributions and priorities in science to operations transition
2. Facilitates and sustains cooperation among the sponsoring organizations/institutions
3. Reviews and approves policies, research, operational themes, goals, plans, and priorities of the COMT
4. Approves key personnel appointments (CPM); TSG membership
5. Coordinates with executives of other institutions on expansion of the COMT Program and partners
6. Meets annually to review and assess progress , facilitate the planning/priority process, and approve priorities for the COMT

B. The EOB membership shall consist of the following

1. (NWS) National Centers for Environmental Prediction – Director (or designate)
2. (NOS) U.S. Integrated Ocean Observing System – Director (or designate)
3. Technical Director of NOS or Director of CO-OPS (or designate)
4. Participant IOOS Regional Association Representatives – Executive Director (or designate) or National Federation of Regional Associations Modeling Representative
5. Senior leadership from other partner agencies
6. Non-federal entity (ex-officio)
7. The COMT Program Manager (CPM) (ex-officio)

Technical Steering Group (TSG)

The Technical Steering Group will be comprised of independent technical experts, both research modelers as well as operational experts who understand the needs of the operational modeling community. The TSG will develop scientific priorities, subject to EOB approval, for the COMT and then evaluate and assess the efforts of the COMT in addressing those needs.

A. The TSG has the following responsibilities

1. Assists CPM to develop science priorities
2. Reviews developmental and transition project priorities proposed by participating members
3. Reviews and provides input to NOAA, partner agencies, and the academic community on scientific and technical directions
4. Reviews the COMT Annual Operating Plan (AOP) annually with each member providing recommendations to the CPM
5. Provides expert peer review on the science being done within the Testbed
6. Assists in developing the plan or process for transitioning models, tools or techniques into the operational infrastructure
7. Reviews/evaluates the strength of the science that the models are emulating and evaluates the data/observations that the models use to validate the results.
8. Assists CPM in reviewing COMT projects

9. Provides expert peer review for the CPM, as requested, on the progress of competitive projects through the award period and participates in quarterly reviews of the COMT modeling effort.

10. This group will meet (virtually) at least quarterly and as necessary

B. The TSG membership shall consist of the following

1. Technical experts from, for example, NOAA, USACE, ONR, NSF, NASA, USGS, DOD and the academic community. Members should oversee various scientific experiments associated with coastal ocean prediction in their external responsibilities
2. Members will be nominated by participating agencies and will include working scientists from a broad spectrum of national and international organizations able to offer independent guidance.
3. Members of the TSG will serve for three years with staggered terms
4. One senior scientist will be designated as the chair of the TSG for a three year term and approved by the EOB
5. Operational users, including emergency managers

Transition Management Group (TMG)

This group, led by the CPM is responsible for the execution of the COMT mission, including meeting the priorities recommended by the TSG and ensuring compliance of guidance put forth by the EOB. This group will facilitate all the programmatic upkeep to ensure the COMT grantees are able to execute their testing activities and are held accountable for their efforts.

A. The TMG has the following responsibilities

1. The TMG coordinates programmatic directions and the management of the COMT.
2. The TMG ensures the mission priorities of members' organizations and COMT are properly aligned, and provides recommendations on high level strategic (scientific and programmatic) directions to the EOB on all activities of the COMT.
3. The TMG recommends to EOB a Senior Scientist to chair the TSG.
4. Provides input and review of Federal Funding Opportunities (Fed members only)
5. Assists CPM on annual budget planning and AOP priority setting (Fed members only)

6. Assists CPM on COMT budget justification in the budget process (Fed members only)
7. Assists CPM in reporting to the Steering and Oversight Committees (TSG and EOB), senior leadership of the agencies
8. The TMG will meet monthly.
9. Provides input to the CPM on COMT project selection.
10. Assists CPM to determine COMT operating priorities and coordinate annual operating plans among member's organizations.

B. The TMG membership shall consist of the following

1. CPM (Will chair the TMG)
2. Lead PI of active Testbed grants
3. Non-federal entity program manager partner (Ex-Officio)
4. Responsible COMT activity managers from participating Federal Laboratories and Operational Center(s) (ie. Coast Survey Development Lab (CSDL), Environmental Modeling Center (EMC), Ocean Prediction Center (OPC), Center for Operational Oceanographic Products and Services (CO-OPS))

COMT Program Manager (CPM)

The program manager provides the day-to-day staff and support to maintain the COMT.

A. The responsibilities of the CPM are to:

1. Lead the development and update of overall COMT science and implementation plans, and provide leadership coordination in the annual budget planning process.
2. Prepare and maintain the AOP for implementing a year's objectives. The CPM Presents AOP to the TSG and EOB.
3. Identify resource requirements and lead the development of funding pathways, in cooperation with the partnering organizations, required for attaining the goals and related metrics established through the AOP
4. Be responsible and accountable for the management of COMT activities and the proper alignment of all interagency COMT efforts with the AOP; (Major COMT activities include, but are not limited to publishing annual FFO, evaluation and administration of

awards, organizing science workshops, conducting funded transition projects, policy and budget updates, etc.)

5. Develop and track COMT performance metrics and report the results to the TMG, TSG and EOB
6. Prepare an annual report and briefings to the EOB and senior leadership of partner agencies that includes, for example, successful research-to-operations transitions, research, and development activities, risks, challenges and prioritized recommendations;
7. Represent the COMT to interagency and international bodies concerning ocean, coastal and marine ecosystems modeling and their applications in research and operational services.
8. Represent the COMT in the US IOOS Program budget planning process

Resources

1. The COMT will be staffed by a CPM. The COMT work will be distributed nationally, benefit Federal Operational Centers and involve multiple federal agencies, academic and industry partners
2. Agency representatives should be appointed by the COMT funding agencies to assist the CPM in execution of grants and staff work.
3. The IOOS Program Office will manage the overall budget planning effort for the COMT.

Location

An important component of the COMT is that each accepted project be associated with a federal operational center. The identified operational center allows models, model components, improvements, and service products derived from improved models to be tested, assessed, and evaluated in an environment equivalent to the operational service delivery environment. It would also provide a direct link between the development modeling activities and operations and service which are major drivers for the COMT.

The operational center will provide office space, necessary equipment, access to operational models and observational real-time data, and computing facilities at a central location. The central location should be affiliated with an operational service provision entity (e.g., NCEP's Ocean Prediction Center) to allow direct interaction between modeling and service delivery/user interface activities.

Member Agency Responsibilities

Member agencies are defined as any agency participating financially or in-kind. They may be represented on other leadership teams mentioned above, but as representatives of their respective

agencies, they will have these additional responsibilities to foster interagency engagement and participation in the COMT.

Member agencies have the following responsibilities:

1. Nominate representatives for the EOB, TMG;
2. Through the TMG:
 - a. Facilitate and sustain cooperation among the sponsoring organizations and institutions
 - b. Review and make recommendations to the EOB concerning the policies, research, operational goals, and priorities of the COMT
3. Provide for a URL that facilitates COMT user exchange of data assimilation products, techniques, and lessons learned, applicable to all modeling centers.
4. Participate in outreach and professional activities that support and promote the COMT, such as conferences and symposium presentations.
5. Deliver scientific results and codes to the user community in appropriate form of transition to operational use; and,
6. Support FFOs for the research communities at large (e.g. universities and other research laboratories) focused on the scientific priorities of the COMT (as resources and agency missions permit) and jointly administered (i.e., FFOs jointly defined and the resulting proposals jointly evaluated and selected by NOAA).