Request for Proposals: STAC-Sponsored Science Synthesis Project for the Chesapeake Bay Program Partnership

Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC)

I. Scope:

The Scientific and Technical Advisory Committee (STAC) provides scientific and technical guidance to the Chesapeake Bay Program (CBP) on matters related to the restoration and protection of the Chesapeake Bay. The Chesapeake Research Consortium (CRC) provides logistic and staff support for STAC via a cooperative agreement with the Environmental Protection Agency (EPA) that includes CBP-funded and STAC-sponsored science synthesis projects.

The CRC is seeking proposals to conduct a STAC-sponsored science synthesis project related to how climate change may impact on-going efforts to restore and protect the Chesapeake Bay. Appropriate topics for a STAC-sponsored science synthesis project are those where a thoughtful analysis and synthesis of available data and/or previously published results would identify, characterize, and suggest means of addressing important knowledge gaps, inform additional research, and place scientific information into a management-relevant context. Uncertainties associated with potential climate change-related impacts on the Chesapeake Bay system are unavoidable and must be acknowledged. Proposals must include characterizations of key, relevant climate change-related uncertainties that may affect the CBP's capacity to predict system responses and achieve desired outcomes. Proposals should also address how the implications of uncertainty and the opportunities for risk-based decision-making can best be communicated to the CBP Partnership.

Suitable science synthesis focus areas under the broad topic of climate change include the following. Although these are all areas of natural science inquiry, we recognize the role of social science and the importance of human behavior and consideration of social factors affecting decisions about mitigation or adaptation.

- Model Forcing - simulated climate forecasts used to drive the Chesapeake Bay Program's suite of models that are used to assess the attainment of applicable water quality standards and the achievement of desired outcomes as articulated in the 2014 Chesapeake Bay Watershed Agreement[1],
- Watershed Processes - the potential impact of climate change on processes and mitigation measures across a range of scales that affect hydrologic inputs and drive watershed fluxes, storage and transformation of nutrients, sediment and contaminants contributing to water quality impairments and impacts on the ecology of living resources in the Bay ecosystem,
- Estuarine Processes - the potential impact of climate change on physical, chemical and biological processes in the Bay ecosystem that affect the ability of the Bay to attain applicable water quality standards, protect living resources, and achieve desired outcomes articulated in the 2014 Chesapeake Bay Watershed Agreement.

[1] https://www.chesapeakebay.net/documents/FINAL_Ches_Bay_Watershed_Agreement.withsignatures-HIres.pdf

Appended to this RFP are summaries of climate change-related recommendations/science needs identified during a recent (September 2018) STAC-sponsored workshop that focused on climate change modeling or by the Chesapeake Bay Program's Climate Resiliency Workgroup. This appendix is provided for information/context only. Some of the recommendations/needs in the attached may not be suitable for a science synthesis project as described in this RFP.

The funded proposal will present the process/procedures that will be undertaken to conduct a thorough and thoughtful synthesis of available data and previously reported approaches, methods, and results related to some aspect of the focus areas mentioned previously. Science synthesis projects will result in a synthesis of the "state of the science" including characterizing knowledge gaps and research needs as related to the specific topic(s) being addressed and Chesapeake Bay restoration. Science synthesis project findings should guide STAC in providing informed recommendations to the CBP Partnership as they make policy decisions and implement management approaches for the purpose of protecting and restoring the Chesapeake Bay.

II. Project Format:

An example of a successful model for science synthesis projects includes hiring an early-career professional (e.g., post-doctoral research scientist) whose time is dedicated to the science synthesis project and whose work is directed by a Steering Committee. Other models may be acceptable depending on the topic and scope of the proposed science synthesis project, but a Steering Committee is always required.

Typically, each Steering Committee will include 4 to 6 members with one Steering Committee member being a current STAC member[2] or STAC-approved designee. The Steering Committee will be led by one or more researchers currently active in a discipline directly related to the proposed science synthesis project topic. In addition, each Steering Committee should include at least one individual who has a history of specific interest and engagement in the synthesis topic, and at least one member who has current or past involvement pertaining to the management of Bay protection and restoration efforts. Multi-disciplinary, multi-institution Steering Committees are encouraged. Larger Steering Committees may also be appropriate if the project team wishes to encourage participation by stakeholders who are less actively involved in directly managing the science synthesis project, but who are able to provide insightful perspectives and guidance. As an alternative in such cases, it may be appropriate to designate a separate Advisory Committee. Each science synthesis proposal should describe the membership and member roles of its committees.

Each science synthesis project will produce a final report to be delivered to STAC during the project's funding cycle. At least one peer-reviewed publication is also expected. The science synthesis team will also be expected to deliver progress updates to STAC and/or other groups within the CBP Partnership (e.g., Climate Resiliency Workgroup) that may have interest in project outcomes.

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2 Current STAC Membership listed here: http://www.chesapeake.org/stac/members.php

III. Proposal Content and Length:

Proposals submitted under this RFP may request funding up to $125,000 in total costs, including any indirect or overhead. Allowable expenses may include salary (post-doc and/or PI), domestic travel (post-doc and Steering Committee/Advisory Committee), supplies, and page charges. Project duration is a maximum of fifteen (15) months from the award date. Proposals should provide a timeline of anticipated tasks and detailed budget and budget justification. Proposals should be no longer than five (5) 8 ½" x 11" pages, single-spaced, 11 pt Arial font. Two-page (maximum) CVs that document the qualifications of each proposed Steering Committee member should be included with the proposal submission. The CVs are in addition to the five-page proposal limit.

IV. Proposal Review and Selection

Proposals will be reviewed by a subcommittee of STAC members based on the following evaluation criteria.

1. Project Description (60%):

Proposals will be assessed based on the overall quality and how the authors demonstrate/illustrate the process/tasks that will be undertaken to successfully achieve the project's objectives by the proposed deadline. Specific assessment characteristics include:

1. The authors compellingly describe a significant research question that if addressed would advance/inform future Bay restoration and protection efforts (See Addendum A for some potential examples).
2. The authors focus on an issue associated with a critical decision point facing the Bay Partnership (See Addendum A for some potential examples).
3. Sufficient existing data and information are available about the proposed topic to permit a collation and synthesis that can address existing knowledge gaps and inform additional research.
4. The authors present a reasonable approach as to how key, relevant climate change-related uncertainties are to be characterized and communicated to stakeholders, including CBP Partnership managers/decision makers.

2. Capacity (15%)

1. Proposals should, to the extent possible, present how the applicant's past performance will ensure the successful completion of proposed activity (i.e., experience with compiling and critically reviewing relevant data/research to produce a "state of the science" report that clearly contributes to informed policy/management decision-making).
2. The team assembled to address the proposed topic represents a range of expertise that will ensure a collaborative analysis and produce findings that will be capable of informing Bay-related management and policy decisions.

3. Probability of success (25%)

A. Reasonableness of timeline.

B. Qualifications of the proposed Advisory Committee and their willingness to participate (may be demonstrated with a letter of collaboration appended to the proposal).

C. Appropriateness of requested budget and budget justification.
D. Adequacy of available support personnel and facilities (if specified in proposal).

V. Proposal Submission

Proposals are due by the close of business on May 10, 2019.

Proposals may be submitted via email or regular mail to:

Rachel Dixon, STAC Coordinator
Chesapeake Research Consortium, Inc
645 Contees Wharf Road
Edgewater, MD 21037

Direct questions regarding this RFP to Rachel Dixon (410.798.1283; dixonr@chesapeake.org) or Brian Benham, Chair, Scientific and Technical Advisory Committee (540.231.5705; benham@vt.edu).

Addendum A:

Summary of Recommendations/Needs from the STAC-sponsored Climate Change Modeling 2.0 Workshop

Recommendations and needs identified during the STAC-sponsored workshop "Chesapeake Bay Program Climate Change Modeling 2.0" (convened in September 2018) are summarized below by breakout group (Watershed and Land Management, Estuarine, and Climate Framework). Some of the recommendations/science needs may not be suitable for a science synthesis project as described in this RFP, but are provided as information/context. Additional information is available online[3].

Watershed and Land Management

a. Recommendations/needs focused around climate effects on nutrient delivery in the Chesapeake Bay watershed.
b. Improve the simulated nutrient response to flow and sediment changes due to changing climate in the Chesapeake watershed.
c. Assess the anticipated change in nitrogen and phosphorus speciation in response to changing hydrology, temperature and other aspects of future climate risk.
d. Assess sensitivity of P loads from developed areas under changing climate conditions.
e. Assess the effects of climate change on BMP performance estimates.
f. Consider uncertainty in the decision process

Estuarine

a. Investigate assumptions regarding model forcing (e.g. temperature, wind), boundary conditions (e.g. sea-level rise, shoreline retreat), and estuarine processes (e.g. hydrodynamics and biological processes) that may be particularly consequential for the simulated distribution, timing and severity of hypoxia.
b. Conduct rigorous multiple model comparison and skill assessment over historical time period with available data (1985-2018).
c. Asses the climate change impacts and associated feedback loops on the Bay's living resources.

Climate Framework

a. Perform both short-term (2025) and long-term (2050 and beyond) assessments of climate change impacts.
b. CBP should develop a climate research framework as well as communication strategy to address the impacts of climate change and the associated risks and uncertainties.
c. Uncertainties associated with projecting climate change impacts should be characterized, together with the recognition that climate change impacts will present an evolving, moving target throughout the coming century – the Chesapeake Bay Program should from this issue as an iterative, risk management problem.
d. In addition to estimating climate change effects, the Chesapeake Bay Program should also consider solutions (e.g. BMP adaptation to mitigate climate change effects).

Climate Science Needs identified by the Chesapeake Bay Program's Climate Resiliency Workgroup

This is a list, in ranked in order of relative importance, of climate science needs recently identified by the CBP's Climate Resiliency Workgroup. Some of the recommendations/needs may not be suitable for a science synthesis project as described in this RFP, but are provided as information/context.

1. Design and function of BMPs under new climate reality
2. Better understanding of precipitation changes with regard to intensity, annual amounts, seasonal impacts, storm events and stormwater management
3. Social Science- human behavior- implications of the human response to climate change, flooding, sea level rise, as well as motivation and needs of communities to adapt
4. Better understanding of sea level rise and subsidence impacts in changing climatic conditions
5. Green infrastructure performance including increased sediment due to climate change
6. Changing climate conditions and their impacts on wetlands
7. Climate impacts to key aquatic fish species abundance, life cycle and habitat
8. Changing climate conditions and their impacts on SAV
9. Changing climate conditions and their impacts on invasive species

[3] http://www.chesapeake.org/stac/workshop.php?activity_id=289