

To: Lynn Scarlett, Chair NOAA SAB
From: Steve Polasky, Eugenia Kalnay, Denise Reed, Bob Winokur (“Gang of four”)
Re: Potential Topics for SAB Discussion

At the April 24-25, 2017 meeting, the SAB agreed to generate a list of topics of high interest and importance to NOAA that the SAB could discuss at future meetings in the remainder of 2017. A volunteer committee comprising Steve Polasky, Eugenia Kalnay, Denise Reed, Bob Winokur agreed to brainstorm on ideas and present a short list of potential topics for the SAB to consider. This memo provides topics that the committee agreed were high priority along with a summary of why we thought these topics rose to the top. As a committee, we spent the most time and had the most agreement about Topic 1, which is reflected in having a longer summary about this topic.

Topic 1: Value of information

NOAA invests in data gathering and analysis (“environmental intelligence”) about fisheries, ecosystems, climate, weather, and other oceanic and atmospheric information. Gathering better information and presenting it to decision-makers and the public in useful and understandable formats can improve public-sector management and private-sector decision-making and result in improved outcomes for the citizens of the U.S. Important topics for NOAA related to the value of information include:

- **Quantification and documentation of the value of information gathered by NOAA.** Information gathered by NOAA has benefits for society. For example, better storm prediction capability can reduce risks and reduce damages. Some values can be quantified in monetary terms, such as reduced value of property damage from better storm prediction and preparedness. A simple approach would be to compare the quality and economic value of current forecasts with those from the reanalysis made with 1990s technology. Other information may improve outcomes in terms of environmental management, improved endangered species protection, or improved conservation of culturally important resources, all of which is valuable but difficult adequately to quantify in monetary terms. What are appropriate methods for documenting the value of information, in both monetary and non-monetary terms?
- **Better understanding of how information is used.** How people respond to available information, or fail to respond, determines whether information has value. Even the best prediction, if ignored, will not reduce risks or damages. What are the ways to improve communication so that information is incorporated into behavior and decisions and will result in better outcomes? With improved understanding of how information is used, it may be possible to redesign data collection to provide information that is of greater use and greater value to the public. What types of information generate the most value and have the highest return on investment?
- **Better communication of the value of NOAA information.** NOAA provides valuable services to society from improved environmental intelligence, but these are not always clear to those outside the agency. How can NOAA do a better job of

demonstrating the positive economic impact of its activities? Can different programs within NOAA learn from one another about how best to convey the value of their programs to society?

Topic 2: The benefits of large-scale ecosystem restoration

NOAA is involved in protecting and restoring coastal and marine ecosystems. Numerous questions could be asked about the effectiveness and value of large-scale restoration. What are the benefits to society of large-scale ecosystem restoration? How does one set large-scale ecosystem restoration goals? (What scale? What attributes?) Can these benefits be quantified, either in monetary or non-monetary terms? When ecosystems are restored, how does this change the provision of various ecosystem services of value to society? What is the state of our knowledge about how successful restoration efforts are, both in the near term and in the longer term? How does one measure outcomes of large-scale restoration? Does ecosystem restoration make ecosystems more resilient? What kinds of information are most needed to better prepare for and adapt to changes in environmental conditions and potential disturbances, and how should NOAA use information in decision-making? This topic is related to Topic 1 in the sense that both are aimed at better understanding and better communicating the value of NOAA activities.

Topic 3: Enhancing and harmonizing the delivery of environmental services across NOAA

NOAA provides scientific data, information, and services, which often cut across many line offices. Consequently, it is important to enhance and optimize the delivery of environmental services across NOAA as well as to provide an integrated approach to the provision of environmental services that provide value to virtually all segments of the U.S. economy and support disaster response and protection of lives and property. Examples of cross-cutting topics include better utilizing citizen science, ecosystem science and management, and exascale computing. Some of these topics can be well handled by working groups (e.g., exascale computing) but others might best reside with the SAB as a whole. What are the most important cross-cutting topics? Are there important general approaches that can be taken to improve NOAA performance on these topics? What options can be pursued to develop an integrated “whole of NOAA” approach for the provision of environmental services, while maintaining unique services provided by individual line offices? One point raised in connection with this topic was the importance of keeping the discussion at the strategic level and not getting into details best handled by NOAA administrators. A strategic discussion could include evaluation and discussion of integrated approaches used by other institutions, articulation of additional service value provided by integration (related to Topic 1), and/or discussion of metrics to assess restoration performance.