



## SCIENCE ADVISORY BOARD

April 2, 2021

Ben Friedman  
Deputy Under Secretary for Operations,  
Performing the duties of Under Secretary of Commerce for  
Oceans and Atmosphere and NOAA Administrator  
Herbert C. Hoover Building, Room 6811  
14th Street & Constitution Avenue, NW  
Washington, DC 20230

Dear Mr. Friedman:

***Subject: Transmission of the Science Advisory Board Report: Decision Making Under Deep Uncertainty***

On behalf of the NOAA Science Advisory Board (SAB), I am pleased to transmit to you a SAB report "Decision Making Under Deep Uncertainty. What is it and how might NOAA use it?" The SAB approved this report at its March 17, 2021 virtual meeting. The Decision Making Under Deep Uncertainty (DMDU) report was drafted by the SAB's Ecosystem Sciences and Management Working Group (ESMWG), which significantly contributed to this topic.

Purpose of the report is to examine whether DMDU has the potential to add value to existing decision making processes within NOAA. DMDU is designed to be used in situations where uncertainty cannot be well-characterized with existing data, models, or understanding. The report highlights fisheries and coastal planning as two areas in which DMDU might add significant value. Techniques seek to manage risk by identifying low-regret solutions, or solutions that deliver net benefits under a wide range of future conditions. Benefits of DMDU include avoiding unanticipated or unintended future consequences, reducing risk mitigation costs, providing adaptable solutions, and enhancing stakeholder engagement. However, techniques are resource-intensive to apply, and therefore are not appropriate for all decision cases. The report makes the following recommendations, which are elaborated in the report:

**Recommendation 1:** Include elements of DMDU where risk-based planning is already used.

**Recommendation 2:** Explore potential applications of DMDU to inform coastal planning programs and activities.

**Recommendation 3:** Explore application of DMDU to design monitoring programs.

**Recommendation 4:** Develop guidelines and data to enable systematic scenario development.

**Recommendation 5:** Consider other promising areas of DMDU application within NOAA.

The SAB looks forward to hearing NOAA's response to these recommendations. Please let me know if you have any questions, comments, or concerns.

Very respectfully,

A handwritten signature in blue ink that reads "John R. Kreider". The signature is fluid and cursive, with the first name "John" being the most prominent.

John Kreider  
Chair, NOAA Science Advisory Board

Attachment: SAB Final Report "Decision Making Under Deep Uncertainty"

CC: Karen Hyun  
Letise LaFeir  
Craig McLean  
Michael Weiss  
Adrian Mahoney  
Cisco Werner  
John Armor  
Jonathan Pennock  
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