



# SCIENCE ADVISORY BOARD

November 5, 2020

Neil A. Jacobs, Ph.D.  
Assistant Secretary of Commerce for  
Environmental Observation and Prediction  
Herbert C. Hoover Building, Room 6811  
14th Street & Constitution Avenue, NW  
Washington, DC 20230

Dear Dr. Jacobs:

***Subject: Transmission of the NOAA Science Advisory Board Report on the Review of the Hurricane Forecast Improvement Program (HFIP)***

On behalf of the NOAA Science Advisory Board (SAB), I am pleased to transmit the attached report entitled "Report and Recommendations to the NOAA Science Advisory Board Concerning the Hurricane Forecast Improvement Program". The SAB approved this report at its October 28, 2020 virtual meeting.

This review was conducted by the SAB's Environmental Information Services Working Group (EISWG), in consultation with external subject matter experts and NOAA experts. NOAA is charged with addressing the HFIP under the Weather Research and Forecasting Innovation Act of 2017 (Weather Act), Title 1 Section 104, and EISWG provided its review under its mandate in the Weather Act, Title 1 Section 401.

The review identifies and commends the vital role HFIP plays to rapidly transition promising research into operations to improve hurricane forecasts and warnings. The review also notes that the structural and financial limitations of HFIP must be addressed, and critical gaps filled, to more rapidly address the urgent goal of the Weather Act. The report makes the following specific recommendations:

*In addressing Weather Act Section 104(c): Project Plan*

**Recommendation 1:** To address The Weather Act Title 1, Sec. 104 (c), the expanded scope must be mapped to necessary resources and timelines.

*In addressing Weather Act Section 104(b)(1): Improving the prediction of rapid intensification and track of hurricanes*

**Recommendation 2:** Expand participation through dedicated science campaigns that cross the atmosphere-ocean interface to improve model physics and data assimilation and increase the use of probabilistic forecasts to quantify uncertainty. Continue Hurricane Analysis and Forecast System (HAFS) development and entrain more external researchers.

*In addressing Weather Act Section 104(b)(2): Improving the forecast and communication of storm surges from hurricanes*

**Recommendation 3:** Communicating storm-surge risk should be prioritized and account for uncertainty from multiple sources and address diversities of human perception, behavior, and needs. Evaluation and improvement of operational storm surge models should also be prioritized.

*In addressing Weather Act Section 104(b)(3): Incorporating risk communication research to create more effective watch and warning products*

**Recommendation 4:** Severe weather can evoke subsequent hazards; warning and watch products need to address risk from multiple threats. Developing a strategic plan for social and behavioral research with milestones and metrics should be a high priority to ensure forecasts and forecast products address diverse societal needs and impacts.

*In addressing Weather Act Section 401(a)(3): Improving communications and partnerships*

**Recommendation 5:** Increase internal coordination across OAR, NWS, and NOS and expand science and technology partnerships to achieve Weather Act goals.

On behalf of the SAB and EISWG and in compliance with the Weather Act, we respectfully submit this report to you for further action by NOAA. Please let me know if you have any questions, comments, or concerns about this report.

Very respectfully,



John Kreider  
Chair, NOAA Science Advisory Board

Attachment: Final Report

CC: Tim Gallaudet  
Ryan Maue  
Erik Noble  
Adrian Mahoney  
Louis Uccellini  
Andrea Bleistein  
Carl Gouldman  
David Helms  
John Snow  
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