

# NOAA'S RESPONSE TO THE SCIENCE ADVISORY BOARD PRECIPITATION PREDICTION GRAND CHALLENGE STRATEGIC PLAN REVIEW

Document Overview: This document serves as the response to the Science Advisory Board's review of the Precipitation Prediction Grand Challenge. Provided in this document are an overview of the PPGC, the links to materials, and the response to each recommendation. If additional information is required please contact Wayne Higgins at [Wayne.Higgins@noaa.gov](mailto:Wayne.Higgins@noaa.gov).

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## Grand Challenge Overview

In early 2020, NOAA's Weather, Water, and Climate Board (WWCB) set a grand challenge for the nation, "To provide more accurate, reliable, and timely precipitation forecasts across timescales from weather to subseasonal-to-seasonal (S2S) to seasonal-to-decadal (S2D) through the development and application of a fully coupled Earth system prediction model."<sup>1</sup> Representatives from every Line at NOAA then wrote the strategic plan for accomplishing this grand challenge.

## The Review

### *Materials:*

- The [Climate Working Group's review is here](#) and the [presentation is here](#).
- The Science Advisory Board's transmission letter is [here](#).
- A [notional approach to NOAA's responses is here](#).

In July 2020, the WWCB invited the Climate Working Group (CWG) and Environmental Information Services Working Group (EISWG), sanctioned working groups of NOAA's Science Advisory Board (SAB), to provide a review of that strategic plan. In August 2020, the Review Team presented that review to the SAB Members. SAB Members accepted the recommendations with the caveat delineated in Recommendation #1 and forwarded the package to Dr. Neil Jacobs as Acting Administrator performing the duties of Under Secretary of Commerce for Oceans and Atmosphere.

NOAA's response to that review follows.

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<sup>1</sup> Note: By addressing systematic errors in global models, improvements in many other parameters, not just precipitation, will be realized.

## Response to the Recommendations

NOAA is grateful for, and agrees with, the recommendations. Moreover, with appreciation for the CWG's thorough and timely review, and the collaboration with the EISWG, the recommendations were incorporated in full into the next version of the Strategic Plan and immediately informed the Implementation Plan.

**Grand Recommendation:** Emphasize the grand in the plan: What is the biggest push that will make the biggest difference?

NOAA agrees and has already done so. The Introduction section includes a list of the six largest pushes that will make the biggest difference and provide the greatest impact.

**Recommendation #1:** Structure the strategic plan for R2O2R, from the identification of needs in science of prediction and predictability, to the co-development of products to service.

NOAA agrees with the Review Team and the SAB, but retained the order of sections recommended by the SAB. A phrase was added to introduction of Objective 1/User Needs that provides a nod to the SAB's Recommendation #1.

**Recommendation #2:** Explain the specific sources (decisions, observations, processes, etc.) of the substantial improvement (or the lack thereof) in precipitation prediction from the last 20 years, especially lessons learned from observations, modeling, and prediction.

Accepted. Appendix A/Table A1 details the specific sources of improvement over the past 20 years as recommended.

**Recommendation #3:** Explain the specific sources that will lead to substantial improvement in precipitation prediction over the next 20 years.

Accepted. Appendix A/Table A1 details the specific sources of improvement over the past 20 years as recommended.

**Recommendation #4:** Highlight clear, quantitative goals and connect those to the improvements distinguished in Recommendation #3.

Accepted. Section 3: The Future includes clear, quantitative goals for the next two, five, and 10-years.

**Recommendation #5:** Consider delineating the role of the community (different NOAA line offices, NOAA Cooperative Institutes, academia, private sector, states, and other federal agencies) and how NOAA and partners will work together to achieve these outcomes.

Accepted. Appendix B delineates the roles and actions for everyone in the community.

**Comment #1:** Highlight the mechanism of integrating precipitation process datasets (including clouds and precipitation rate), seamless approaches to understand and model the processes behind precipitation predictability from weather to decadal scales, and establish traceability of error sources to evaluate improvements in precipitation prediction skill.

Accepted. The comment was addressed in the PPGC strategy document in the activities that require the biggest push in the document introduction.

Comment #2: Clarify the focus of the plan to exclude or include precipitation prediction improvement over the ocean.

Accepted. The comment was addressed in the PPGC strategy document in the activities that require the biggest push in the document introduction, specifically defined.

#### Conclusion and Acknowledgements

The Precipitation Prediction Grand Challenge is a critical initiative for improving our nation's, and the world's, prediction capabilities. NOAA acknowledges the Climate Working Group, the Environmental Information Services Working Group, the Review Panel members, and the Science Advisory Board for their dedication and contributions to NOAA.

Here is the finalized version of the [Precipitation Prediction Grand Challenge Strategy](#).

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