



# SCIENCE ADVISORY BOARD

July 21, 2024

Dr. Richard W. Spinrad  
Under Secretary of Commerce for Oceans and  
Atmosphere & NOAA Administrator  
Herbert C. Hoover Building, Room 6811  
14th Street & Constitution Avenue, NW  
Washington, DC 20230

Dear Dr. Spinrad:

**Subject: Transmittal of NOAA Science Advisory Board Statement on NOAA Investment in Deep Learning Numerical Weather Prediction**

On behalf of the NOAA Science Advisory Board (SAB), I am pleased to transmit to you the SAB Environmental Information Services Working Group's (EISWG) Statement on NOAA Investment in Deep Learning Numerical Weather Prediction (DLNWP). At the SAB meeting on June 18, the EISWG presented this statement, and the SAB approved it.

The statement includes six recommendations that emphasize urgency of action by NOAA on DLNWP. The DLNP approach has advanced rapidly and represents a potentially revolutionary approach to weather forecasting. As a result, NOAA's peer institutions and private industry have made significant investments to explore its efficacy. NOAA has yet to make a core investment in DLNWP. Delay represents substantial risk to NOAA, who is expected to be the US authoritative provider of weather forecasts and leader in weather research. NOAA has both an opportunity and a responsibility to explore DLNWP, resourcing it commensurate with its game-changing potential.

The six recommendations in the statement, considered preliminary steps, are as follows:

- 1. Staff with DLNWP expertise:** A substantial investment in new staff with DLNWP expertise is needed.
- 2. Living roadmap for DLNWP evaluation and development:** prepare a living roadmap, with recognition this topic area is rapidly developing and plan adjustments are to be expected.

3. **Data collation and reanalysis:** DLNWP methodological development can benefit from large, curated data sets, including reanalyses and long time series from major observing systems such as satellite radiances, radars, and conventional data.
4. **Changes in computational resourcing:** Re-thinking high-performance computational resourcing will be needed alongside the development of a DLNWP capacity and its evaluation.
5. **Partnerships:** Collaboration will be in the best interests of partners across the enterprise. NOAA should identify barriers to industry, academic, and pan-government collaborations, then work to address them. NOAA should make all its DLNWP data readily available to others.
6. **Management of DLNWP:** NOAA should build and manage its DLNWP effort as a coherent team, working collaboratively in pursuit of the common goal, with the enthusiastic support of all affected line offices.

The SAB understands the Assistant Secretary of Commerce for Environmental Observation and Prediction is championing efforts across NOAA Line Offices, including NOAA Research and the National Weather Service. The EISWG and the SAB agree this statement's objective is to support and provide backing to early efforts underway within NOAA.

Please let me know if you have any questions, comments, or concerns, or if the SAB can be of assistance in any way.

Very Respectfully,



John R. Kreider  
SAB Chair

Cc:

Karen Hyun	Carmen Davila
Michael Weiss	Carl Gouldman
Sarah Kapnick	Martin Yapur
Michael Morgan	Brad Colman
Kenneth Graham	Scott Glenn
Steve Thur	Casey Stewart
Cindy Elsenheimer	Joseph Fillingham

Attachment: NOAA Science Advisory Board Statement on NOAA Investment in Deep Learning Numerical Weather Prediction