

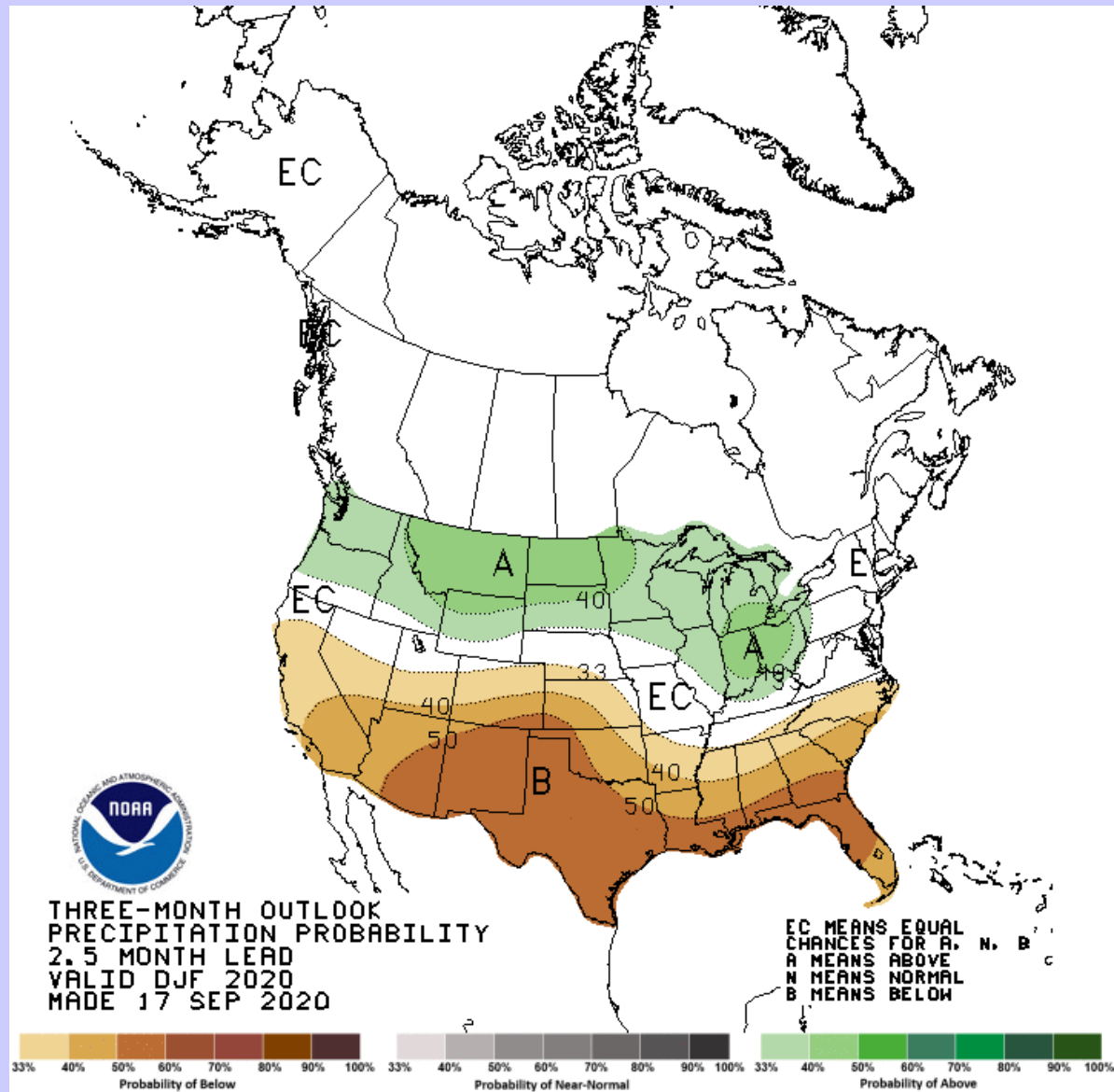
# Definition: Sub-Seasonal to Seasonal (S2S) Forecasting

- Operational weather models – typically 2 weeks out (most skill is in 1<sup>st</sup> week)
- Sub-seasonal – 2 weeks to about 60 days
- Seasonal – usually considered as out to 12 months, sometimes as much as 24 months
- S2S often called the bridge between weather and climate



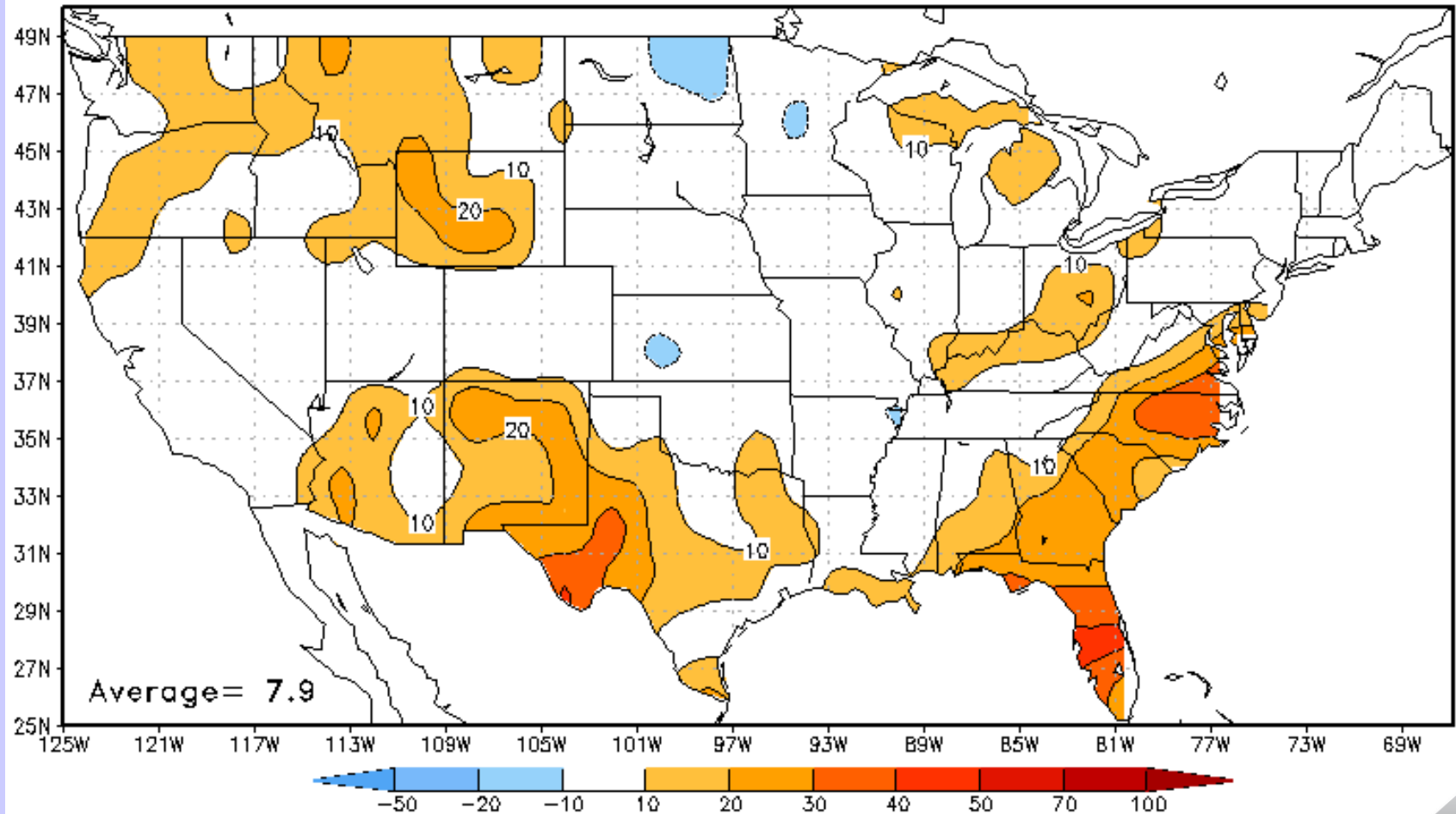
# Available Operational Products – NOAA

## CPC Outlooks



# Historical Skill of NOAA Outlooks

Seasonal (Lead 0.5 Months) Precipitation Heidke Skill Score  
DJF Manual Forecasts From 1995 to 2019



# Challenges

- Difficult science problem (National Academy of Sciences reports in 2010, 2016)
- Historically minimal federal research funding in comparison to weather and climate timescales
- Community of academic researchers is small, historically a gap area between weather and climate research



# One Hundred Fifteenth Congress of the United States of America

## AT THE FIRST SESSION

*Began and held at the City of Washington on Tuesday,  
the third day of January, two thousand and seventeen*

## An Act

To improve the National Oceanic and Atmospheric Administration's weather research through a focused program of investment on affordable and attainable advances in observational, computing, and modeling capabilities to support substantial improvement in weather forecasting and prediction of high impact weather events, to expand commercial opportunities for the provision of weather data, and for other purposes.

*Be it enacted by the Senate and House of Representatives of  
the United States of America in Congress assembled,*

### SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the “Weather Research and Forecasting Innovation Act of 2017”.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

Sec. 1. Short title; table of contents.  
Sec. 2. Definitions.

#### TITLE I—UNITED STATES WEATHER RESEARCH AND FORECASTING IMPROVEMENT

Sec. 101. Public safety priority.  
Sec. 102. Weather research and forecasting innovation.  
Sec. 103. Tornado warning improvement and extension program.  
Sec. 104. Hurricane forecast improvement program.  
Sec. 105. Weather research and development planning.  
Sec. 106. Observing system planning.  
Sec. 107. Observing system simulation experiments.  
Sec. 108. Annual report on computing resources prioritization.  
Sec. 109. United States Weather Research program.  
Sec. 110. Authorization of appropriations.

#### TITLE II—SUBSEASONAL AND SEASONAL FORECASTING INNOVATION

Sec. 201. Improving subseasonal and seasonal forecasts.

#### TITLE III—WEATHER SATELLITE AND DATA INNOVATION

Sec. 301. National Oceanic and Atmospheric Administration satellite and data management.  
Sec. 302. Commercial weather data.  
Sec. 303. Unnecessary duplication.

#### TITLE IV—FEDERAL WEATHER COORDINATION

Sec. 401. Environmental Information Services Working Group.  
Sec. 402. Interagency weather research and forecast innovation coordination.  
Sec. 403. Office of Oceanic and Atmospheric Research and National Weather Service exchange program.  
Sec. 404. Visiting fellows at National Weather Service.  
Sec. 405. Warning coordination meteorologists at weather forecast offices of National Weather Service.  
Sec. 406. Improving National Oceanic and Atmospheric Administration communication of hazardous weather and water events.  
Sec. 407. National Oceanic and Atmospheric Administration Weather Ready All Hazards Award Program.

# TITLE II—SUBSEASONAL AND SEASONAL FORECASTING INNOVATION

- ‘(c) FUNCTIONS.—The Under Secretary, acting through the Director of the National Weather Service and the heads of such other programs of the National Oceanic and Atmospheric Administration as the Under Secretary considers appropriate, shall— “(1) collect and utilize information in order to make usable, reliable, and timely foundational forecasts of subseasonal and seasonal temperature and precipitation; “(2) leverage existing research and models from the weather enterprise to improve the forecasts under paragraph (1)

# Weather Research Act of 2017

## Title II Implementation

- Called for report to Congress within 18 months of enactment; report not yet submitted
- Act was reauthorized as part of NIDIS reauthorization
- No funding yet appropriated for implementation
- Program would be funded under NOAA Office of Atmospheric Research, US Weather Research program; this line item was funded at \$23M in FY20