

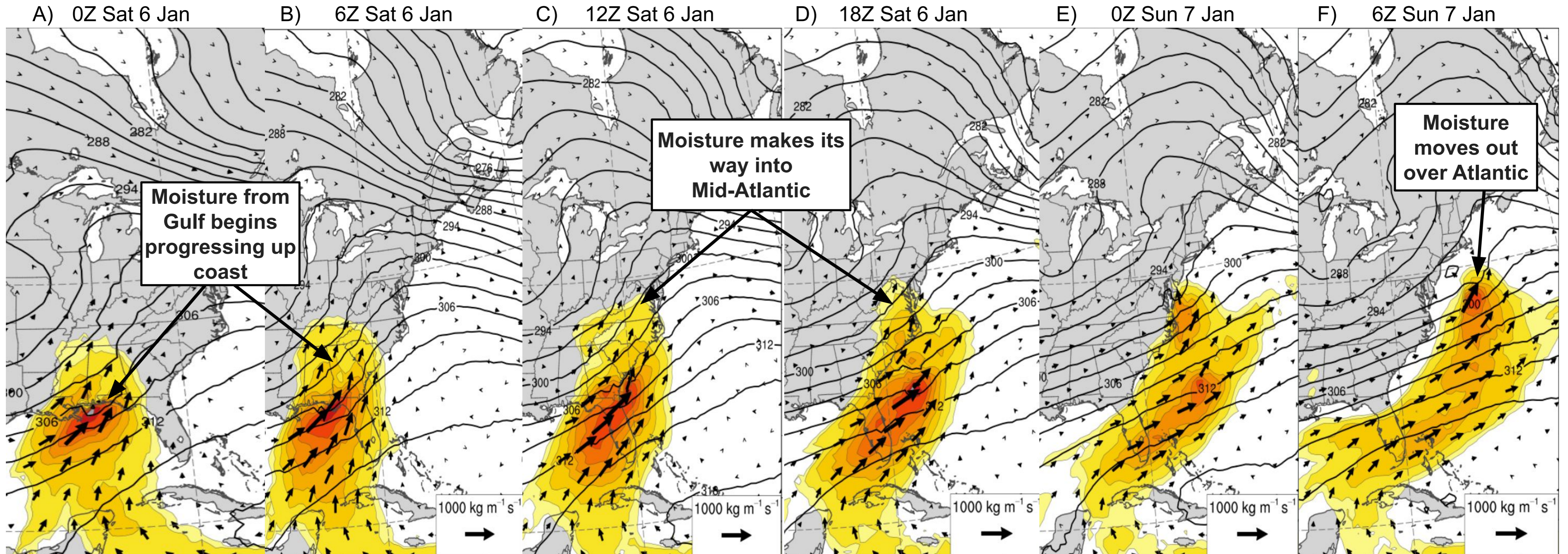
CW3E Atmospheric River Outlook: 3 Jan 2024

Pair of Atmospheric Rivers Forecast to Bring Precipitation to East Coast

- A pair of atmospheric rivers (AR) are forecast to develop over of the Gulf of Mexico, bringing heavy precipitation to much of the Eastern US.
- The first AR is forecast to form early Fri 5 Jan, progressing up the US East Coast through Sun 7 Jan before moving out to the Atlantic.
- The first system is forecast to bring heavy precipitation, a mix of rain and snow, to the Eastern US. The SE US and Mid-Atlantic are expected to receive rain and New England, NY and PA are expected to receive more mixed precipitation and snow.
- The second, much stronger AR ($IVT > 1200 \text{ kg m}^{-1} \text{ s}^{-1}$ in the core) forms in the Gulf last Mon 8 Jan into Tue 9 Jan, propagating through the region by Thu 11 Jan.
- The NWS Weather Prediction Center is forecasting > 2 inches of rainfall near the core of the AR on Days 6 and 7 as it progresses up the coast.

CW3E East Coast AR Outlook: 3 Jan 2024

First Event GFS IVT Analysis (init. 6Z 3 Jan)

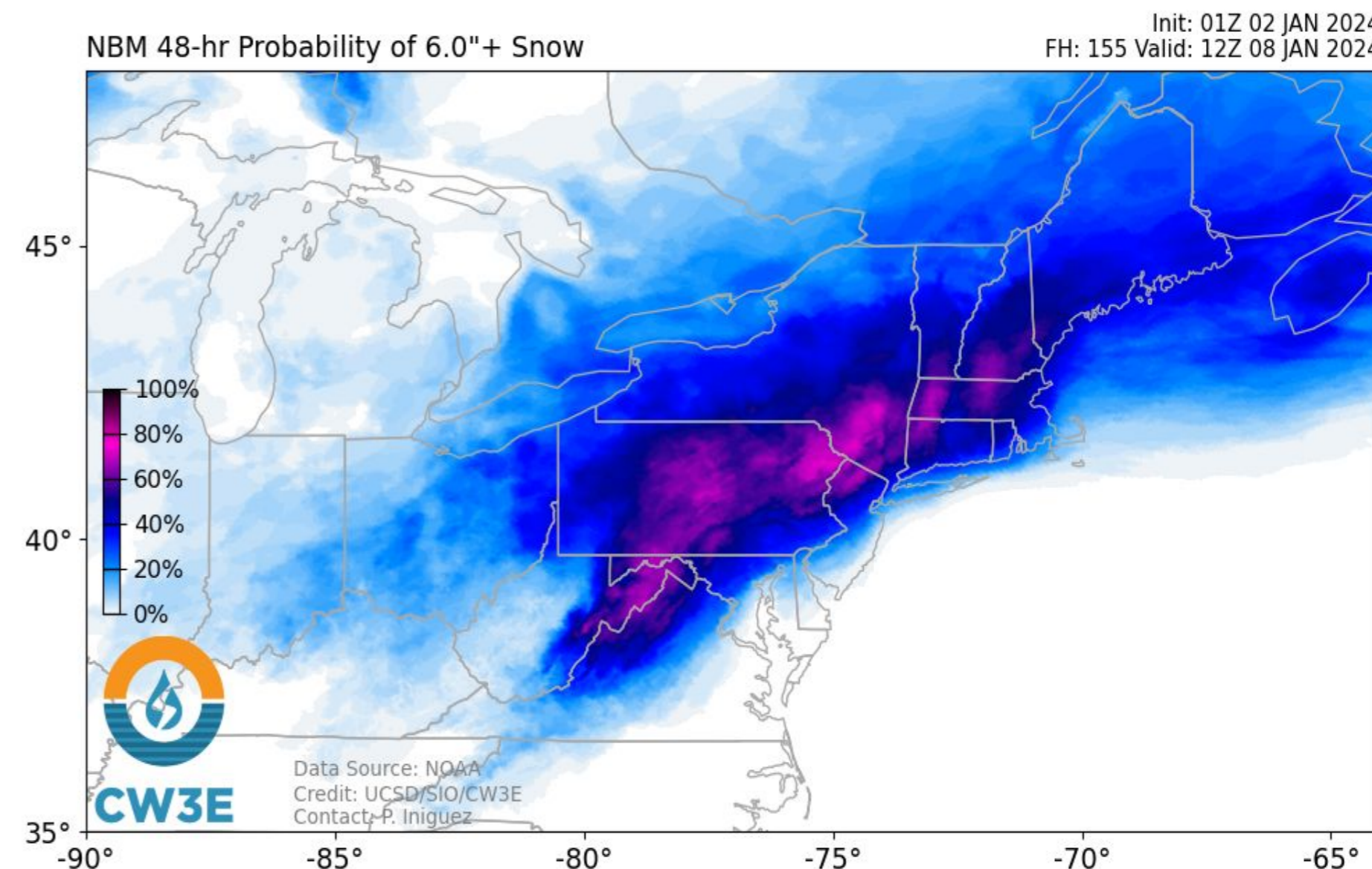
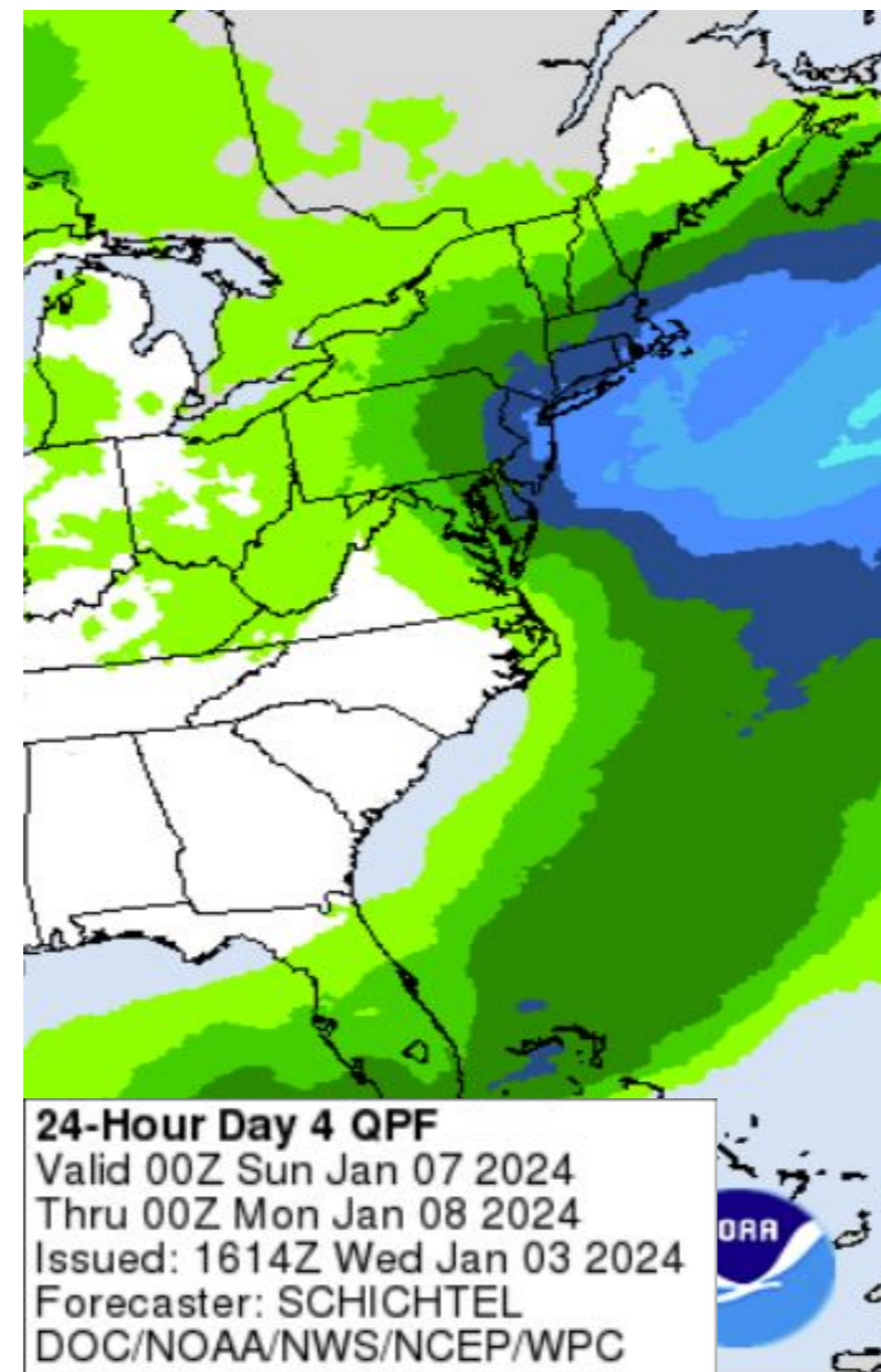
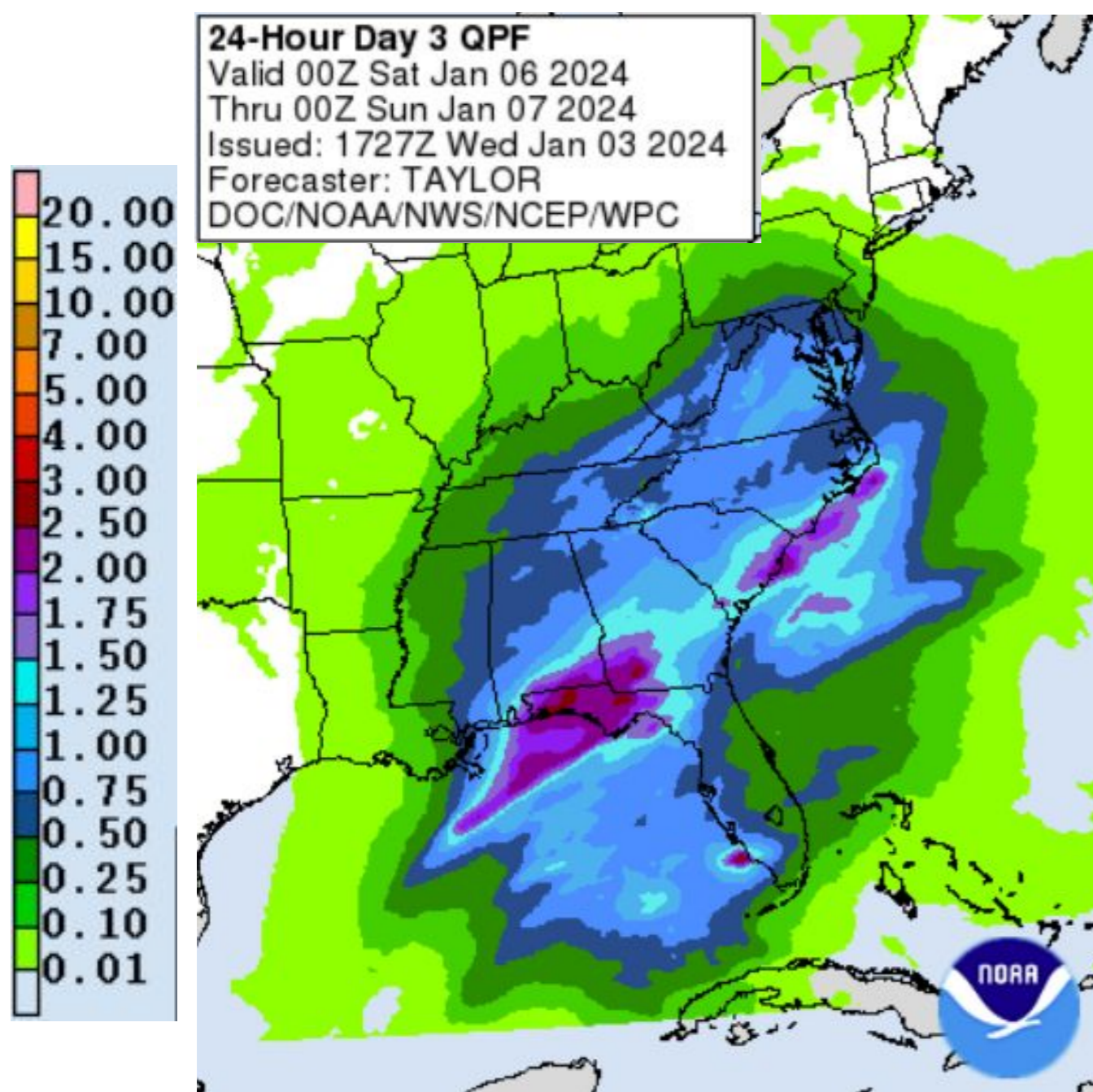


Images adapted from imagery of Dr. Alicia Bentley (https://www.atmos.albany.edu/student/abentley/realtime/standard.php?domain=northamer&variable=IVT_conv)

- An atmospheric river out of the Gulf of Mexico will progress along the US East Coast into the Mid-Atlantic through Sat 6 Jan before moving offshore over the Atlantic on Sun 7 Jan
- This moisture will lead to precipitation across the Eastern Seaboard over the weekend

CW3E East Coast AR Outlook: 3 Jan 2024

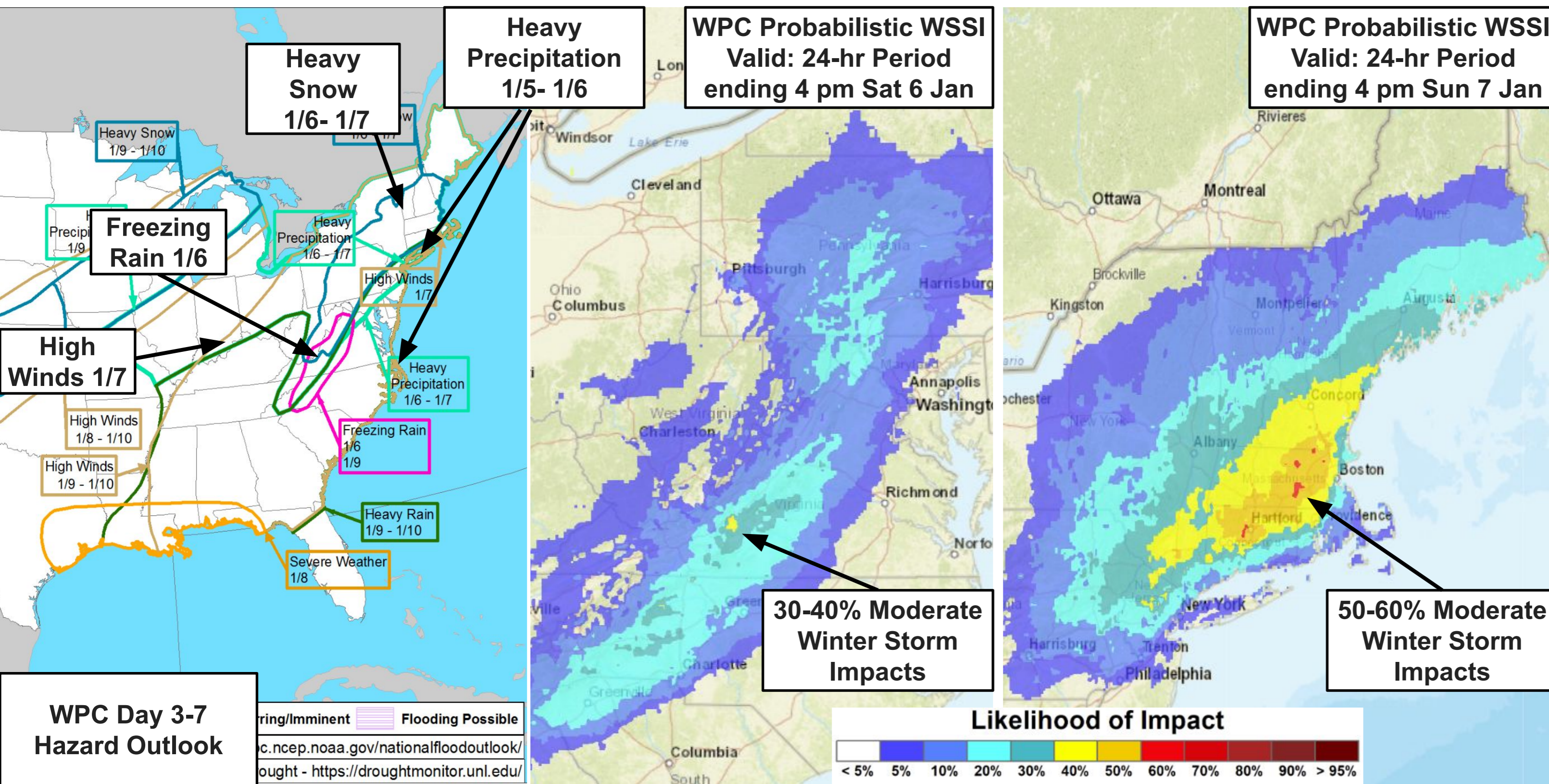
WPC Day 3 and 4 QPF and NBM Probability of Snow



- Precipitation is forecast to exceed 1 inch for much of the SE US on day 3, with peak precipitation in the Florida Panhandle and along the Carolina coast.
- Liquid precipitation forecasts are not as high for the NE US as a result of likely snowfall in region. The NBM is indicating a >60% chance of 6+ inches of snowfall along the Appalachians

CW3E East Coast AR Outlook: 3 Jan 2024

First Event WPC Impact Forecasts



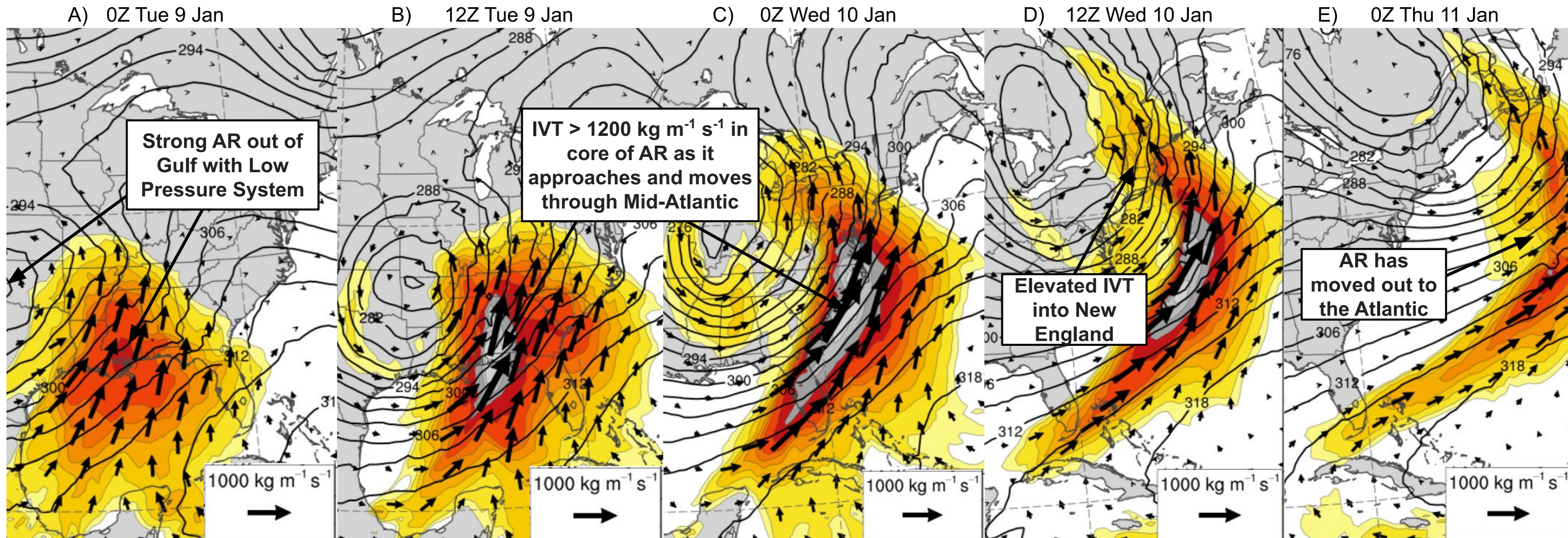
- WPC's Day 3-7 Hazards Outlook highlights moderate risks of heavy rain for the SE US and Mid-Atlantic Coasts, freezing rain along the Appalachian Mountains in VA and NC and heavy snow from Sat 6 Jan from W. MD to New England for Fri 5 through Sun 7 Jan
- The probabilistic WSSI indicates a 30-40% probability of moderate winter storm impacts the 24-hr period ending 4 pm Sat 6 Jan in the southern Appalachians and 50-60% in southern New England for the 24-hour period ending at 4 pm on Sun 7 Jan

Source: WPC; <https://www.wpc.ncep.noaa.gov/threats/threats.php>

Source: WPC; https://www.wpc.ncep.noaa.gov/wwd/wssi/prob_wssi.php

CW3E East Coast AR Outlook: 3 Jan 2024

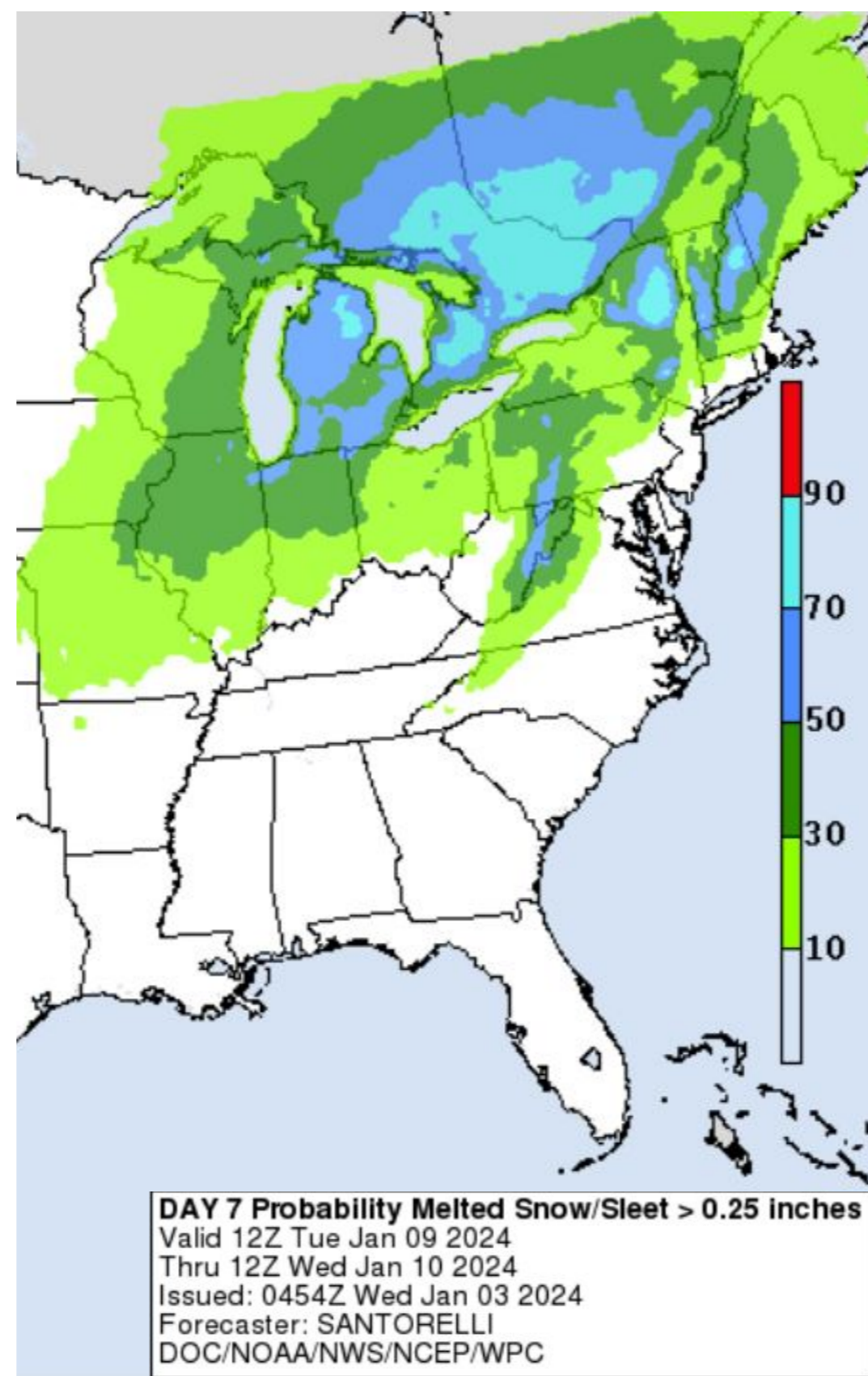
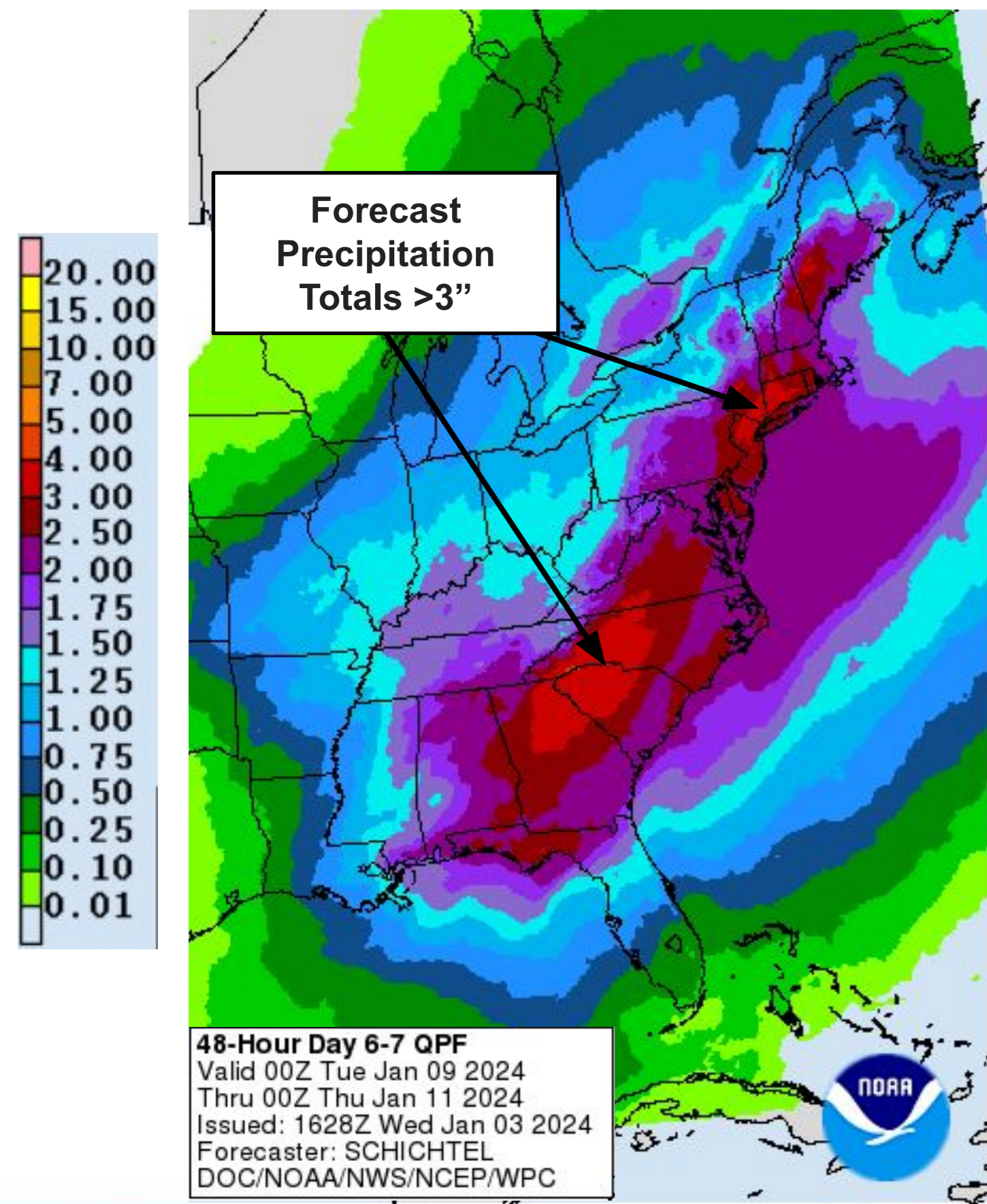
Second Event GFS IVT Analysis (init. 6Z 3 Jan)



- The second event is associated with a much stronger AR (IVT > 1200 kg m⁻¹ s⁻¹ in the core) and low pressure system. The AR progresses up the east coast from Tue 9 Jan into Thu 11 Jan
- The extreme moisture with this AR provides a source for heavy precipitation throughout the Eastern US

CW3E East Coast AR Outlook: 3 Jan 2024

WPC Day 6-7 QPF and Day 7 Winter Weather

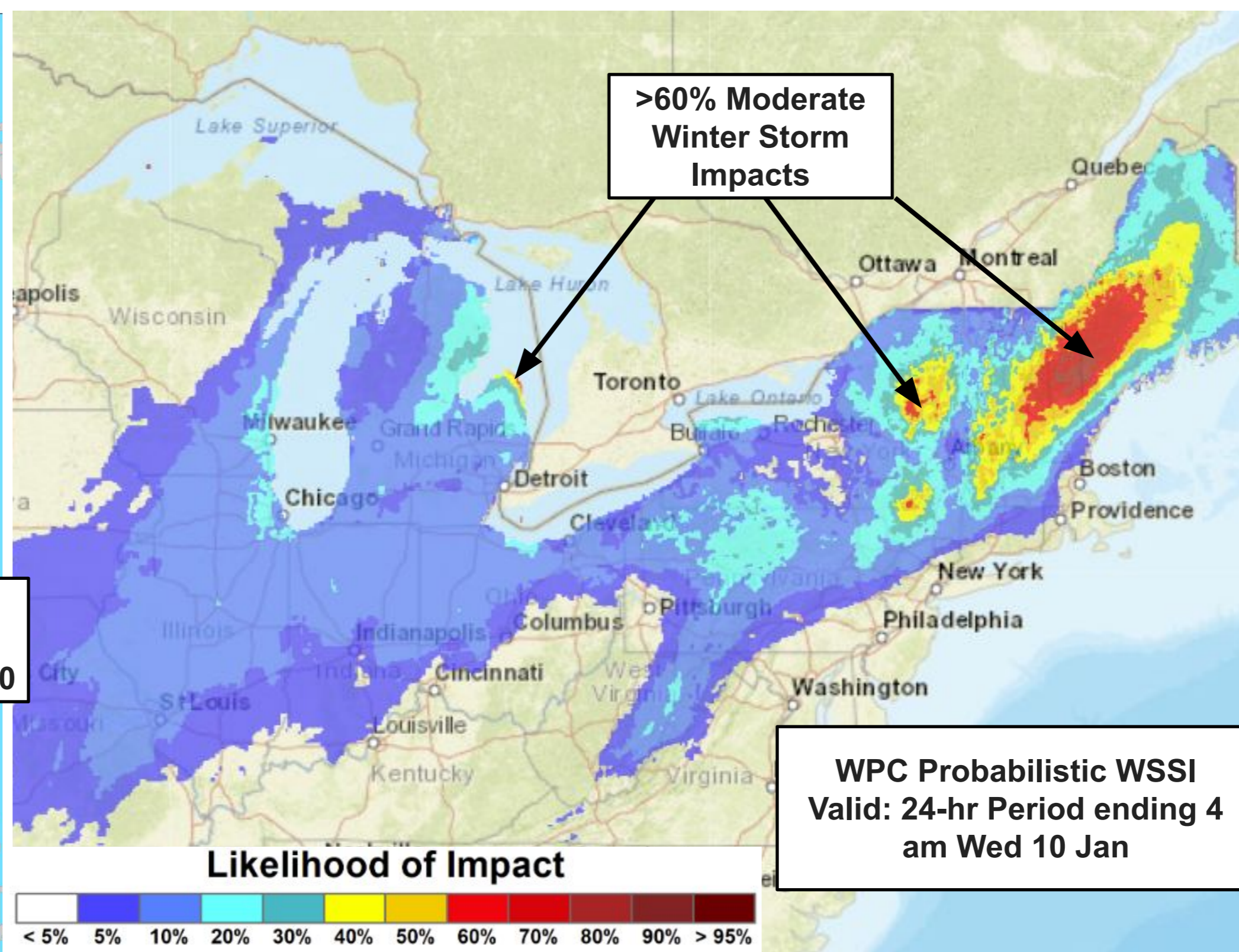
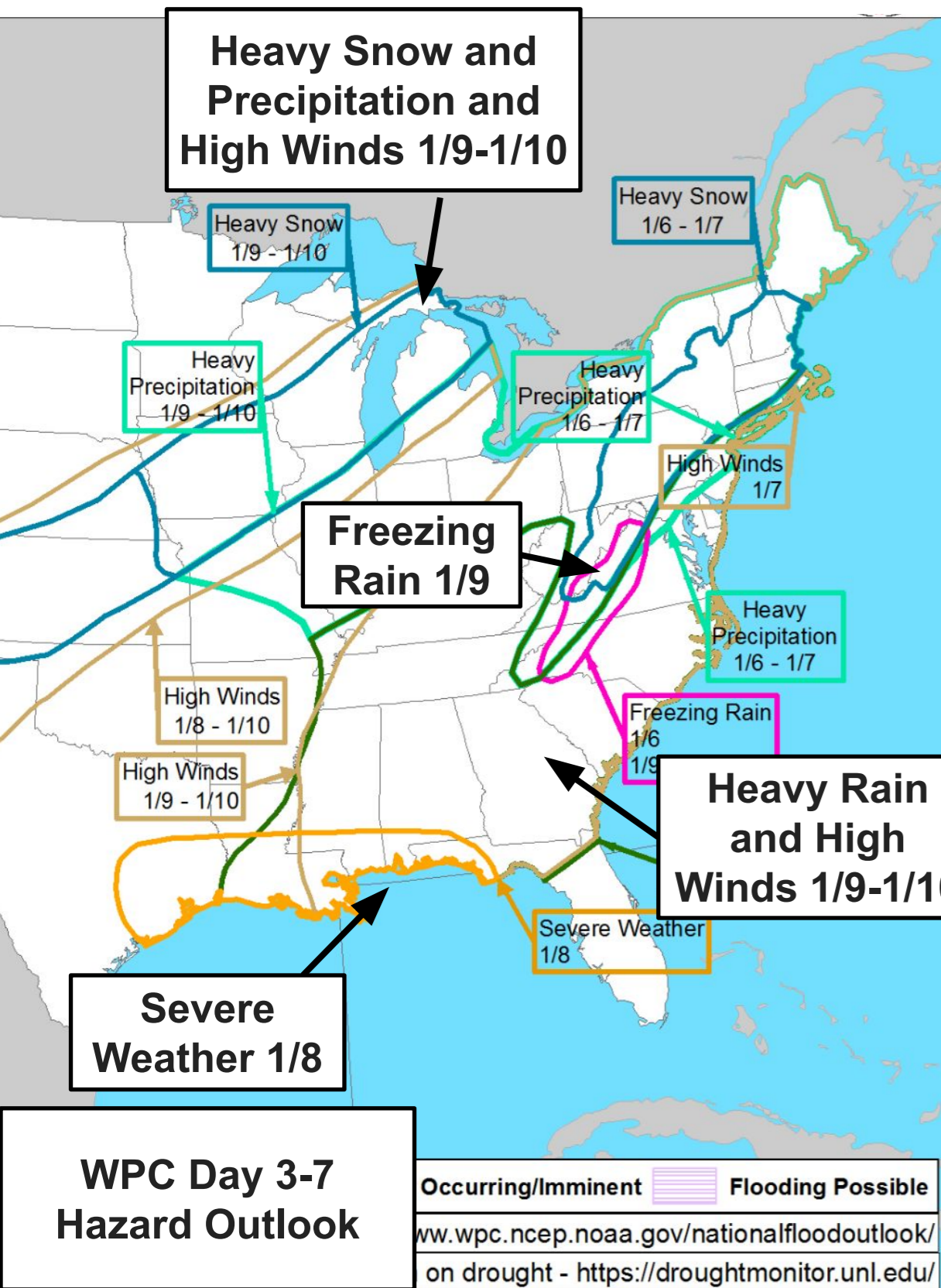


Source: WPC; <https://www.wpc.ncep.noaa.gov/index.shtml#page=wwx>

- Precipitation is forecast to exceed 2 inches near the core of the AR for regions along the Gulf Coast on Day 6 and much of the Mid-Atlantic Coast on Day 7.
- There are elevated probabilities of melted snow/sleet for the southern Appalachians, upstate NY and New England on Day 7.

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Second Event WPC Impact Forecasts



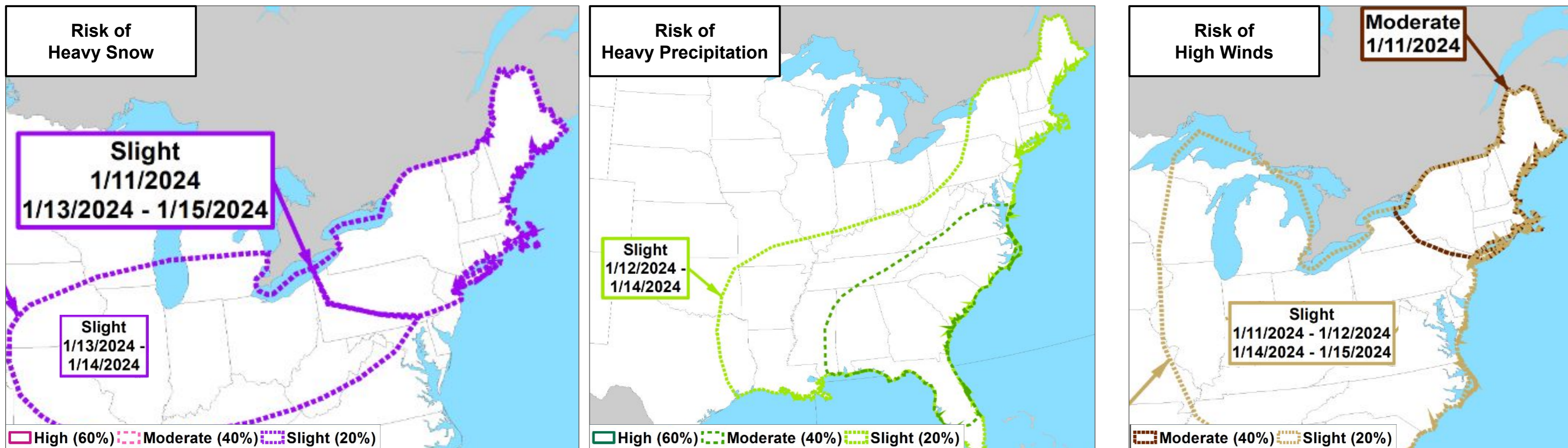
Source: WPC; https://www.wpc.ncep.noaa.gov/wwd/wssi/prob_wssi.php

Source: WPC; <https://www.wpc.ncep.noaa.gov/threats/threats.php>

- For the second AR, WPC's Day 3-7 Hazards Outlook is highlighting moderate risks of Severe Weather along the Gulf Coast, Freezing Rain in the S Appalachians, Heavy Snow and Precipitation in the Midwest and Great Lakes, Heavy Rain in the SE US and High Winds across the Eastern Seaboard, Midwest and Great Lakes
- The heavy precipitation forecast for this event is resulting in elevated probabilities of moderate Winter Storm Impacts in New England.

CW3E AR Outlook: 22 Dec 2023

Climate Prediction Center 8-14 Day Hazard Outlooks



- The NWS Climate Prediction Center (CPC) Days 8-14 Hazards Outlook indicates a heightened risk for heavy precipitation (left), heavy snow (center), and high winds (right) with the second storm
- The end of the second event on Thu 11 Jan falls within this period, where they indicate slight risks for heavy snow and moderate risk for strong winds in the NE US as well as slight risk for high winds for the Eastern Seaboard and Midwest

<https://www.cpc.ncep.noaa.gov/products/predictions/threats/threats.php>