The UAlbany–NWS CSTAR Partnership 2014–2024: High-Impact Weather in Complex Terrain

Kristen Corbosiero

Brian Filipiak and Dylan Card

Ross Lazear and Nick Bassill

University at Albany

CSTAR Goals

- ***Collaborative Science, Technology, and Applied Research***

  ~ Foster *collaboration* between *researchers* and *operational forecasters* to help *improve forecast accuracy* and *methods*

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  ~ How do we *assess* if we've *achieved our goals*?

CSTAR Mentions in NWS AFDs: 2014–2024

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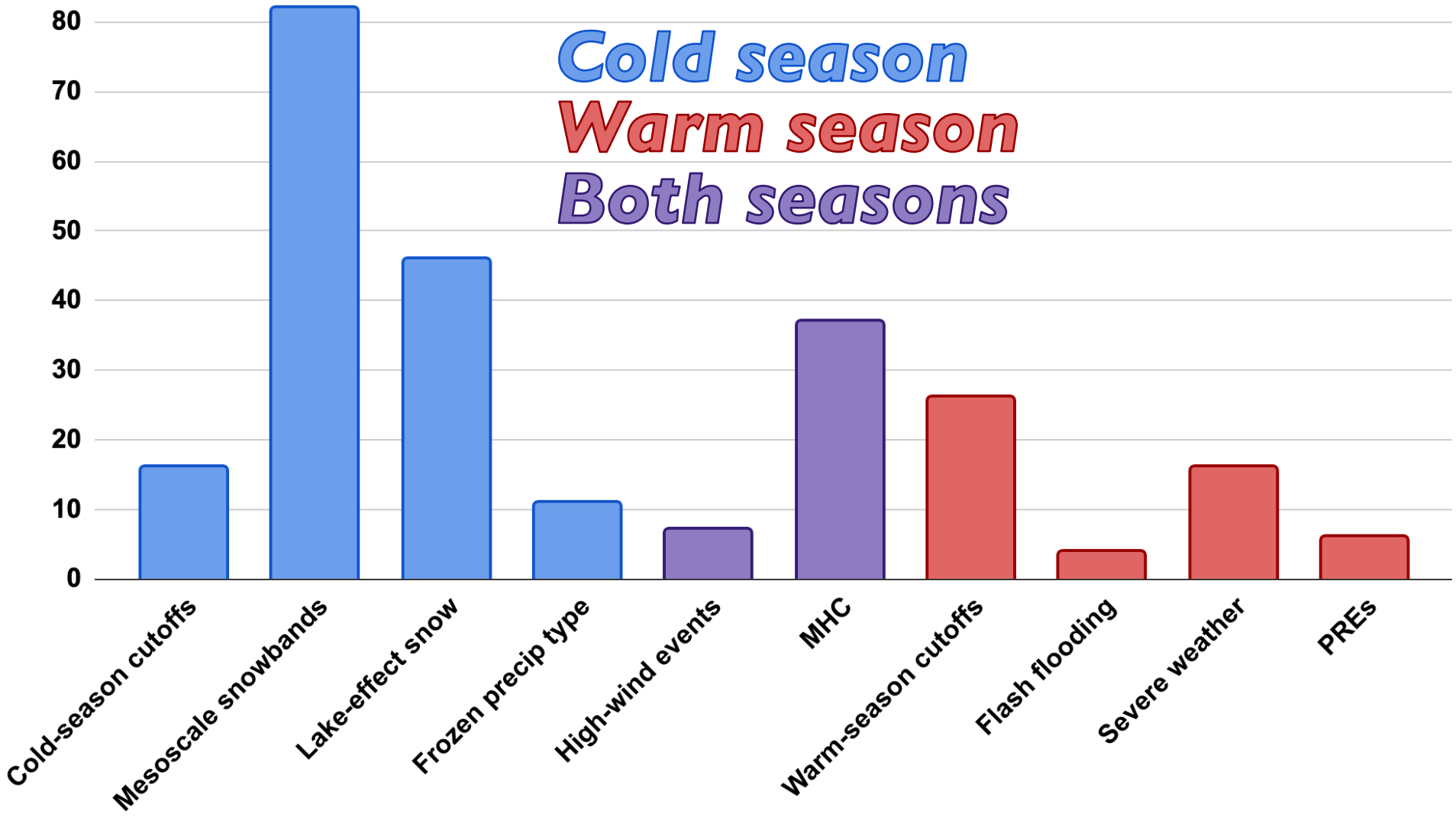

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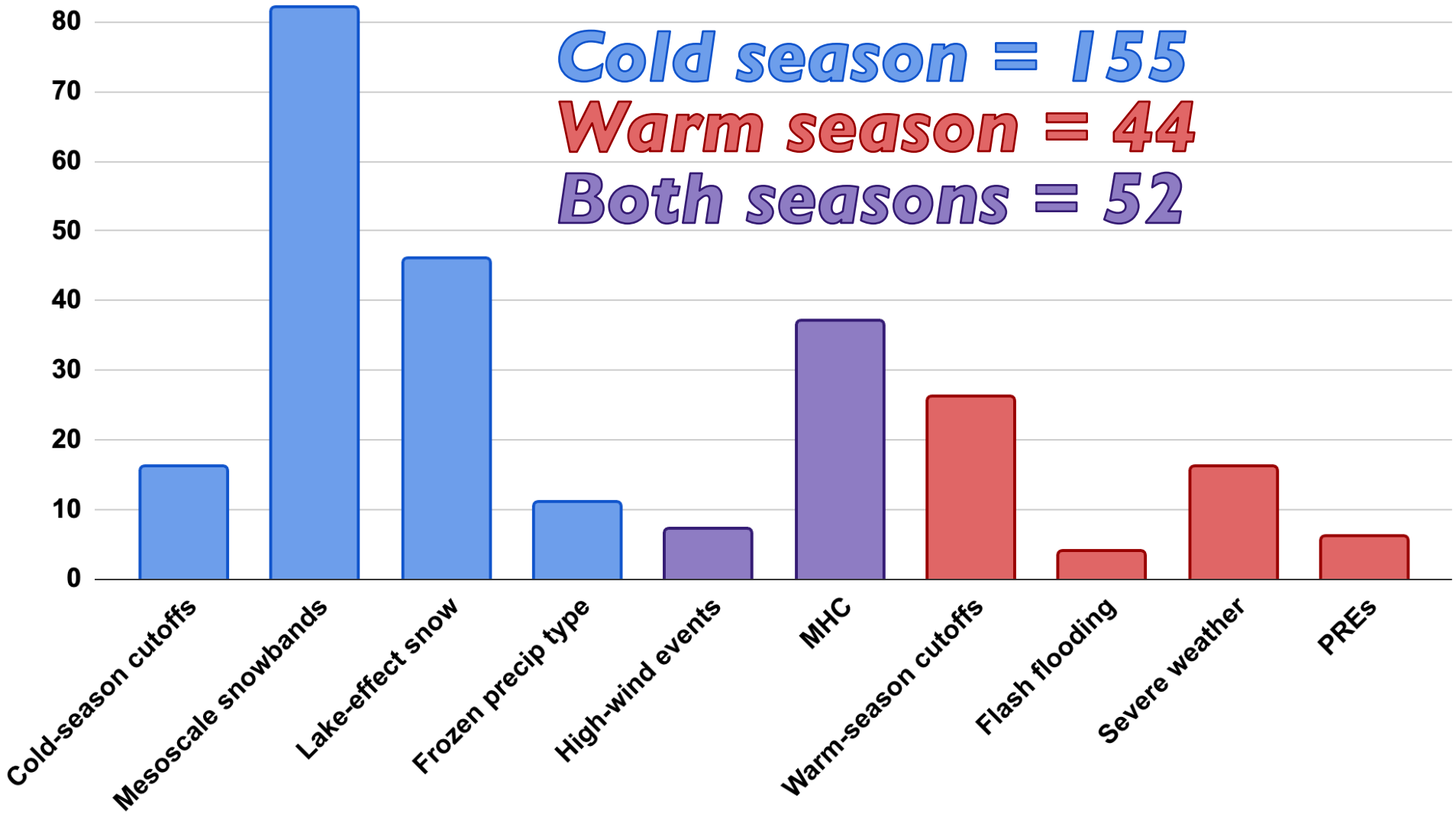

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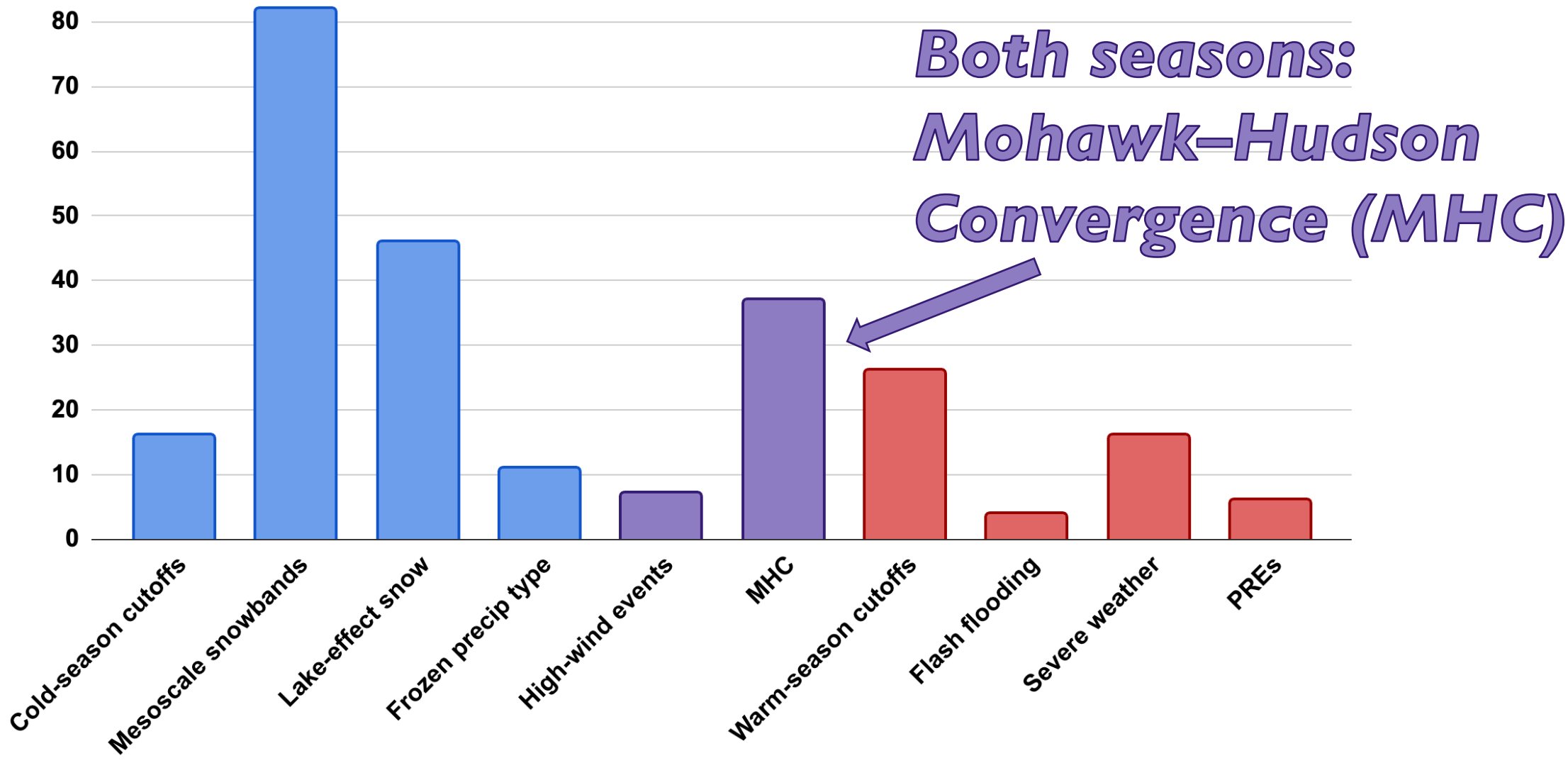

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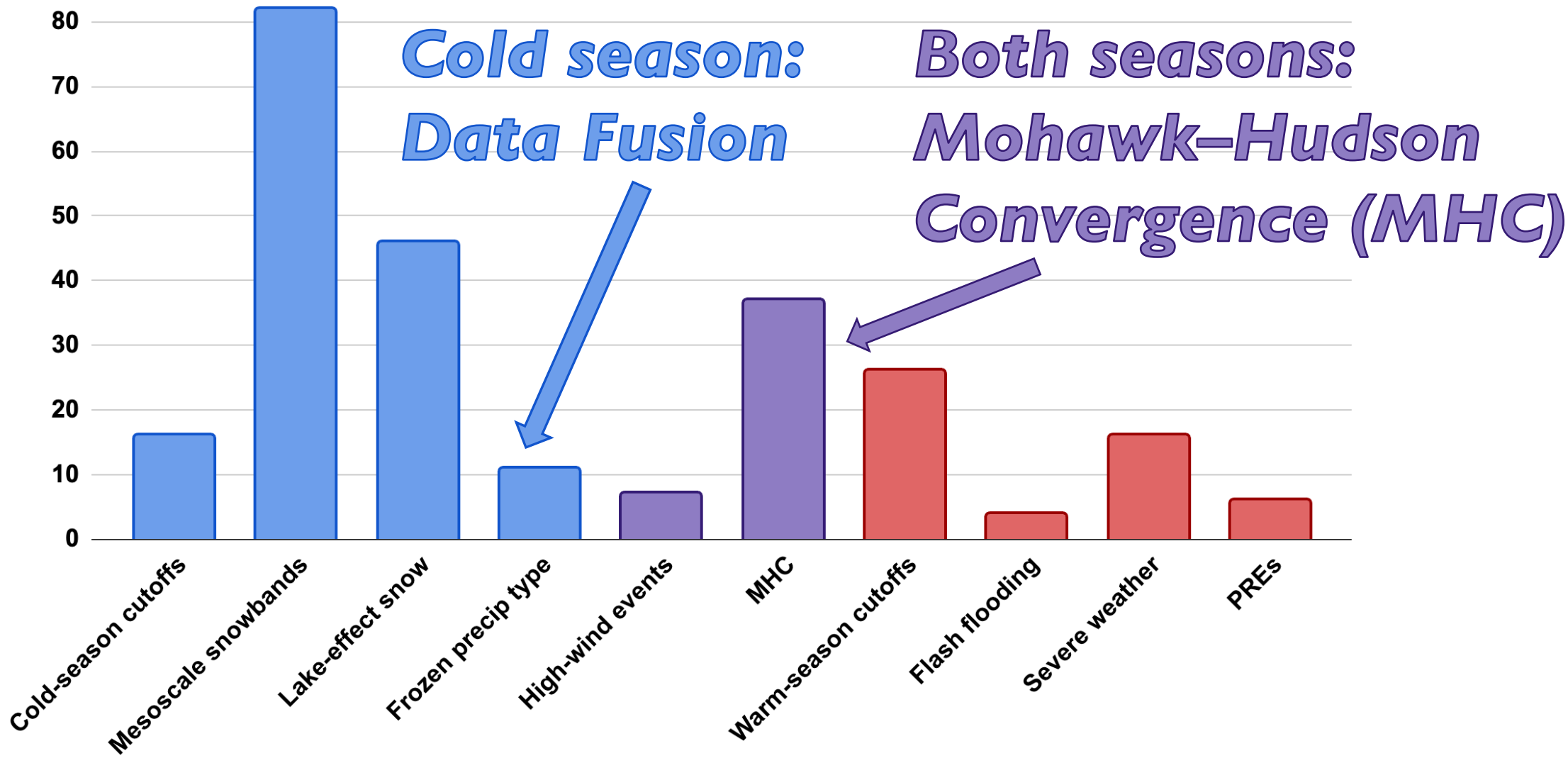
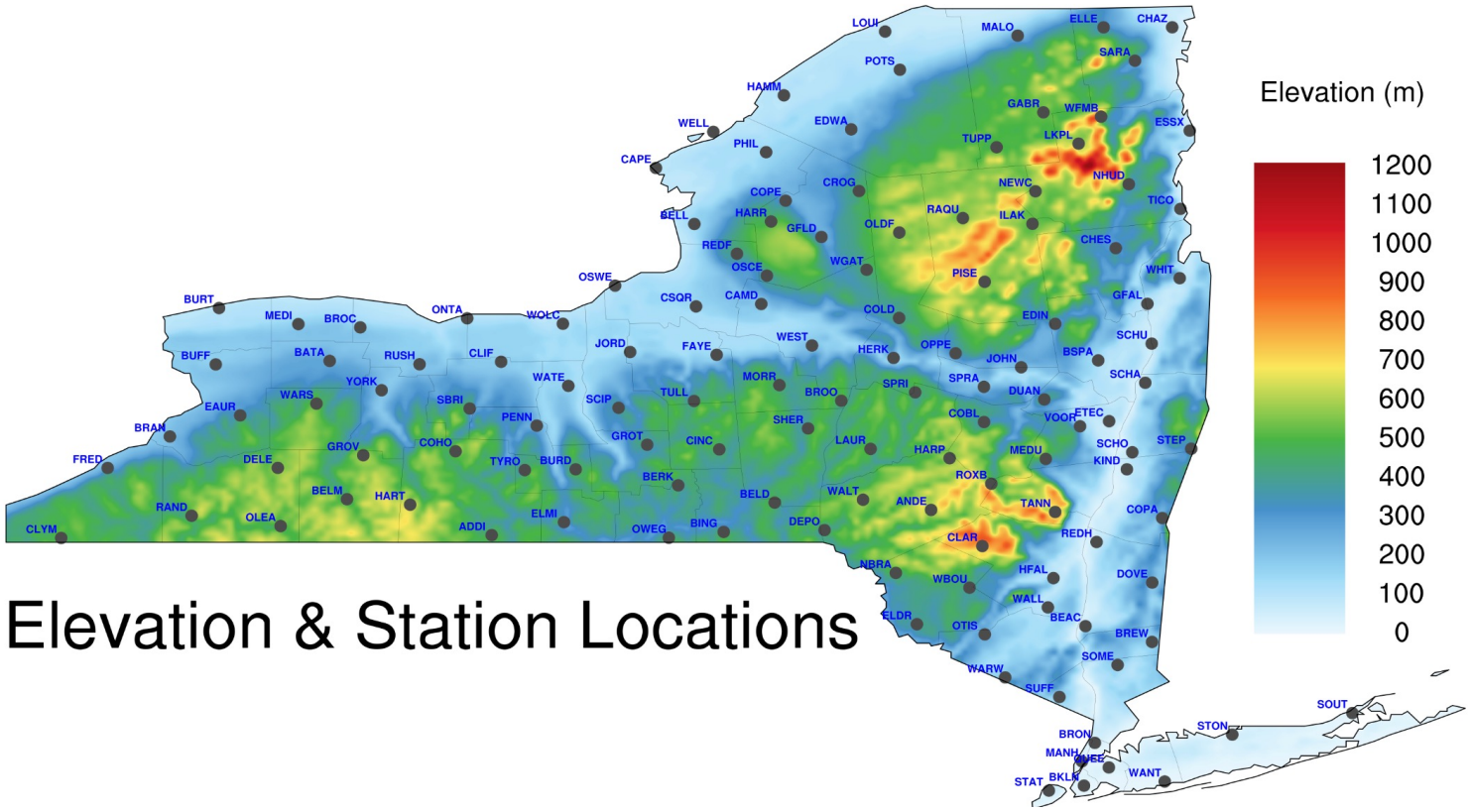


Mohawk–Hudson Convergence



Elevation & Station Locations

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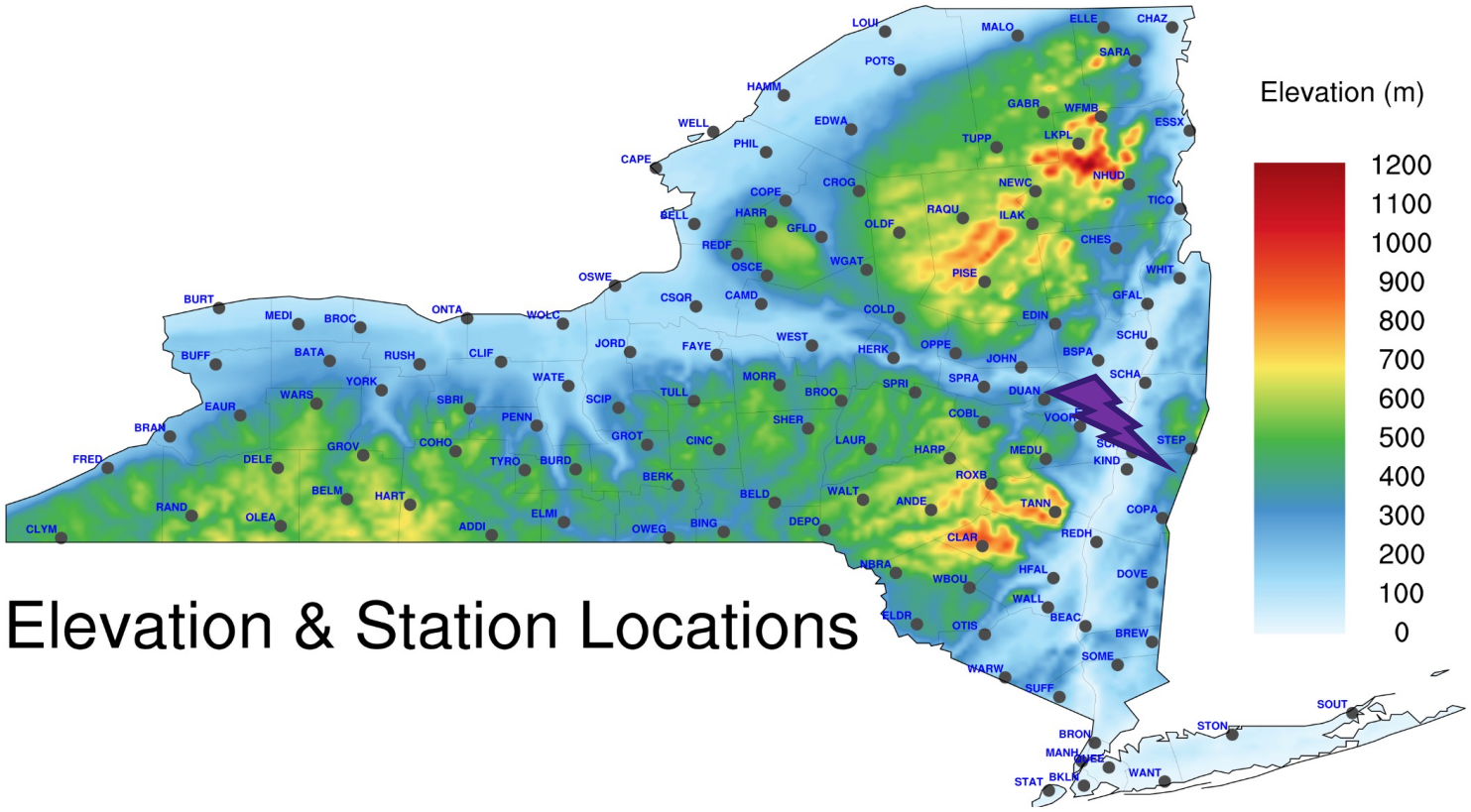

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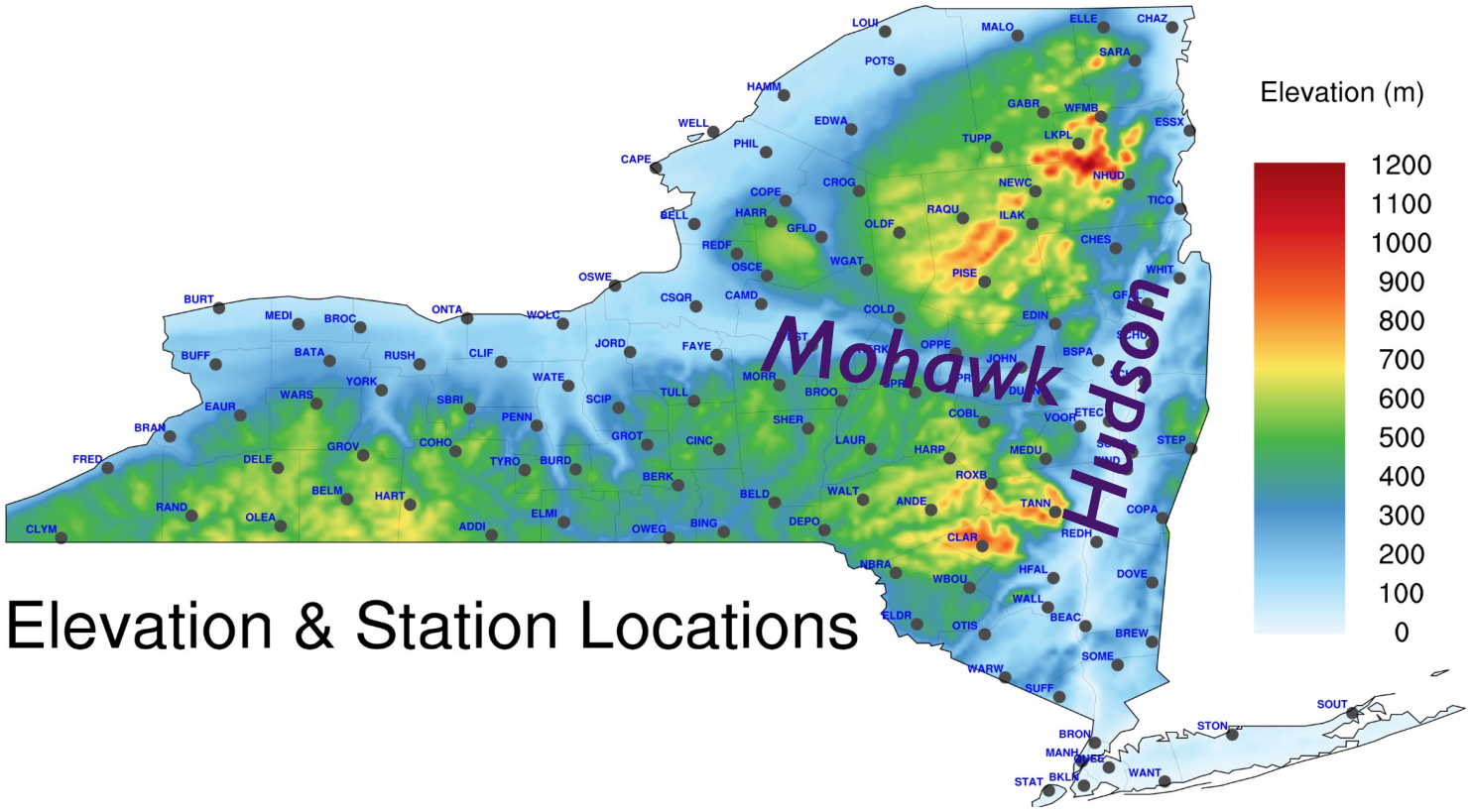

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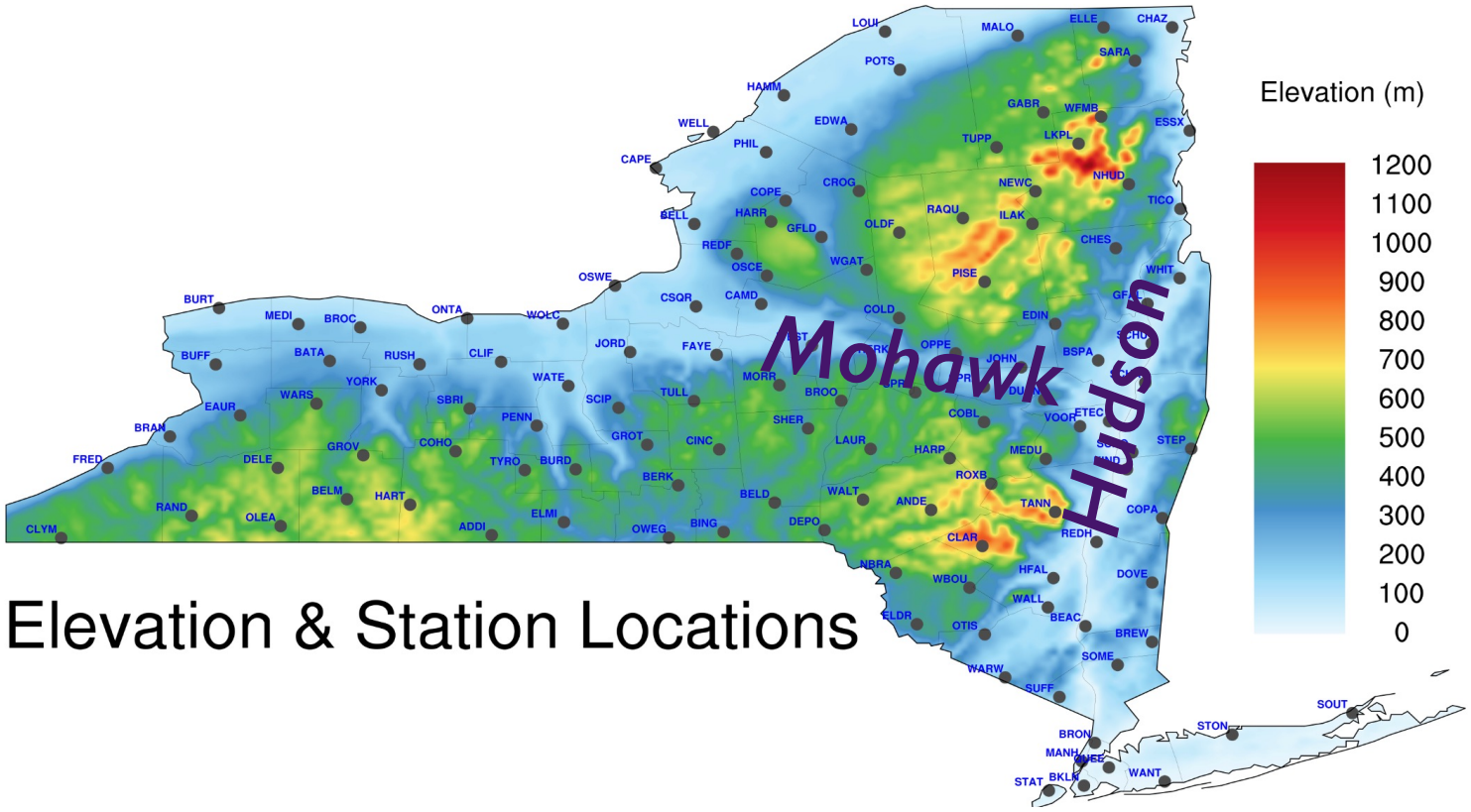

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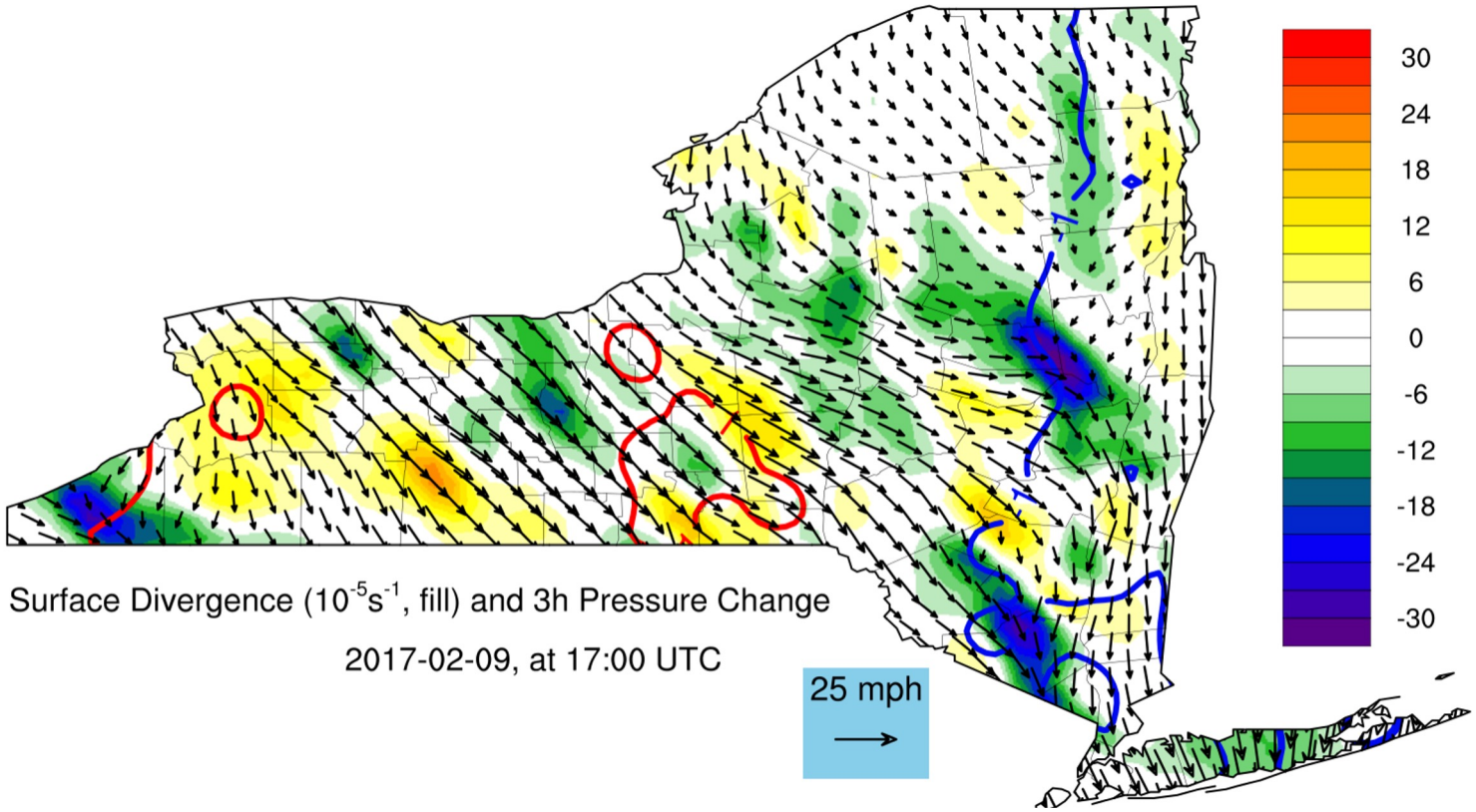

Mohawk–Hudson Convergence

- *Cold MHC* **can result in persistent** *moderate to heavy snow* **in the wake of a** *departing low pressure system*, **whereas** *warm MHC cases* **can initiate** *unexpected thunderstorms* **close to KALB**

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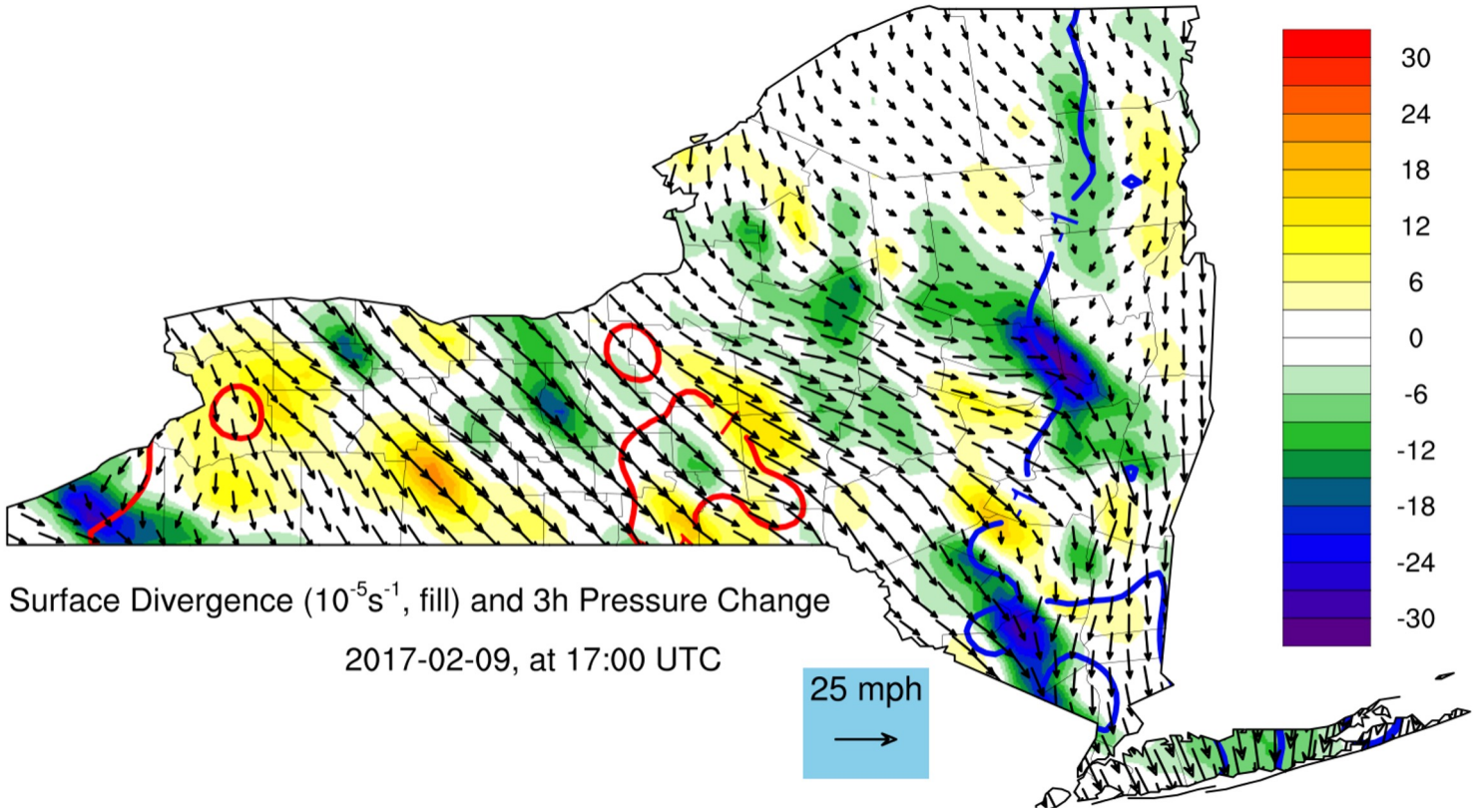

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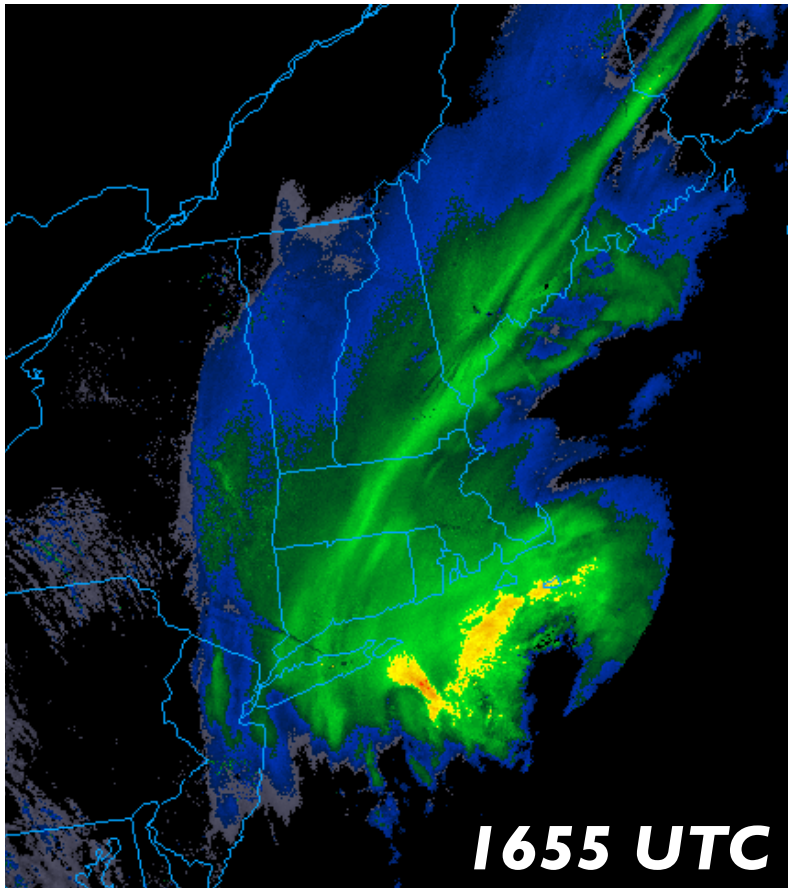

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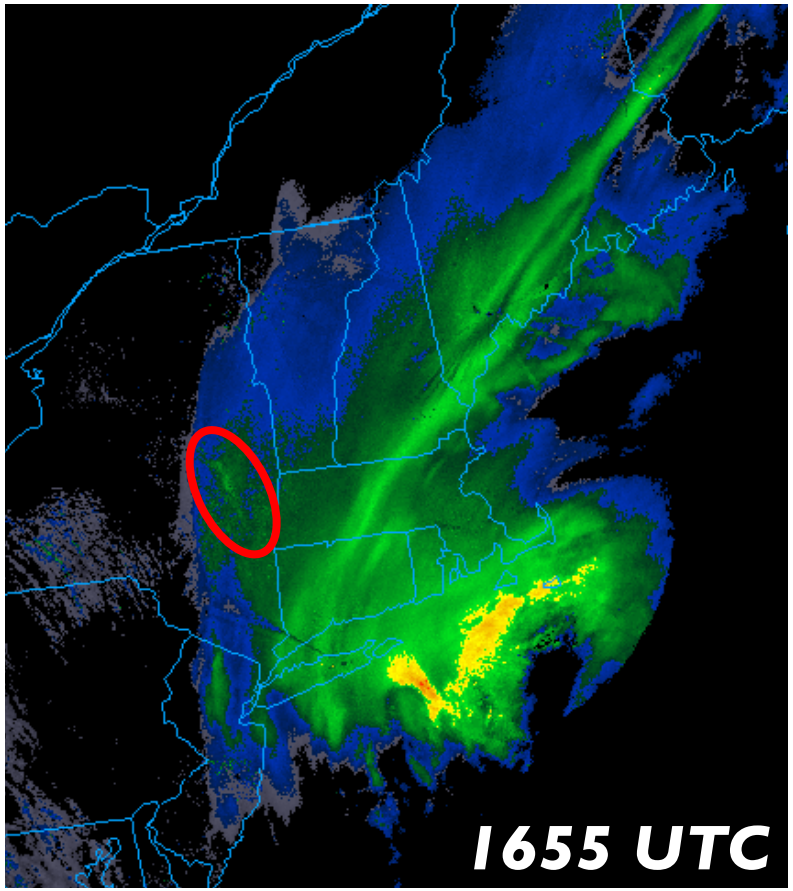

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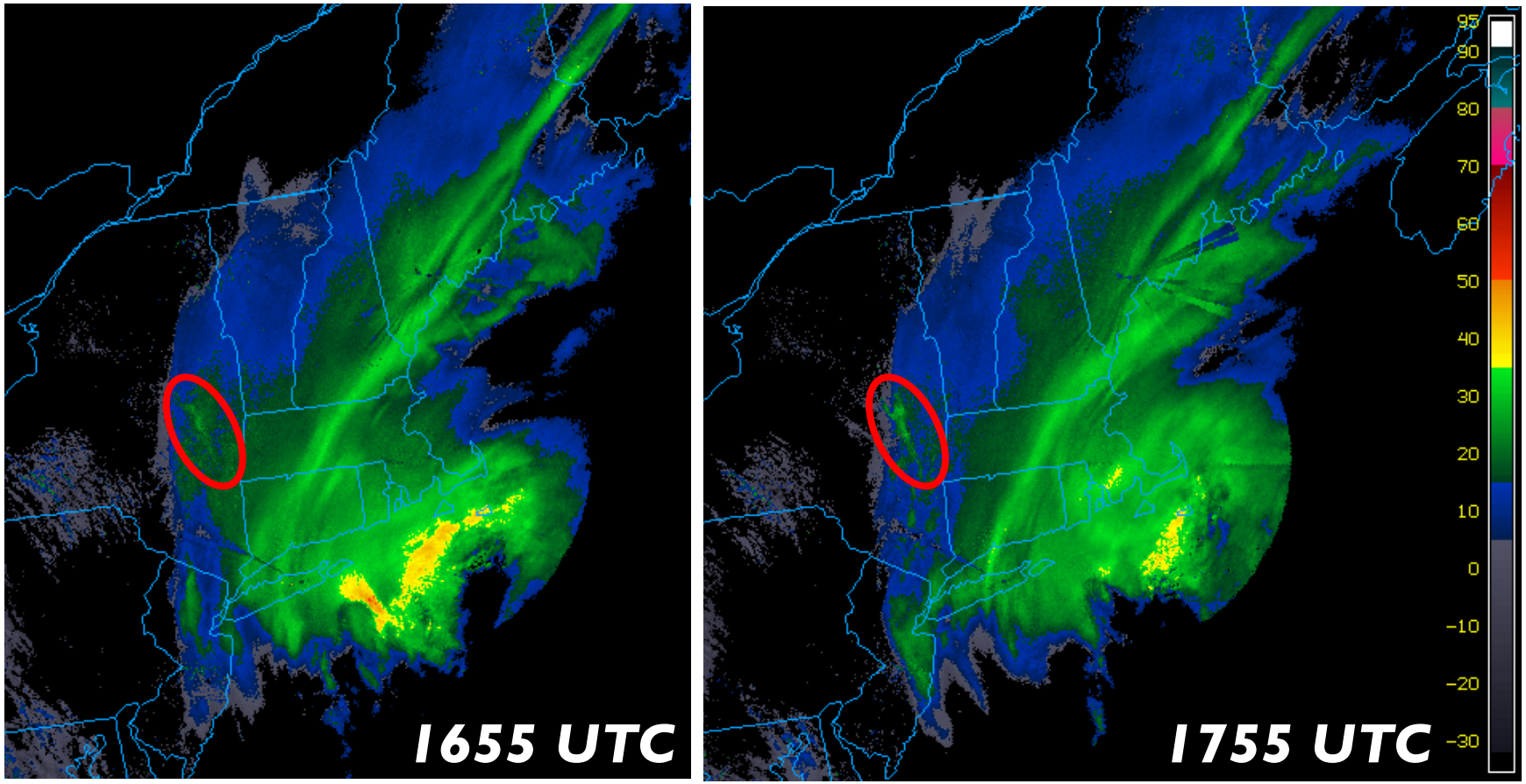

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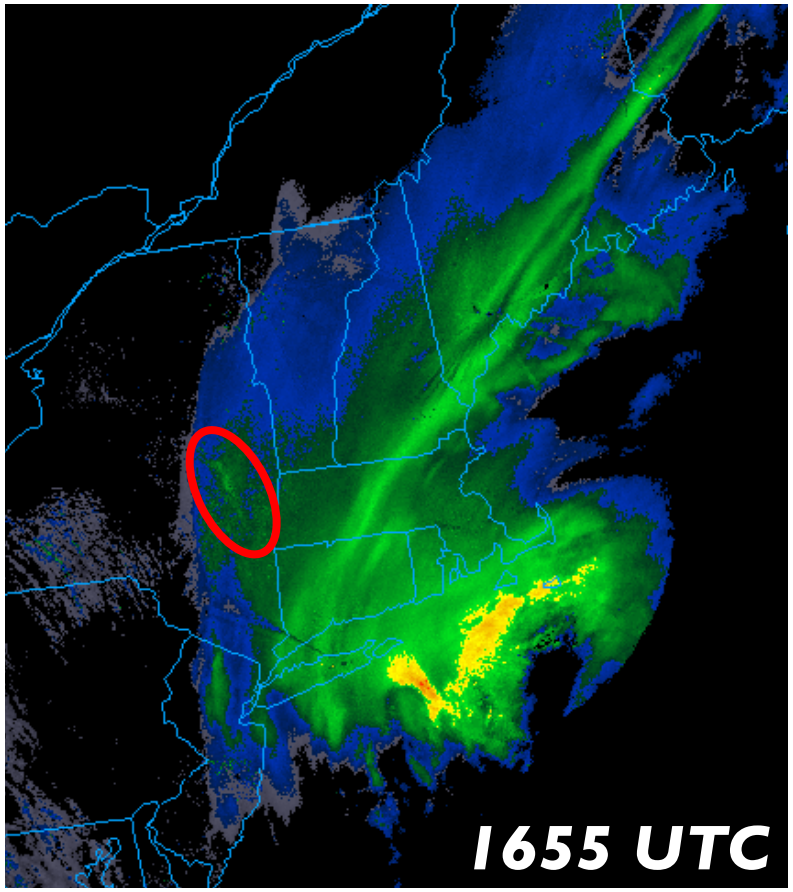

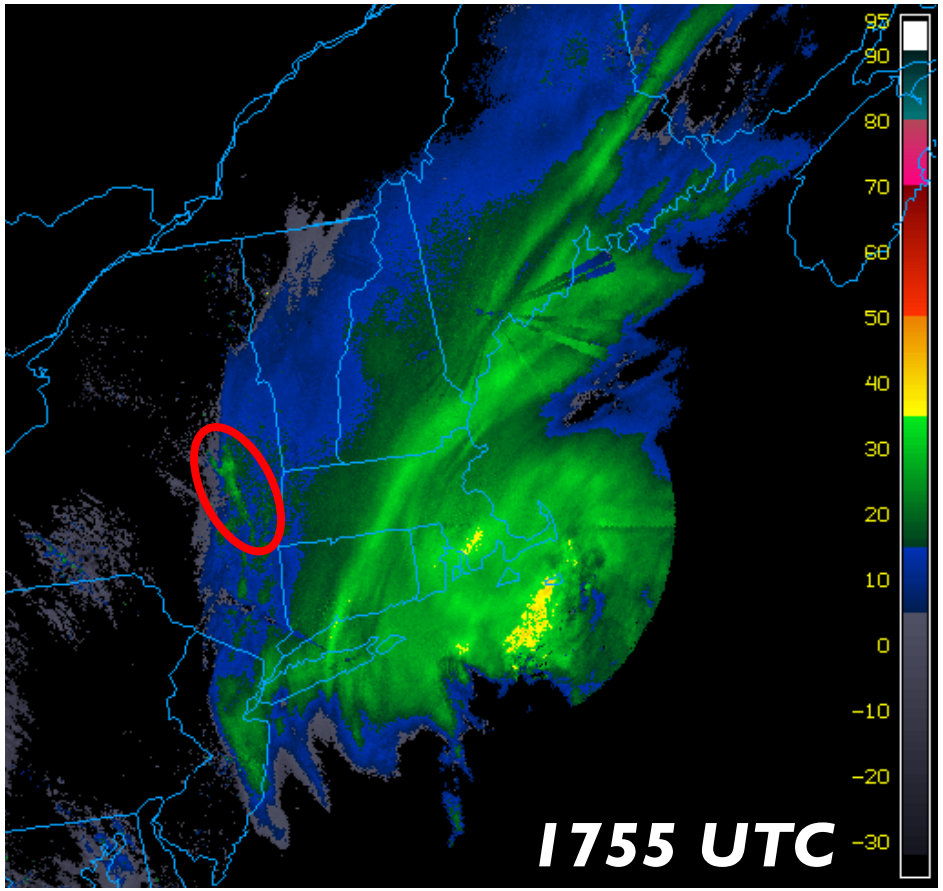

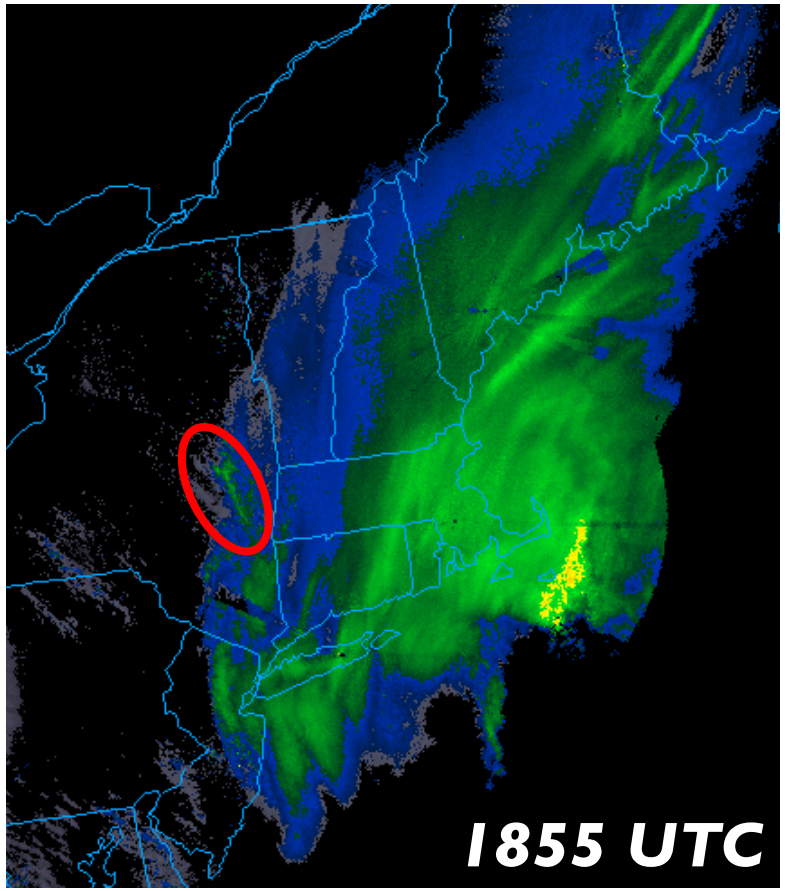

Mohawk–Hudson Convergence: SLP

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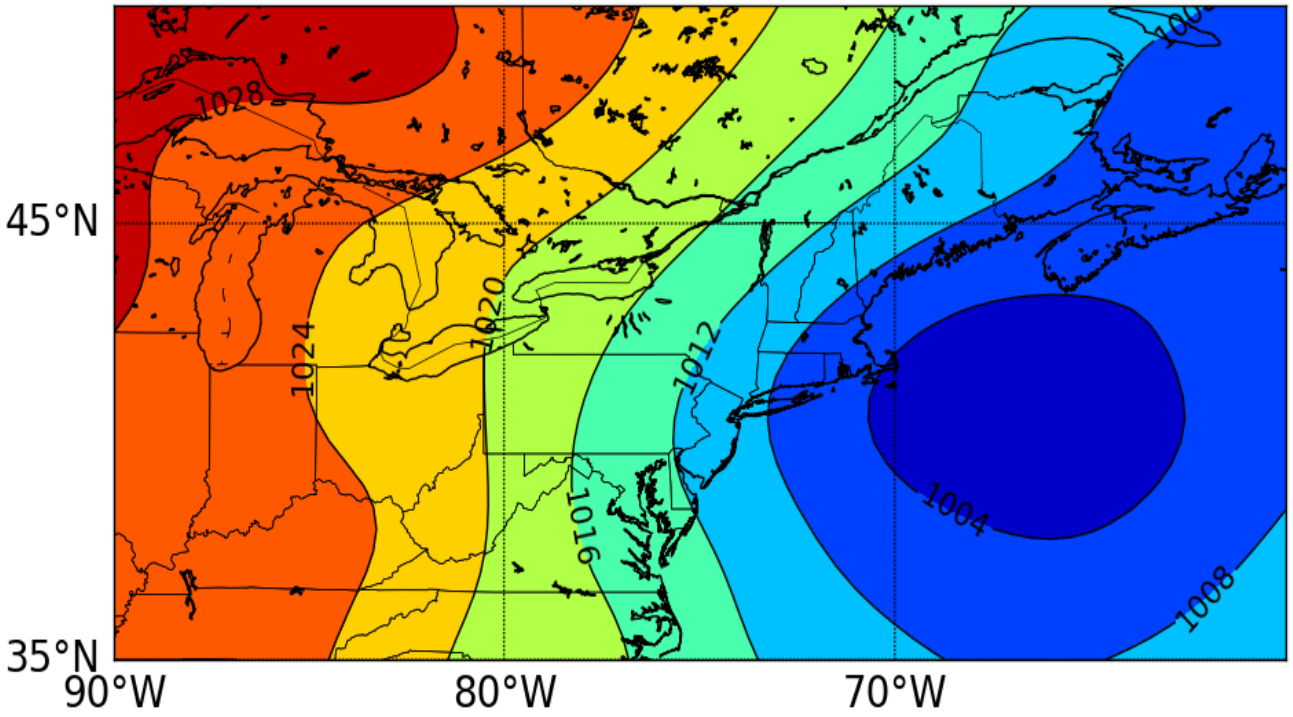

Mohawk–Hudson Convergence: Temp. advection

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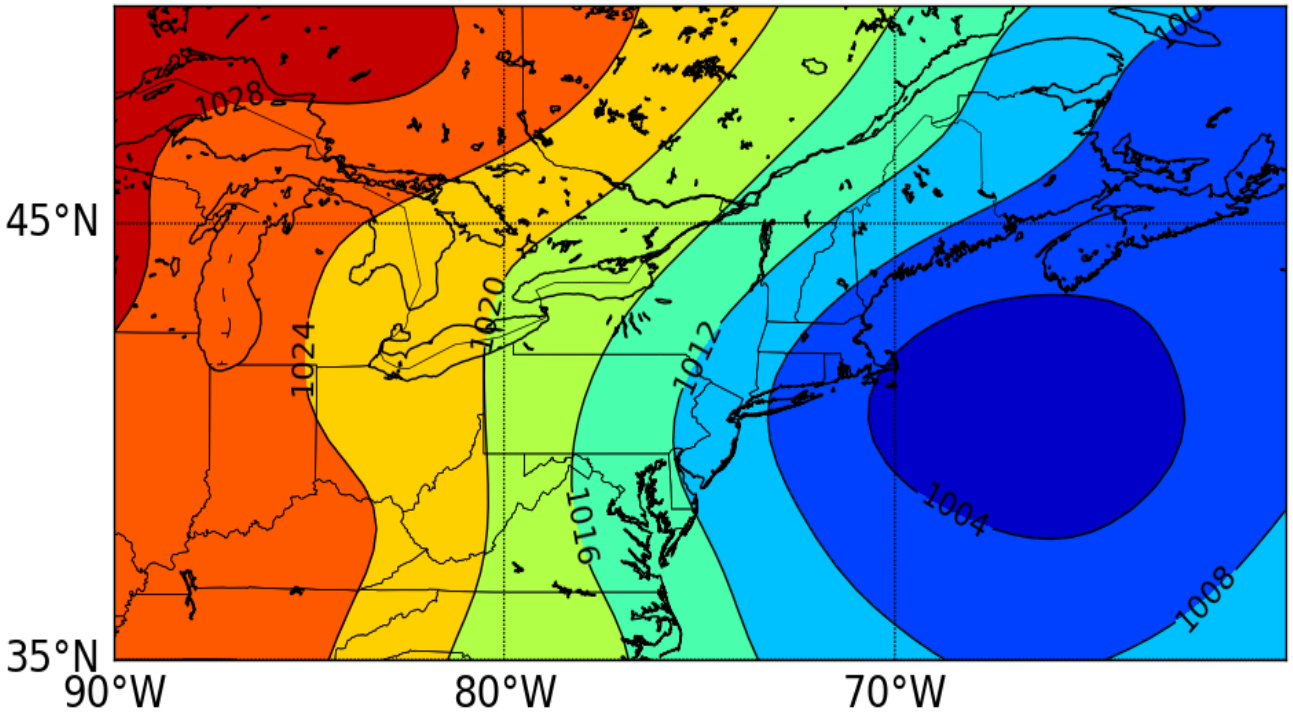

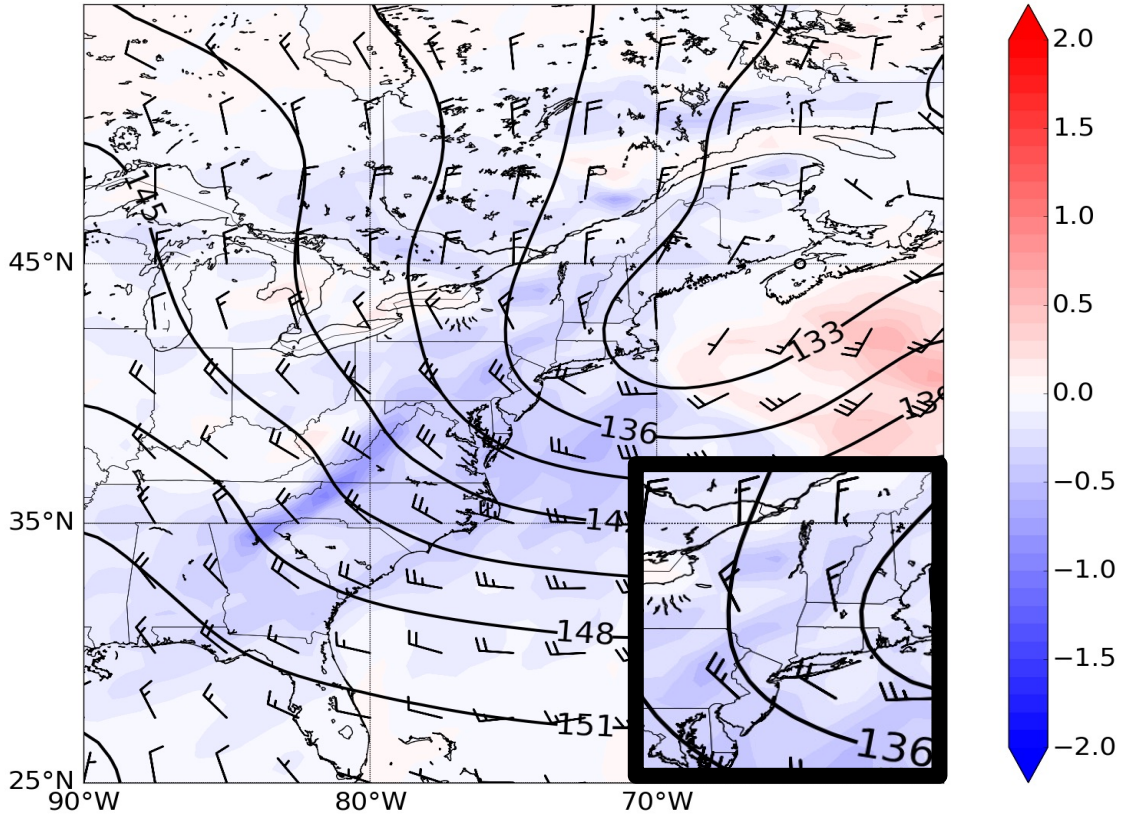

Mohawk–Hudson Convergence: Vorticity

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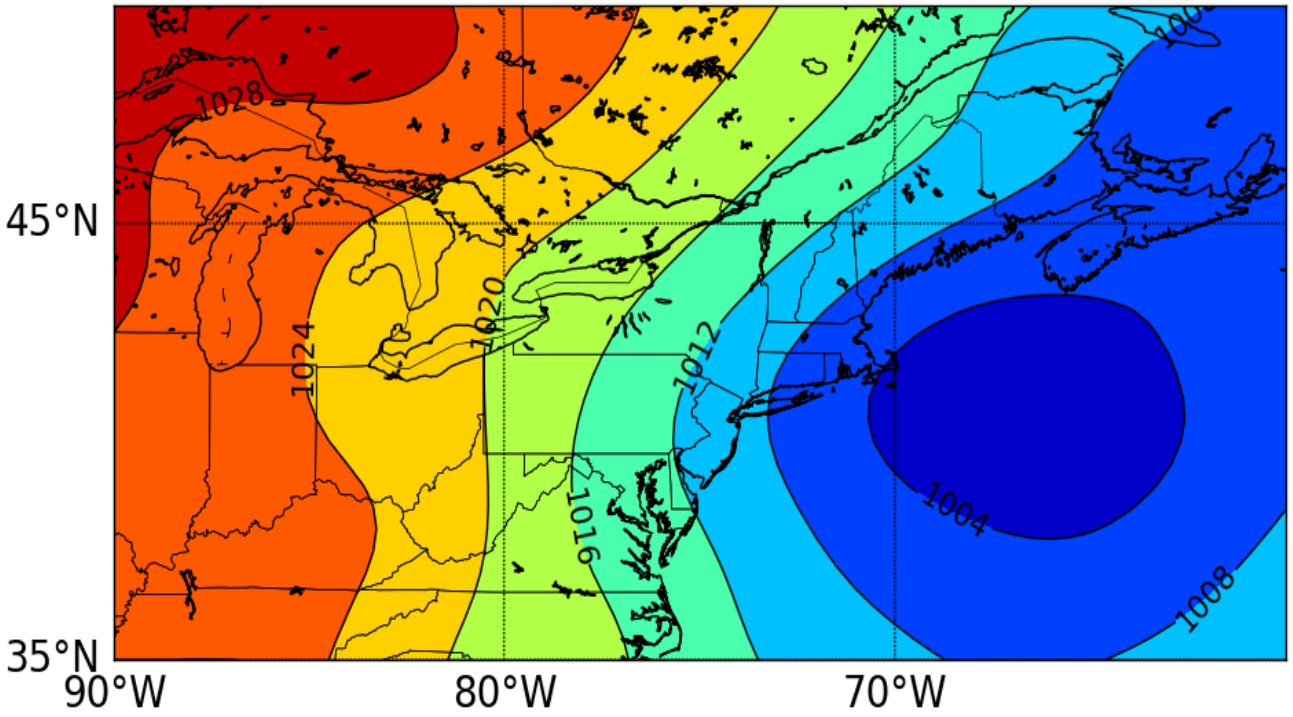

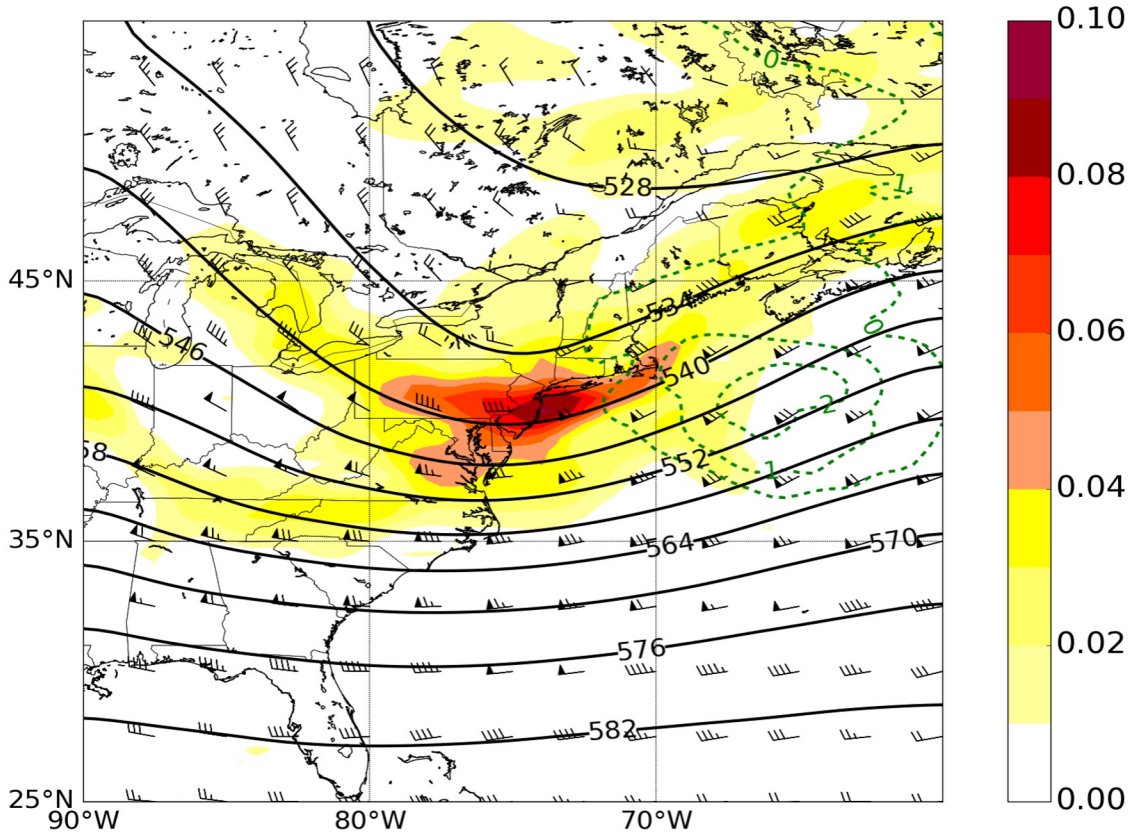

Mohawk–Hudson Convergence: Jet

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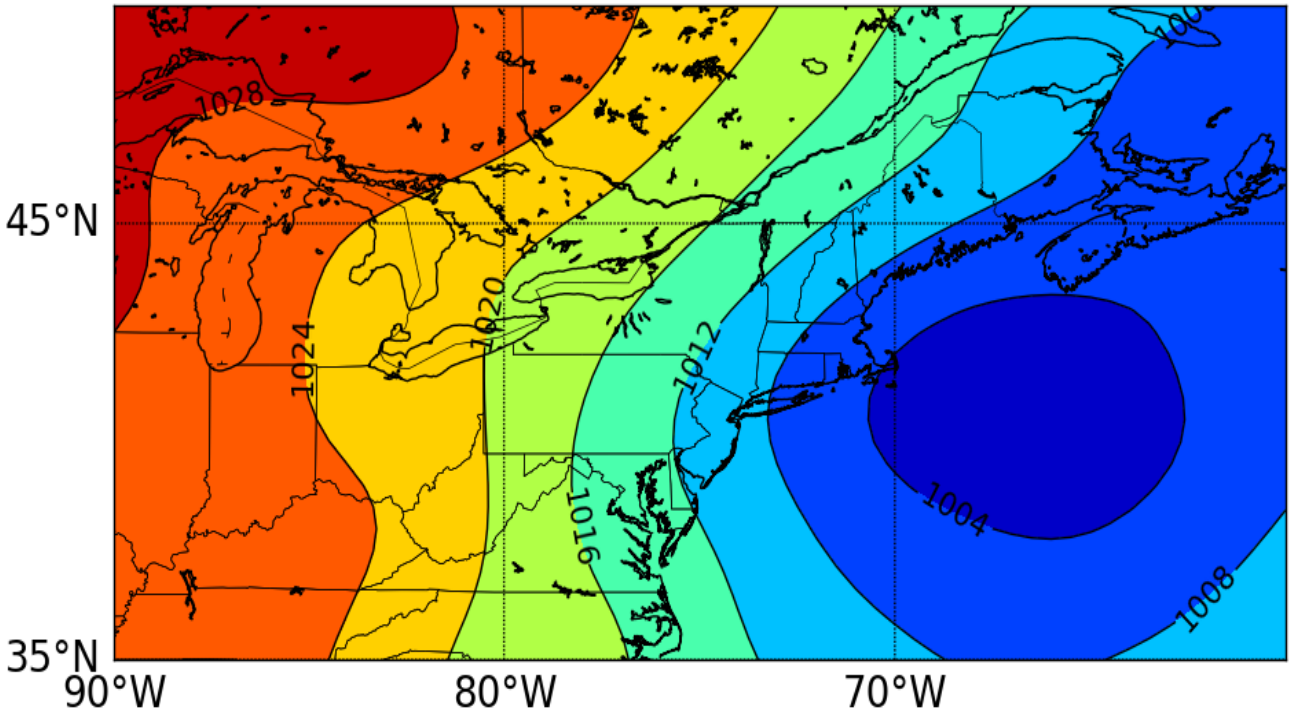

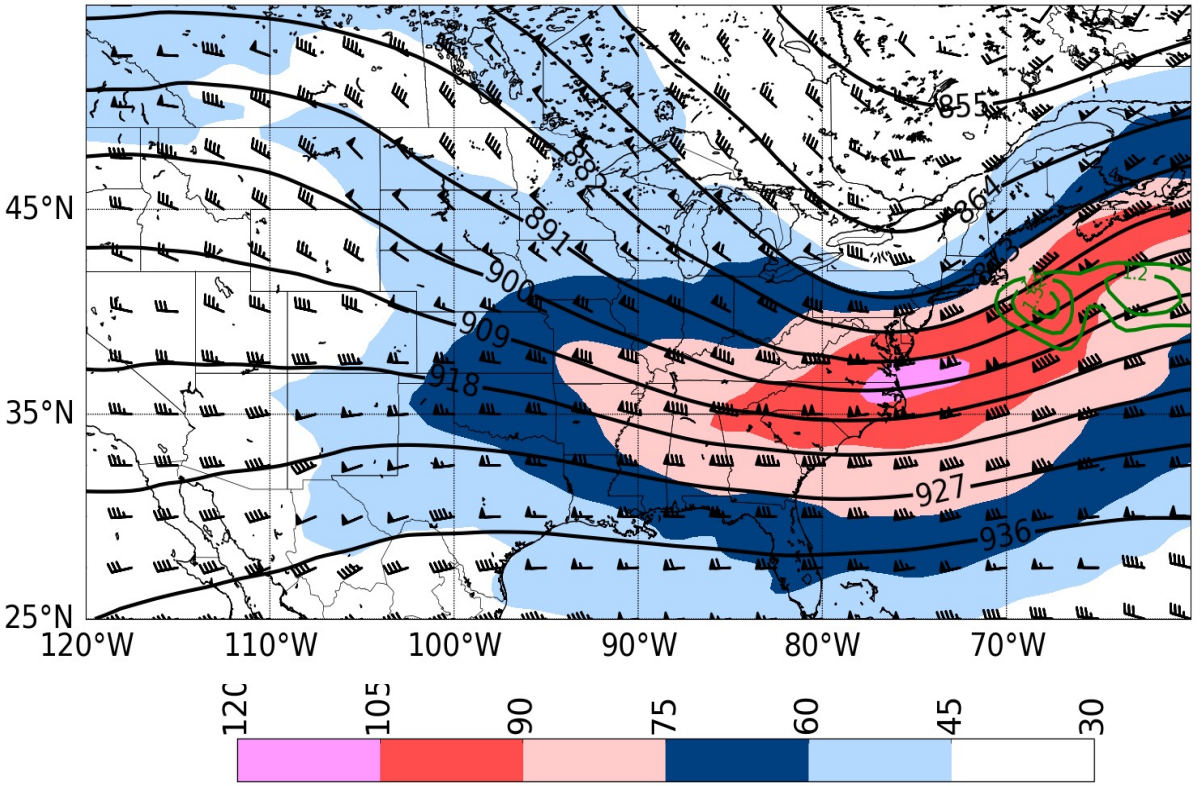

Mohawk–Hudson Convergence: Surface winds

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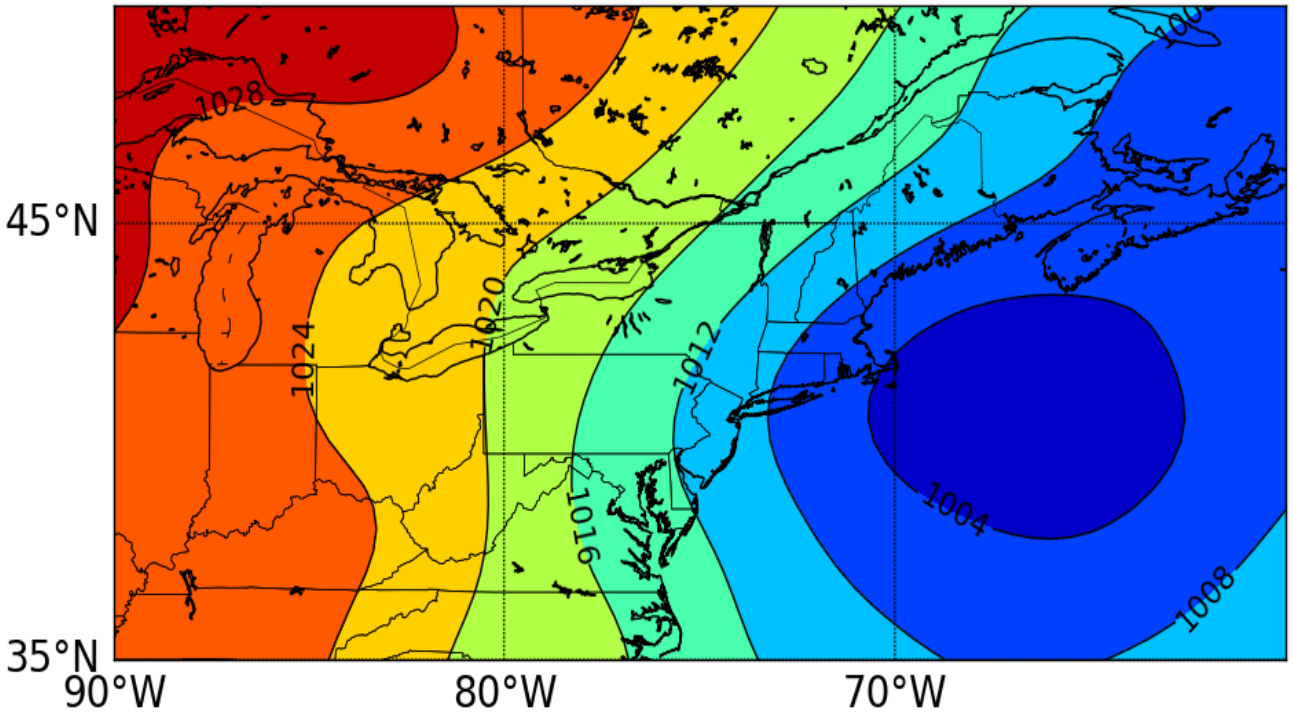

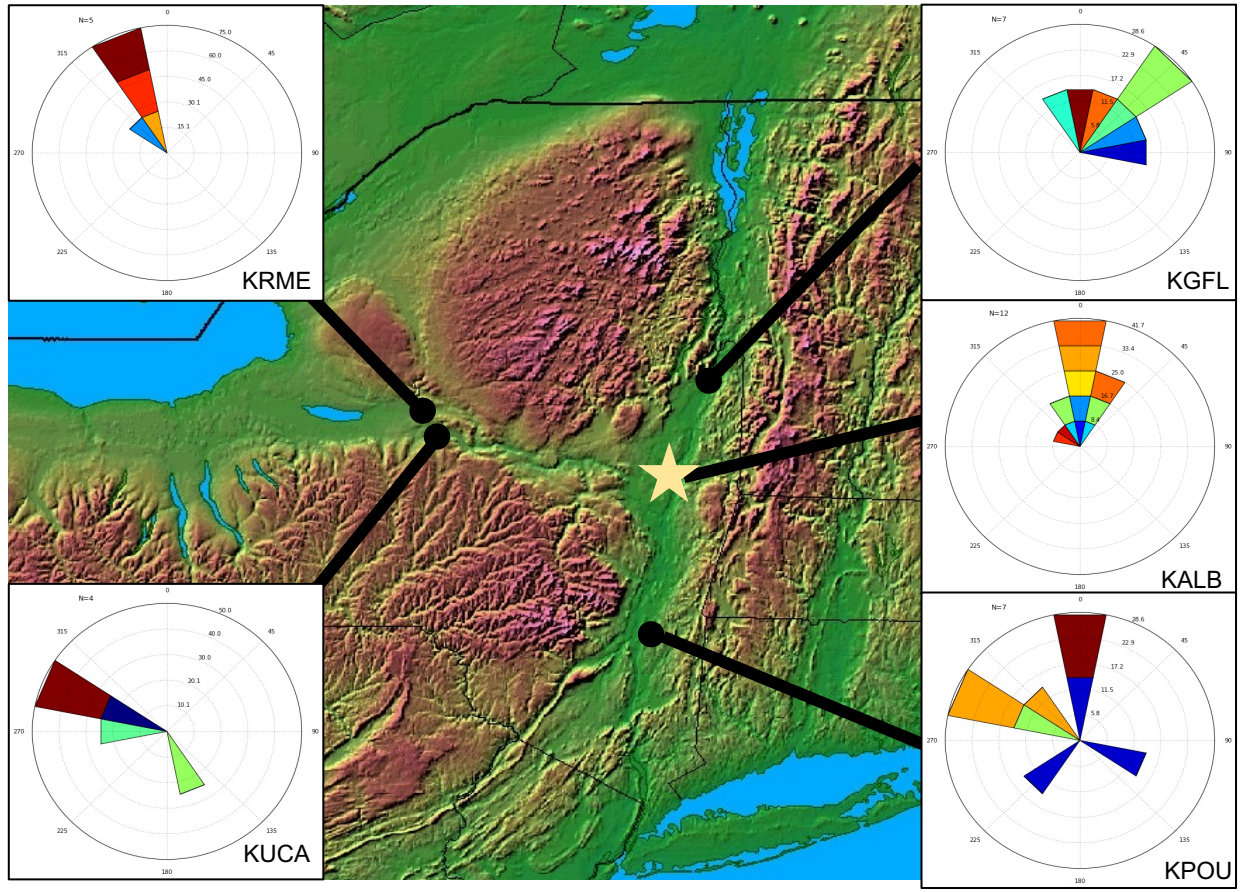

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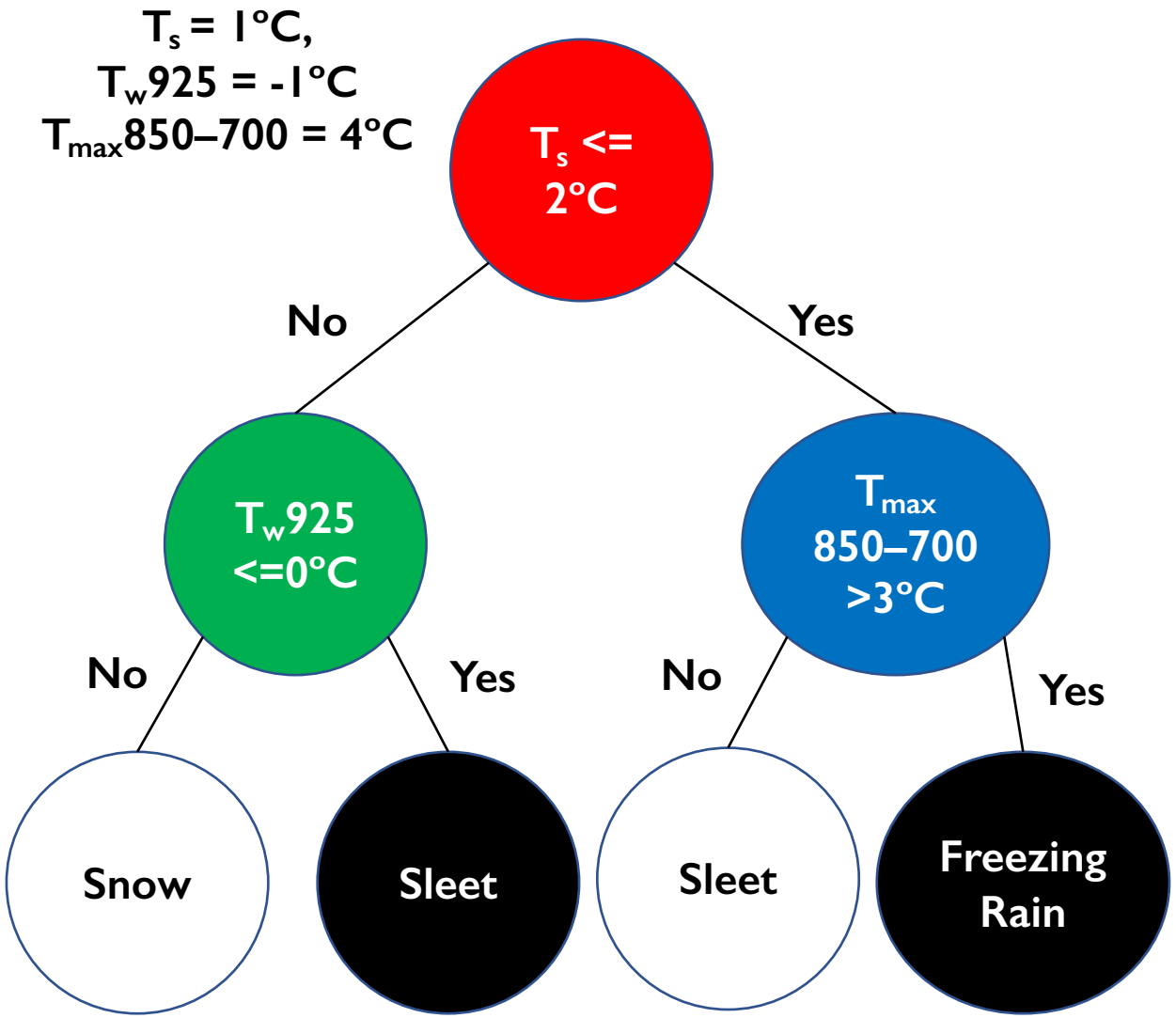

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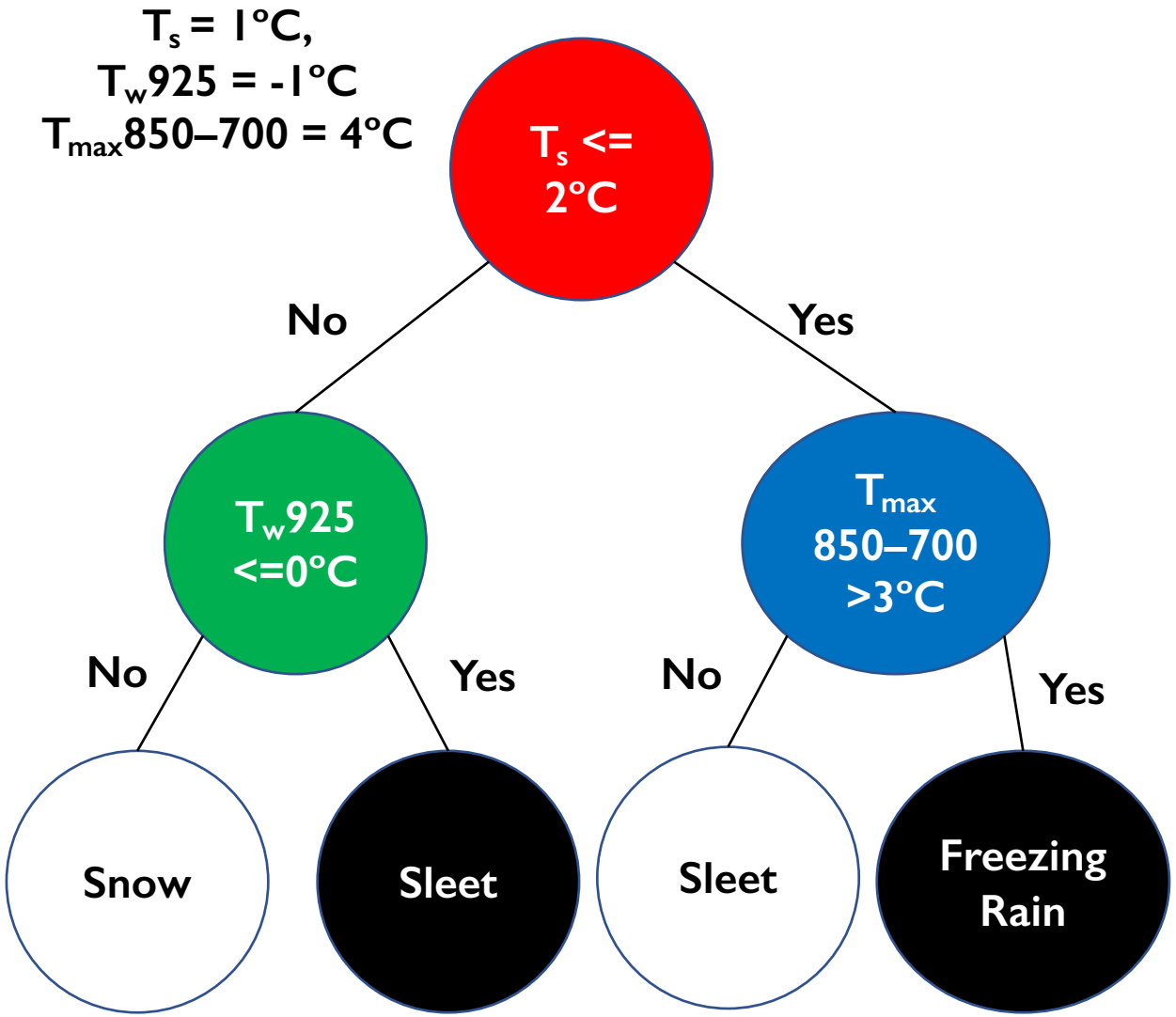

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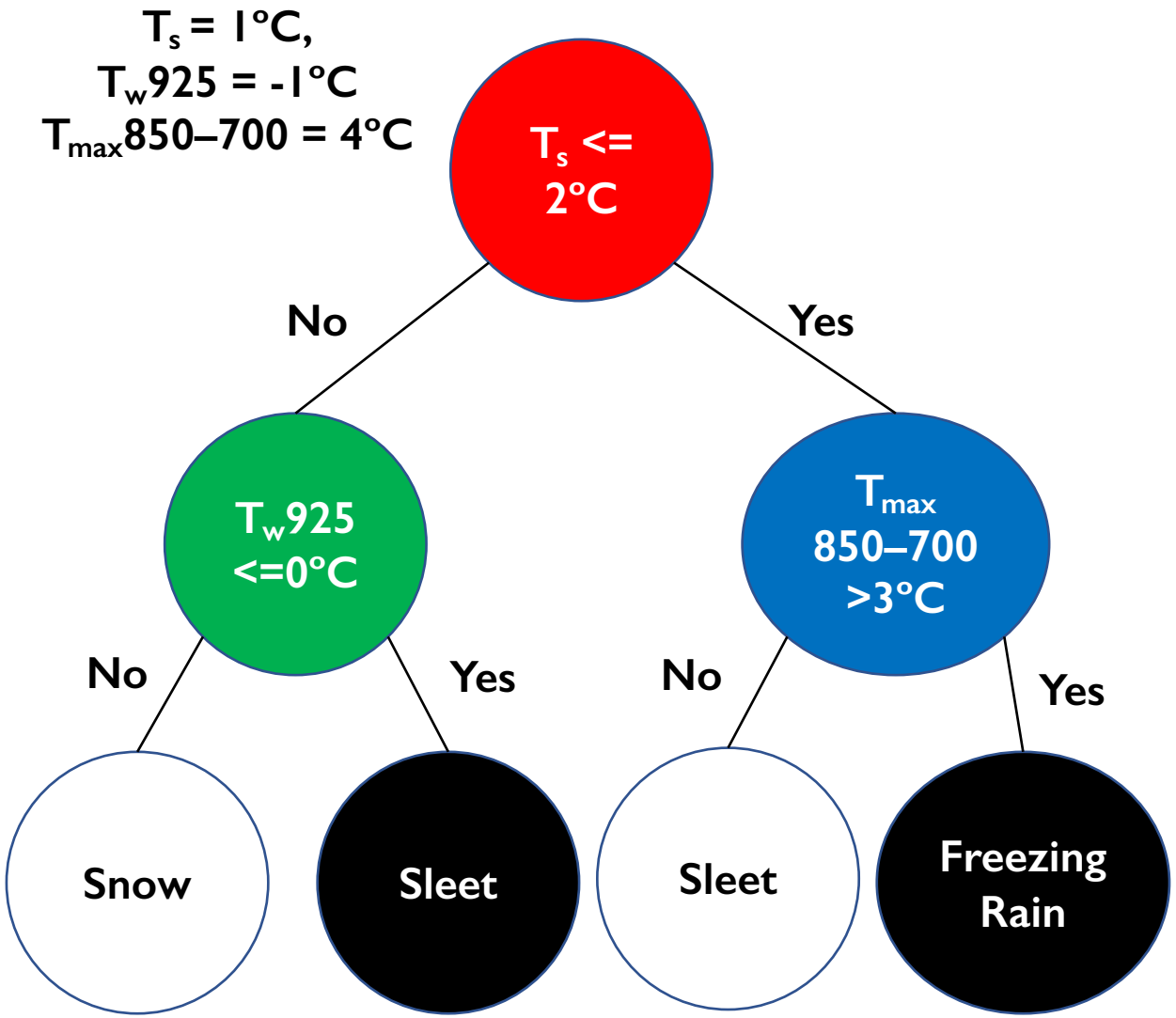

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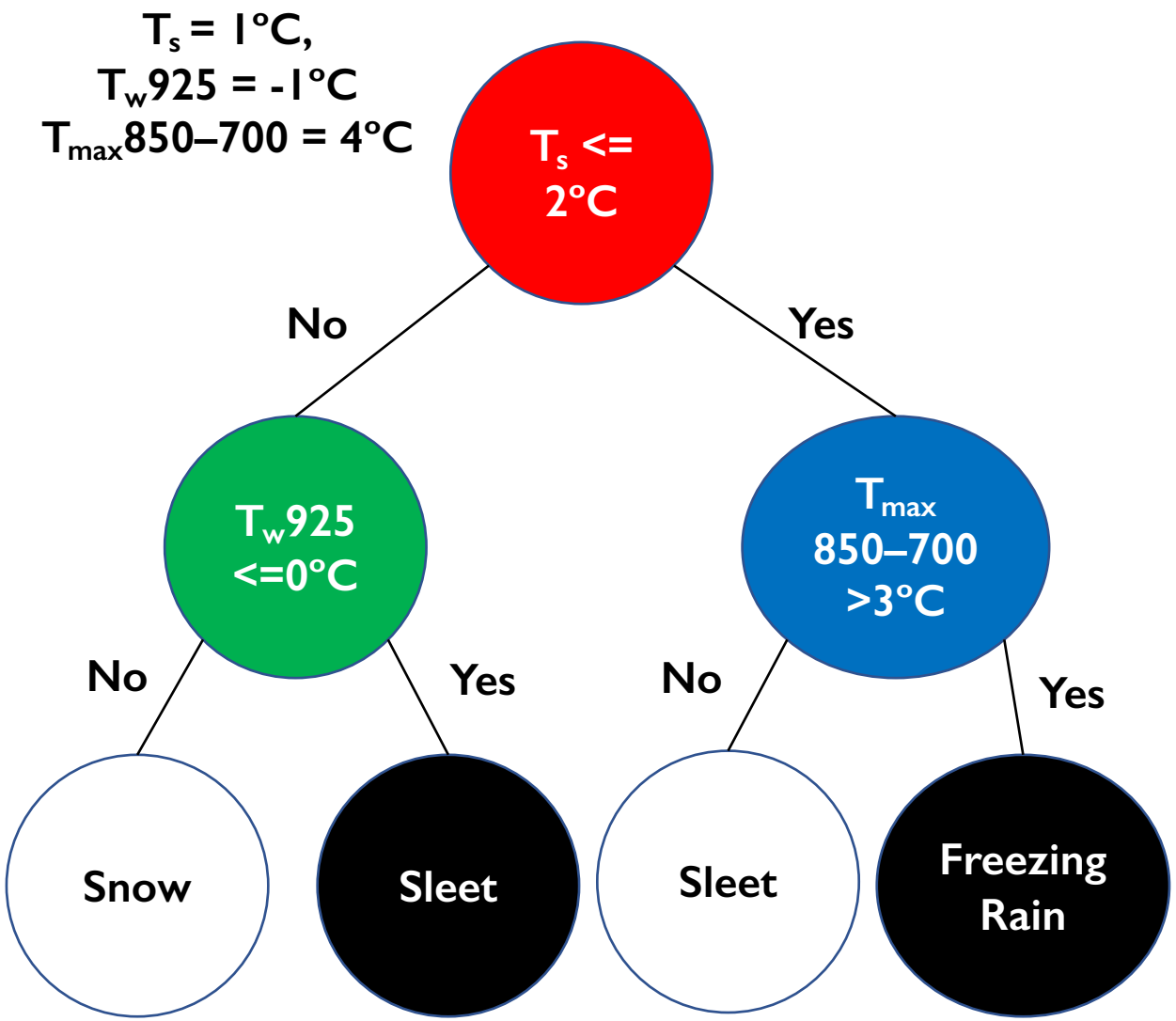
- Generate *probabilistic outcomes*



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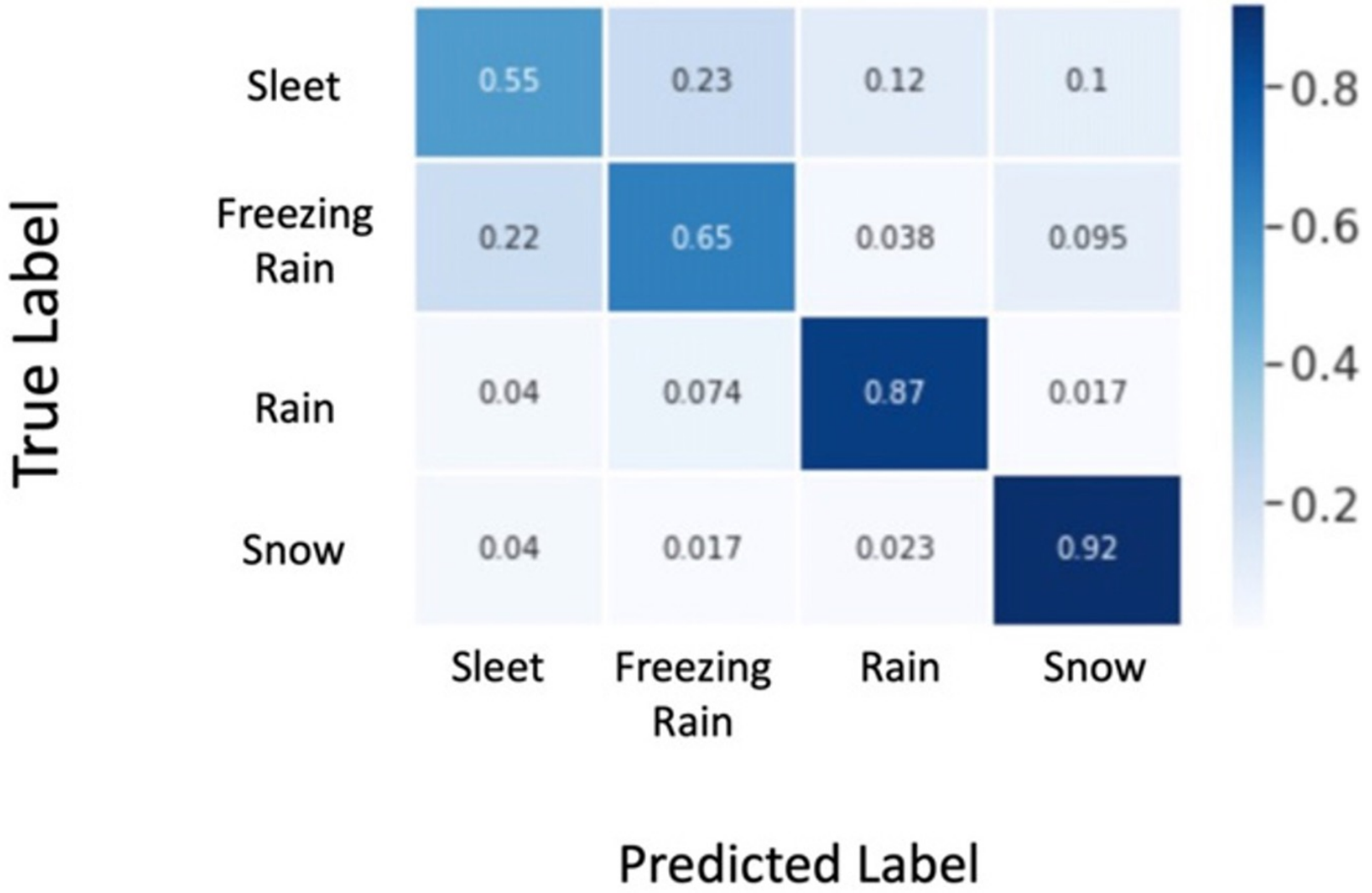

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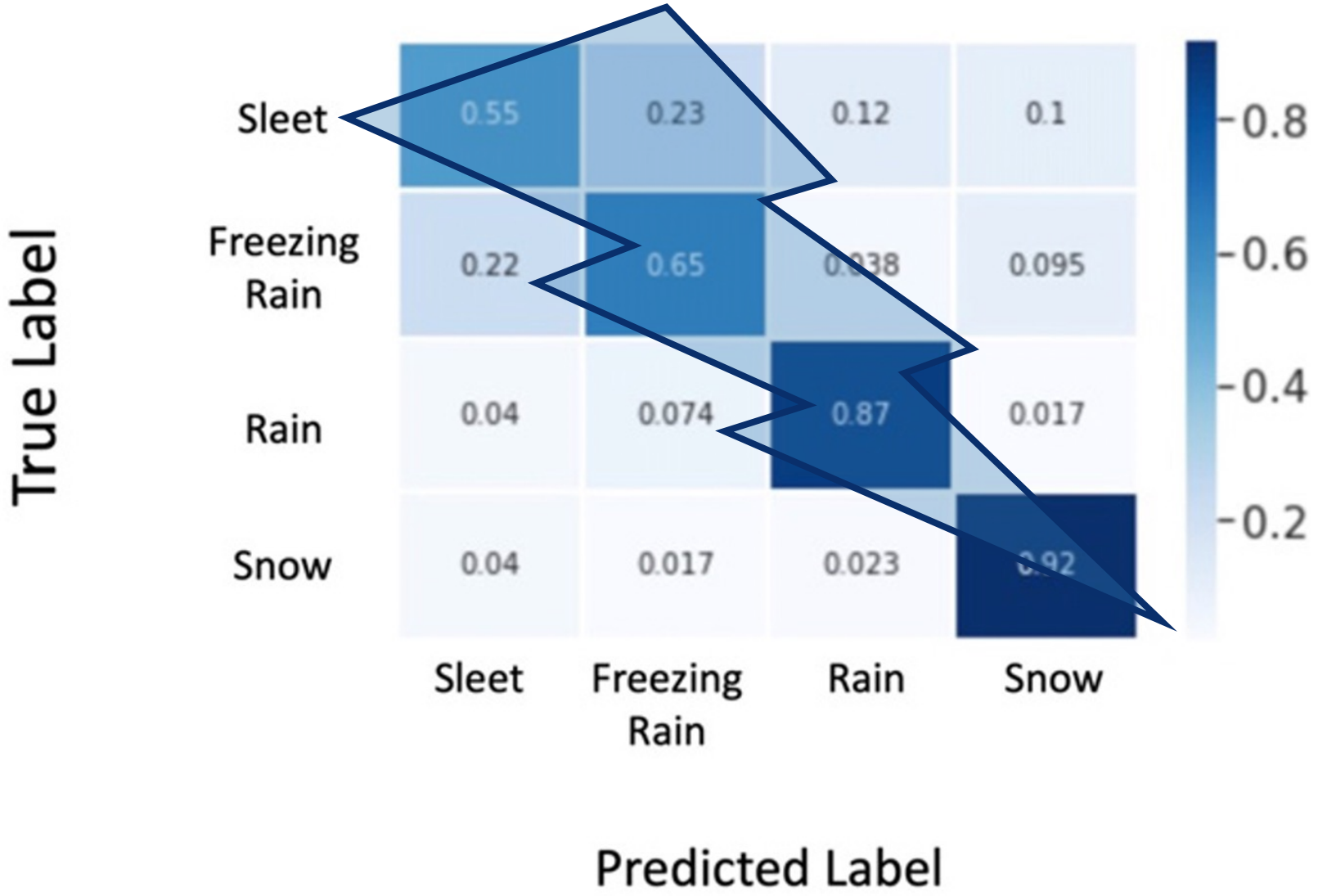

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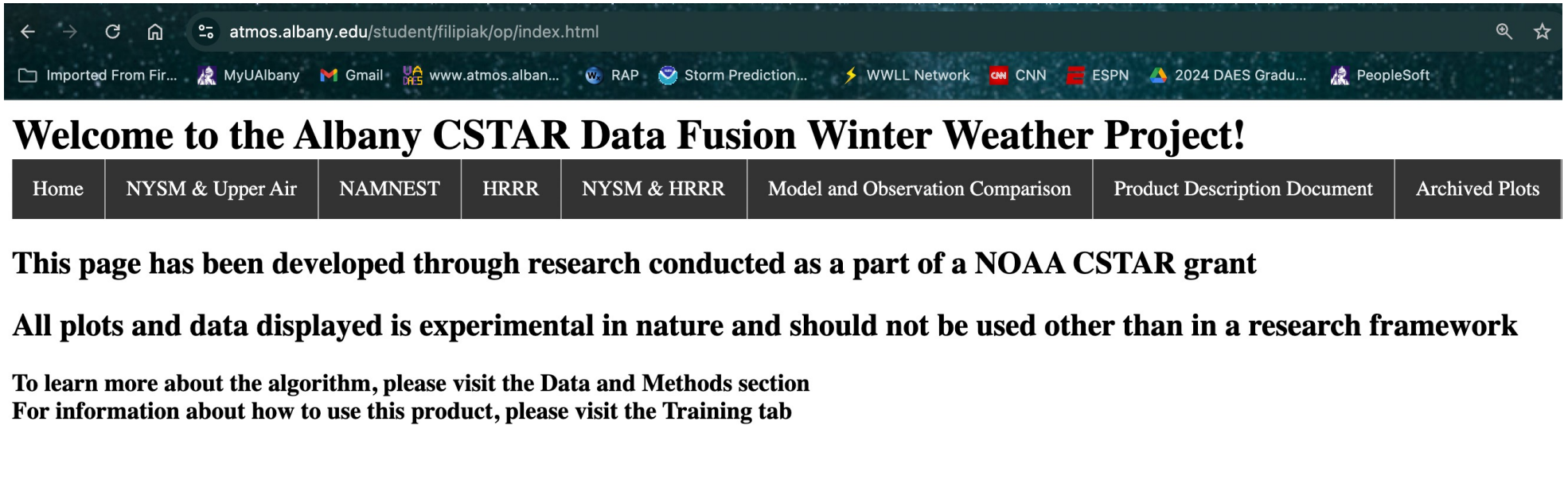

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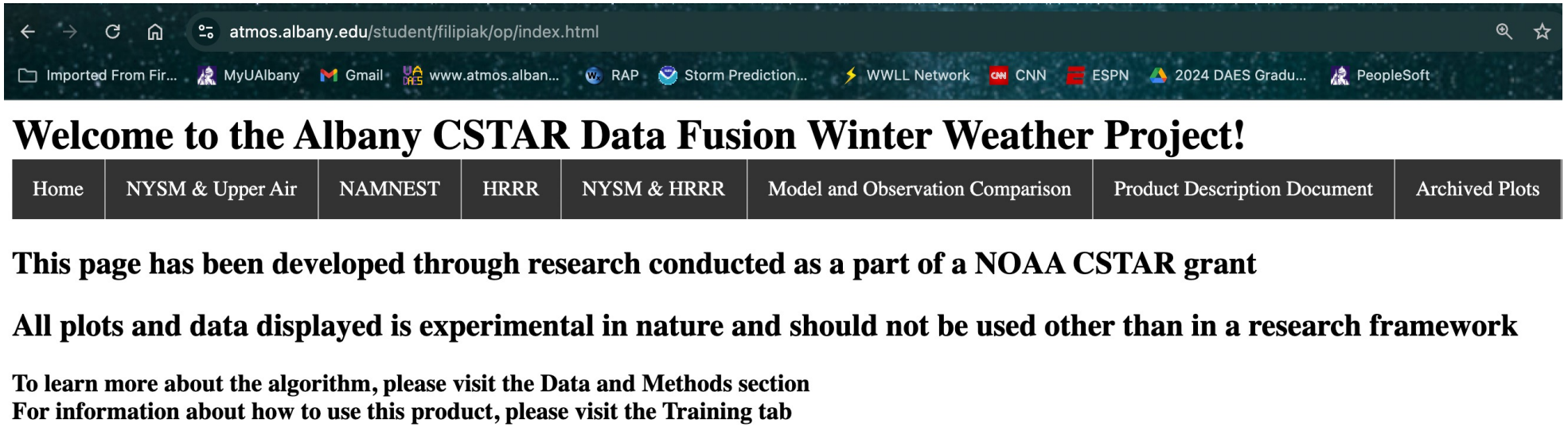

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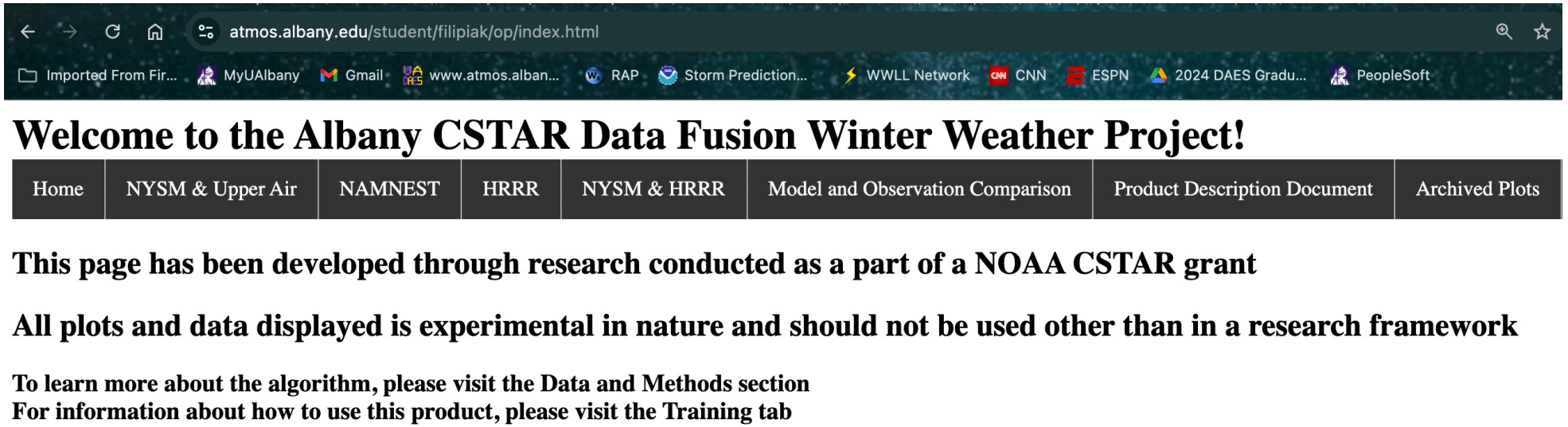
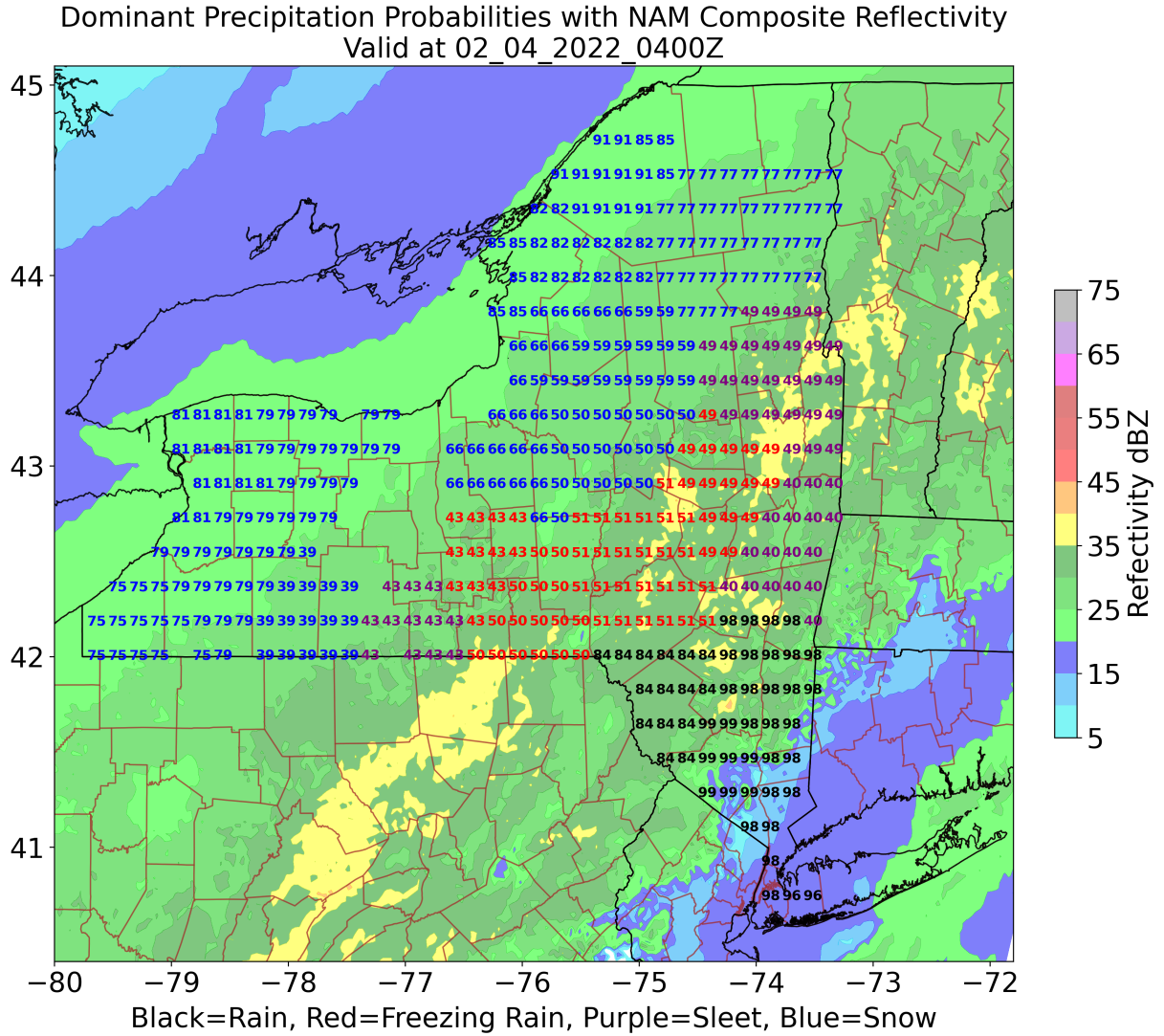


- *Live updating map* of *probabilities* with radar or reflectivity
- *Six probabilistic products* available: rain, freezing rain, sleet, snow, mixed precipitation (sleet + freezing rain), and dominant precipitation type

Random Forest: Operational Product Guidance



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AFDALY

AREA FORECAST DISCUSSION
National Weather Service Albany NY
934 PM EST Thu Feb 3 2022

.NEAR TERM /THROUGH FRIDAY/...
Winter Storm Warning for Herkimer, Hamilton, northern Fulton,
northern Warren and northern Washington Counties until to 1 pm
Friday...

Winter Storm Warning for southern Fulton, Montgomery, Schoharie,
western Schenectady and western Albany Counties from 1 pm today
to 5 pm Friday...

Winter Storm Warning for Southern Vermont, the Capital Region, Glens
Falls and northern Saratoga Region, and the northern Taconics
in eastern New York and northern Berkshire County in western
Massachusetts from 5 pm this afternoon to 5 pm Friday...

Winter Weather Advisory for western Greene and western Ulster
Counties from 5 pm this afternoon to 5 pm Friday...

Winter Weather Advisory for the mid Hudson Valley, southern and
central Taconics, and Litchfield County, CT from 7 pm tonight
to 5 pm Friday...
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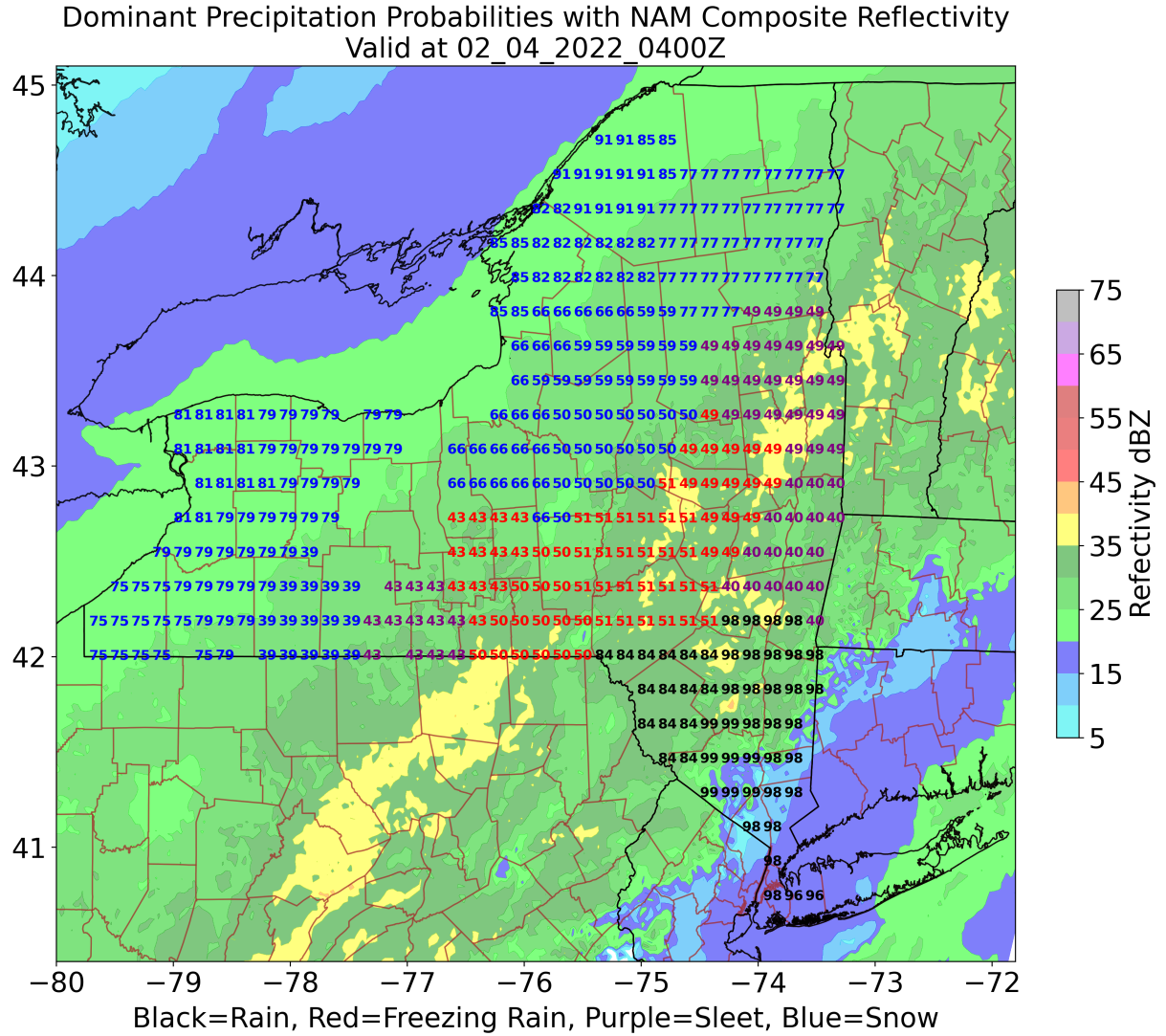
Based on reports from spotters, social media and data from the NY State Mesonet, and experimental precipitation type CSTAR output, sleet and freezing rain occurring to the Johnstown/Amsterdam area and even near the Herkimer sawtooth. Some slight reductions in the snow forecasts out there and a alight increase in the ice forecasts from the Capital Region east and south.



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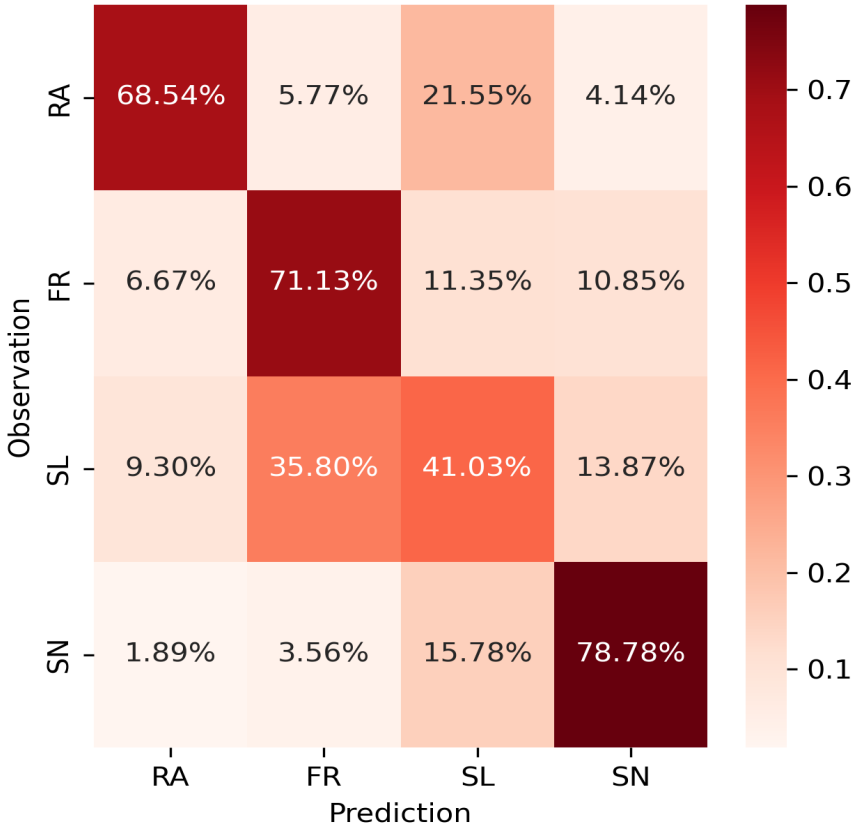

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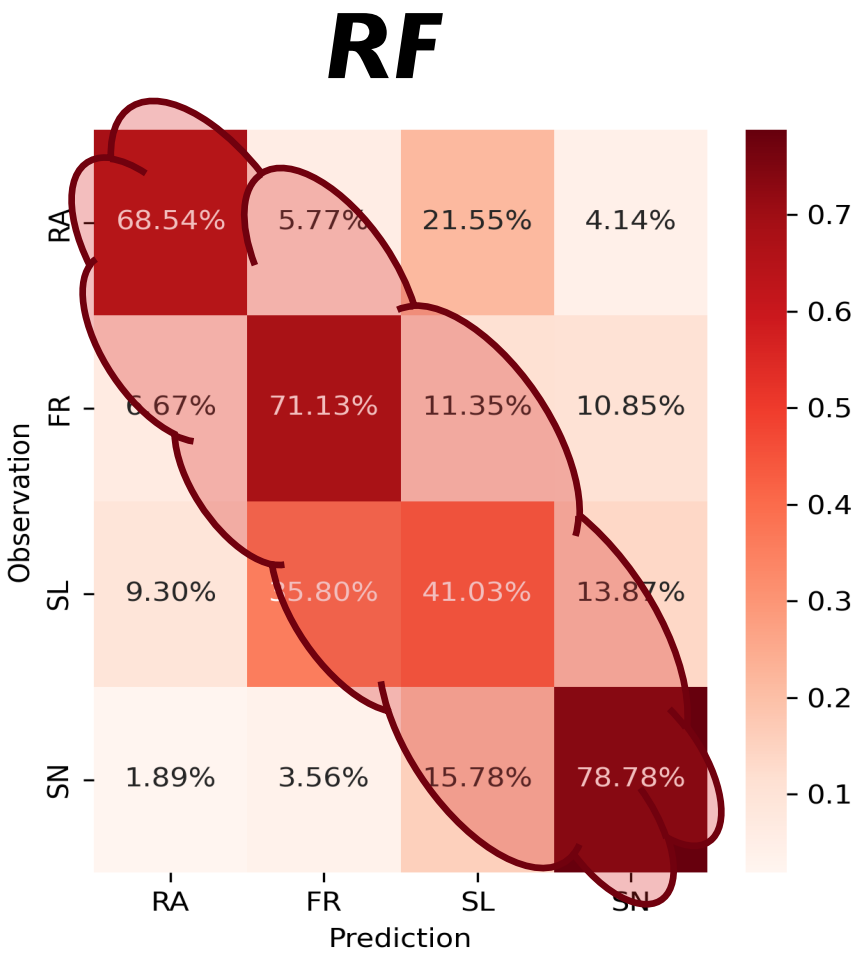

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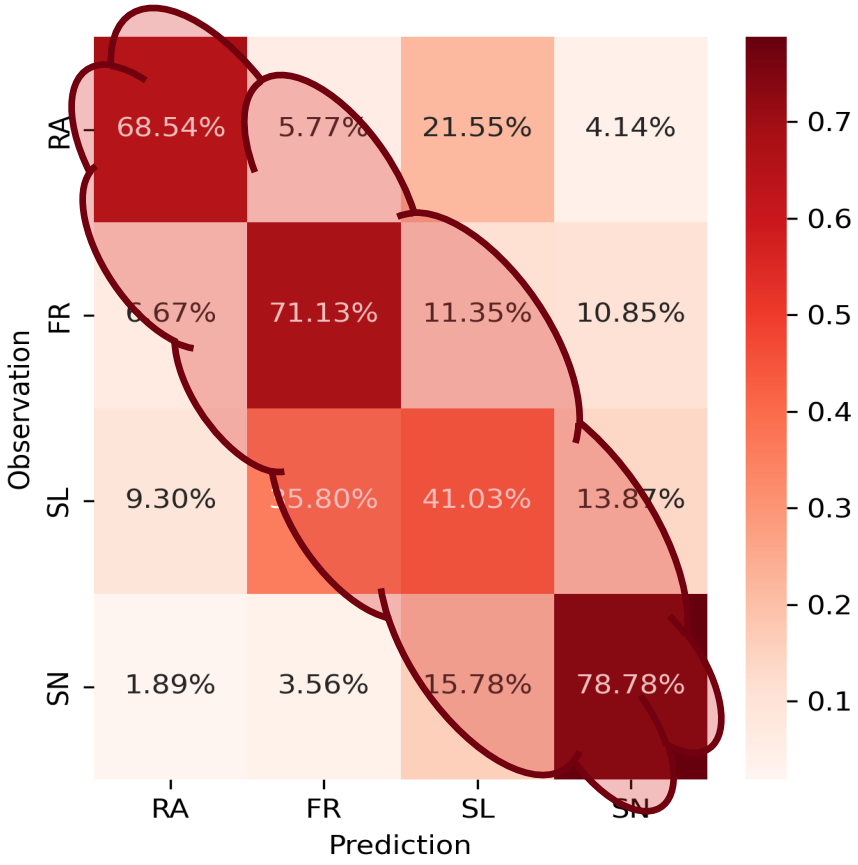

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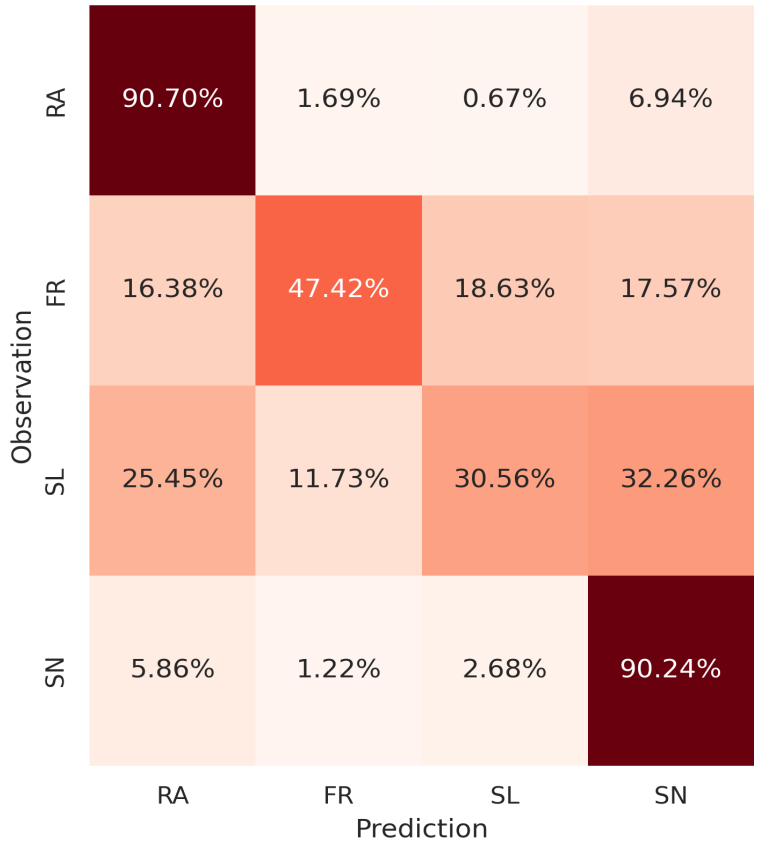

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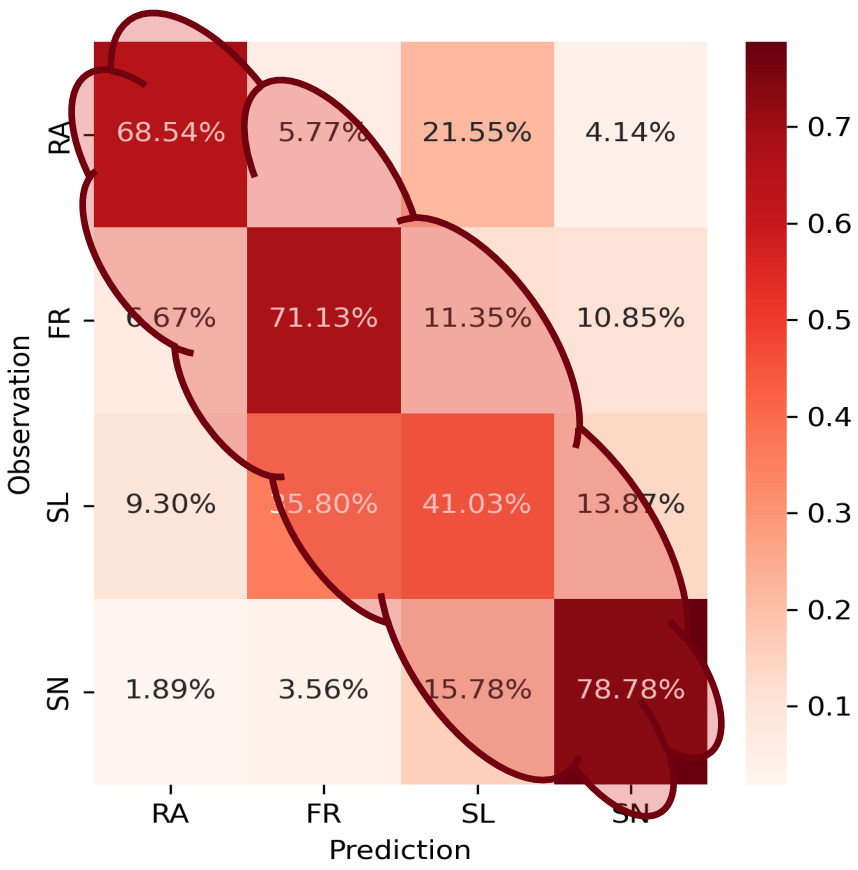

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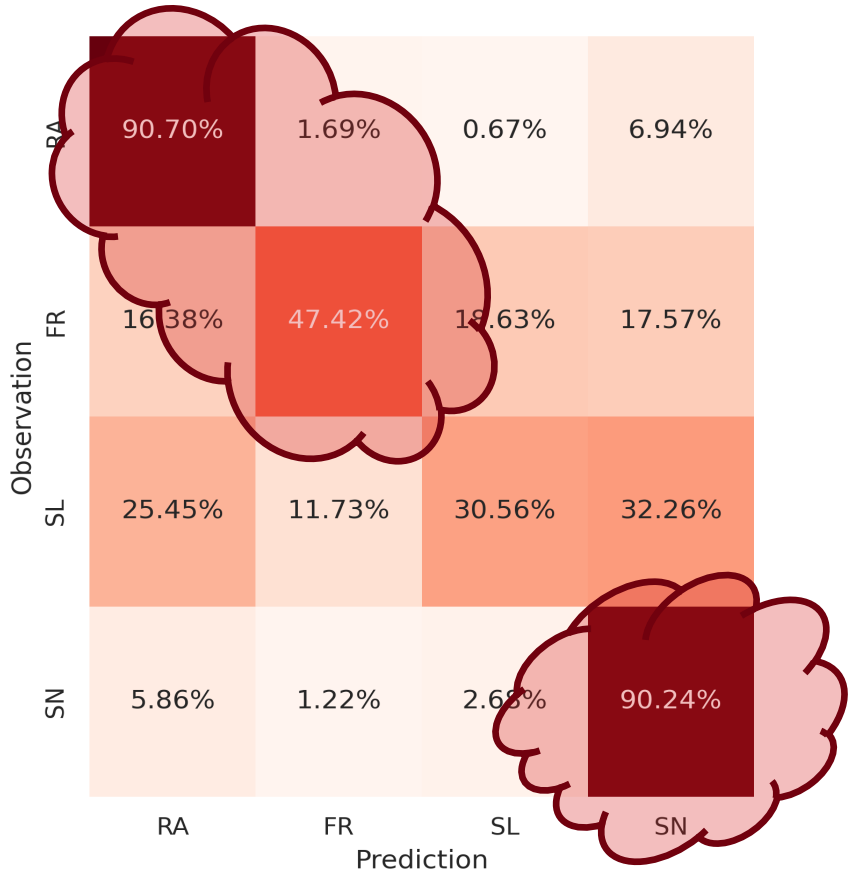

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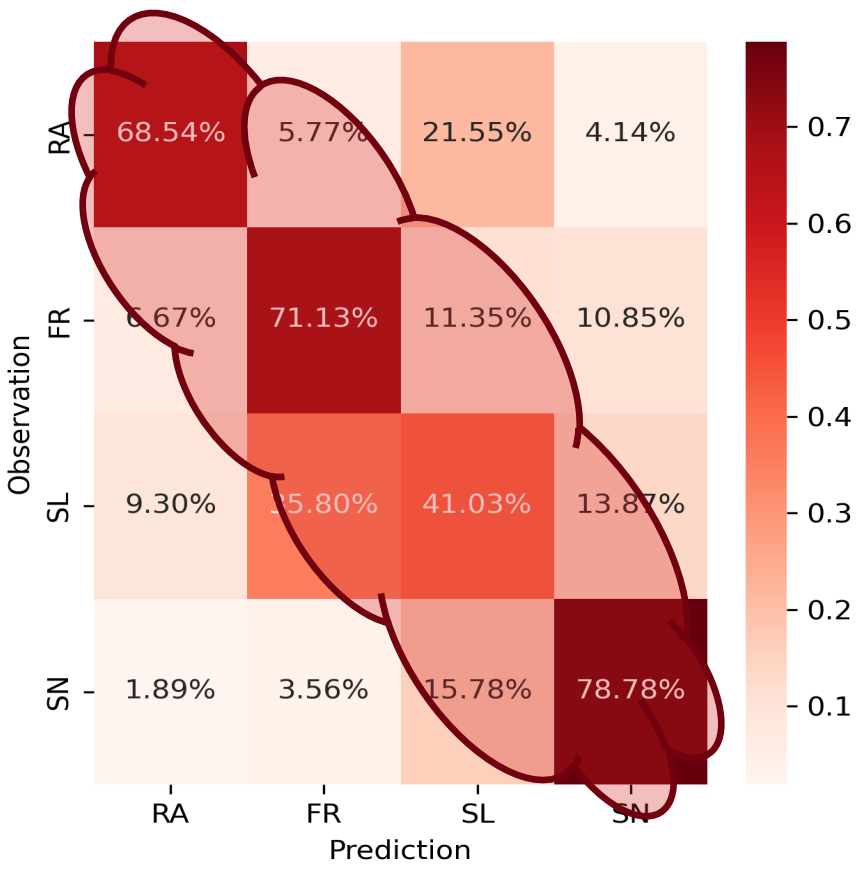

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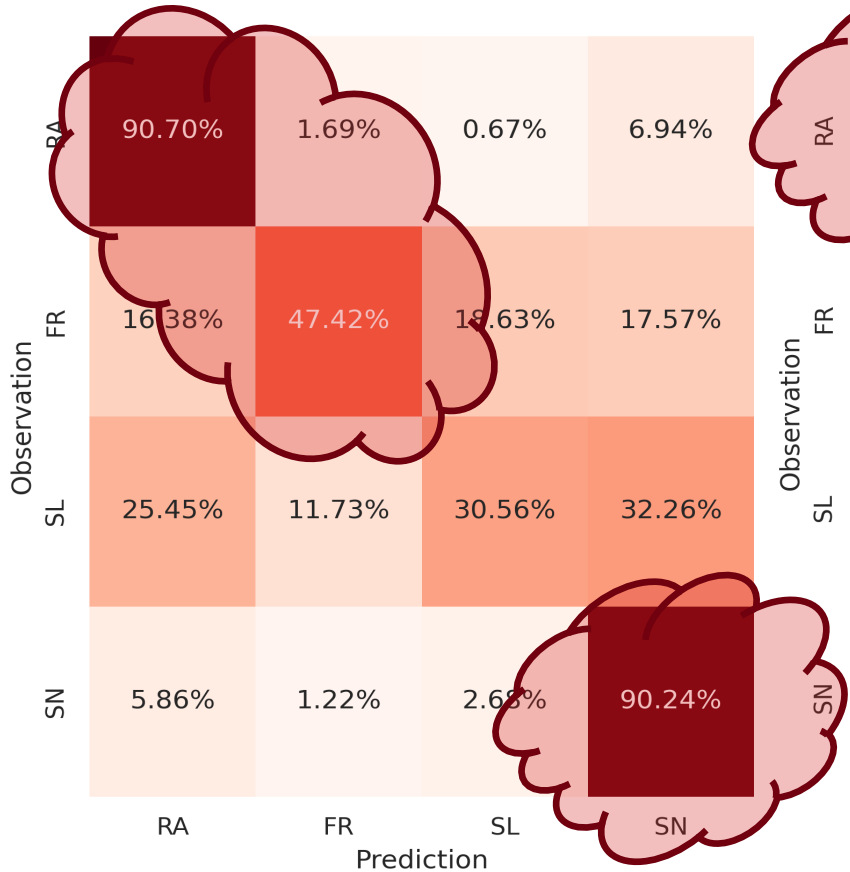

HRRR