

Georgia

icebaby



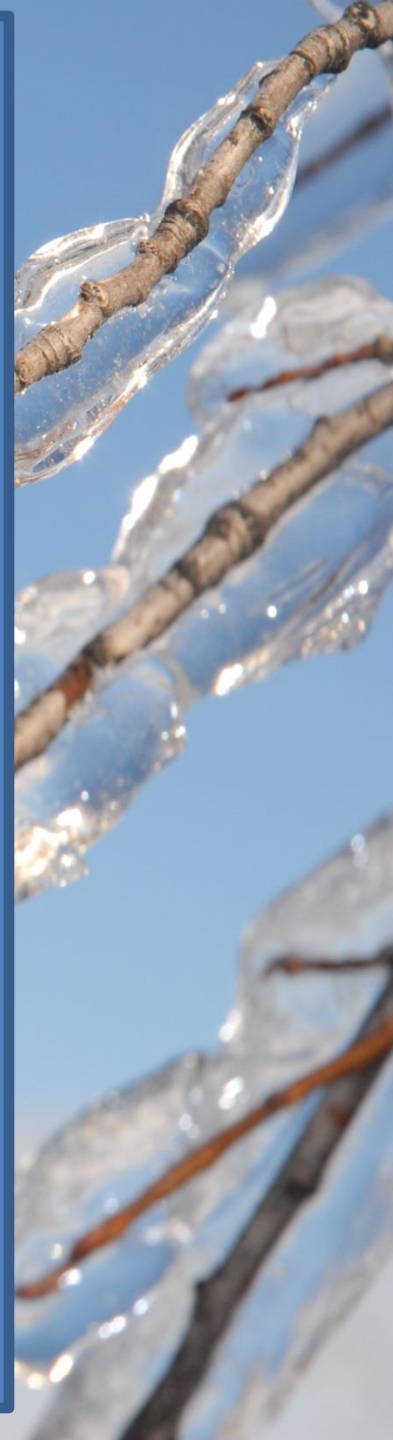
Carly Kovacic
Meteorologist
National Weather Service
Peachtree City WFO



Why Study Ice Storms?

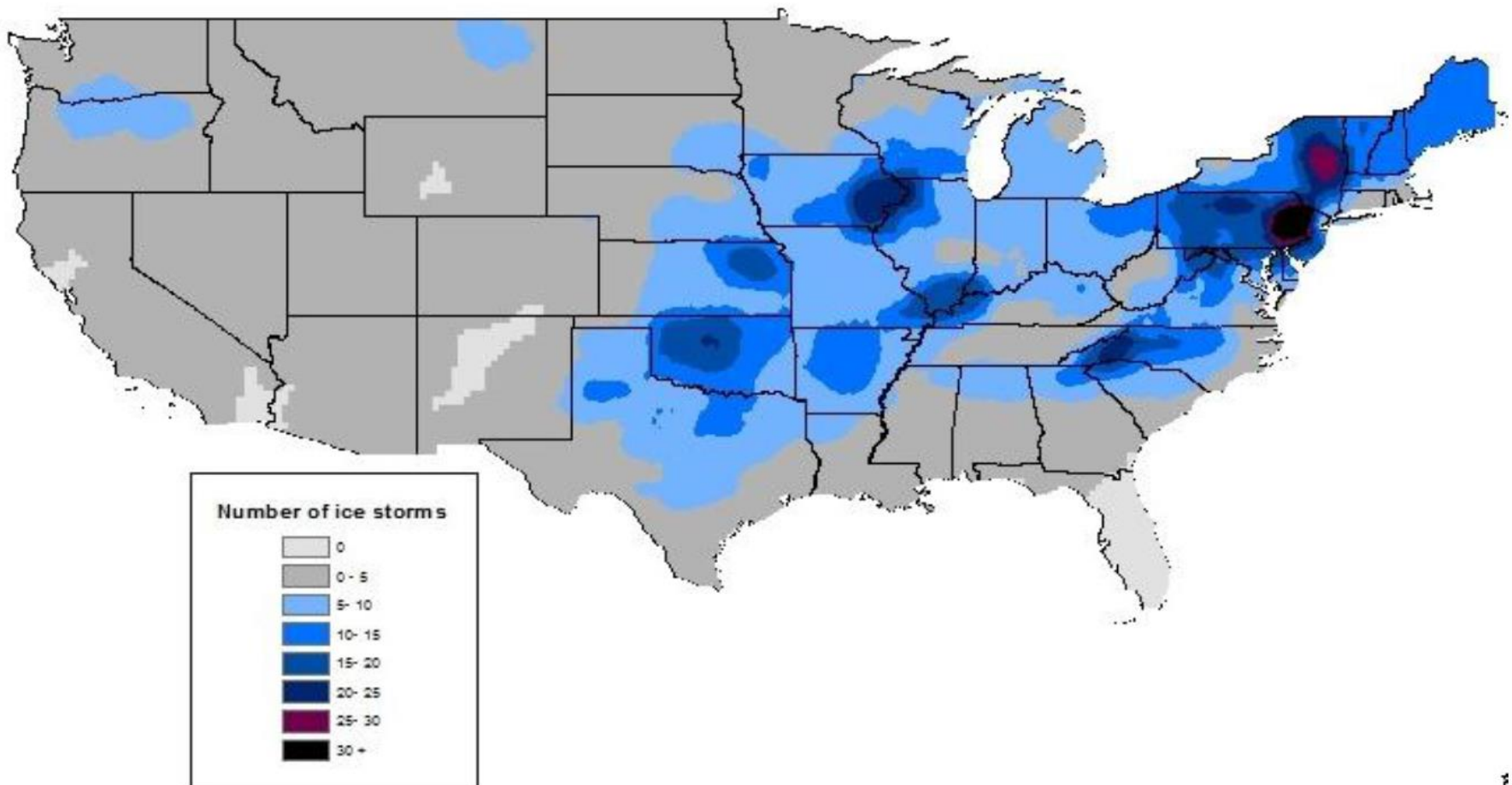


- Pronounced impacts to life & property
- Impacts last several days-several weeks or longer
- Industries affected include:
 - Power
 - Transportation
 - Aviation
 - Insurance
 - Public Safety
- Few studies have addressed spatial/temporal changes in frequency
- Improve ice storm forecasts and warnings



How many ice storms have occurred over the CONUS over the past decade?

Total Winter Ice Storms 1998-2011



Taking a Closer Look at Georgia

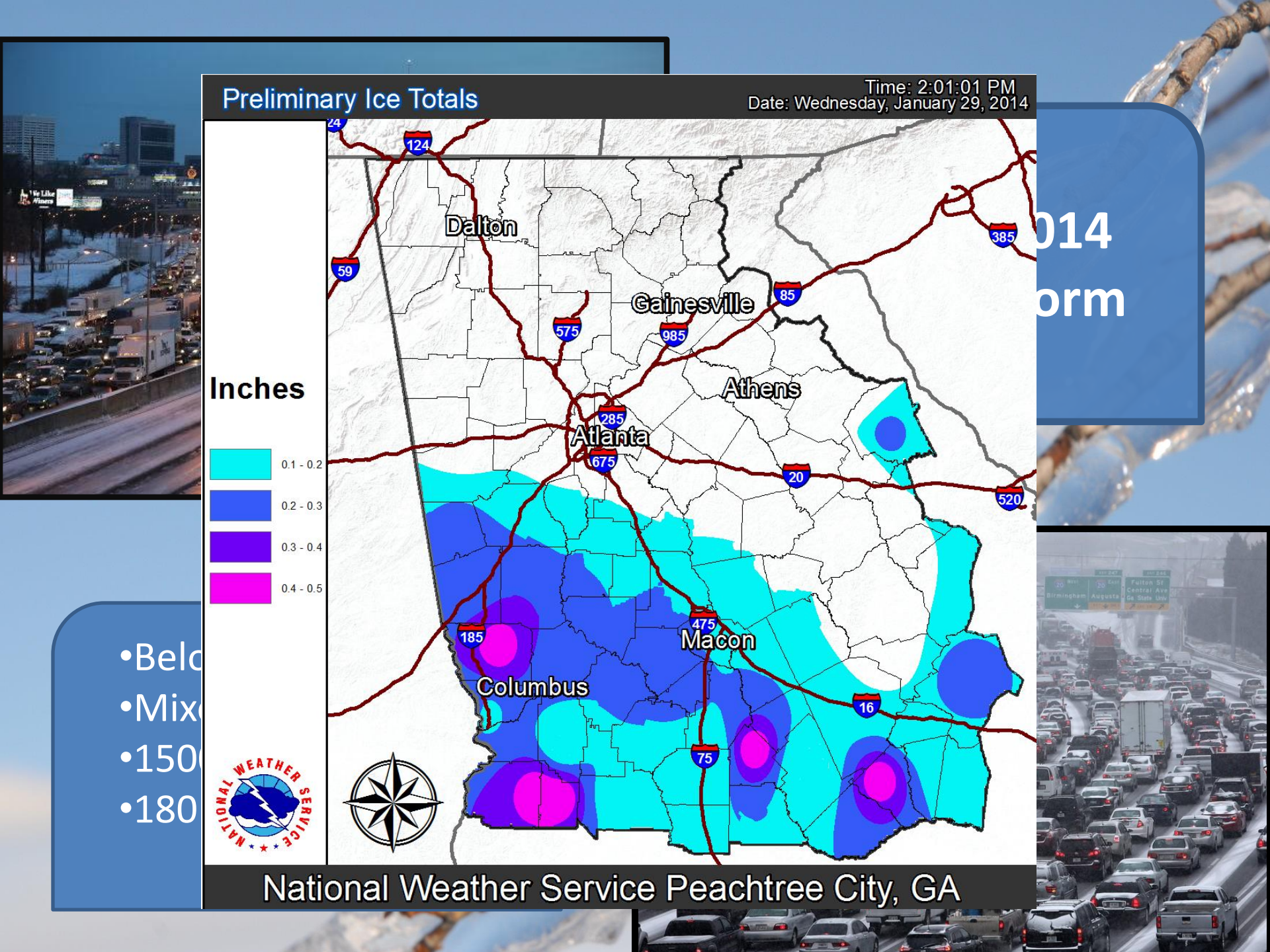




Jan 28-29, 2014 Winter Storm

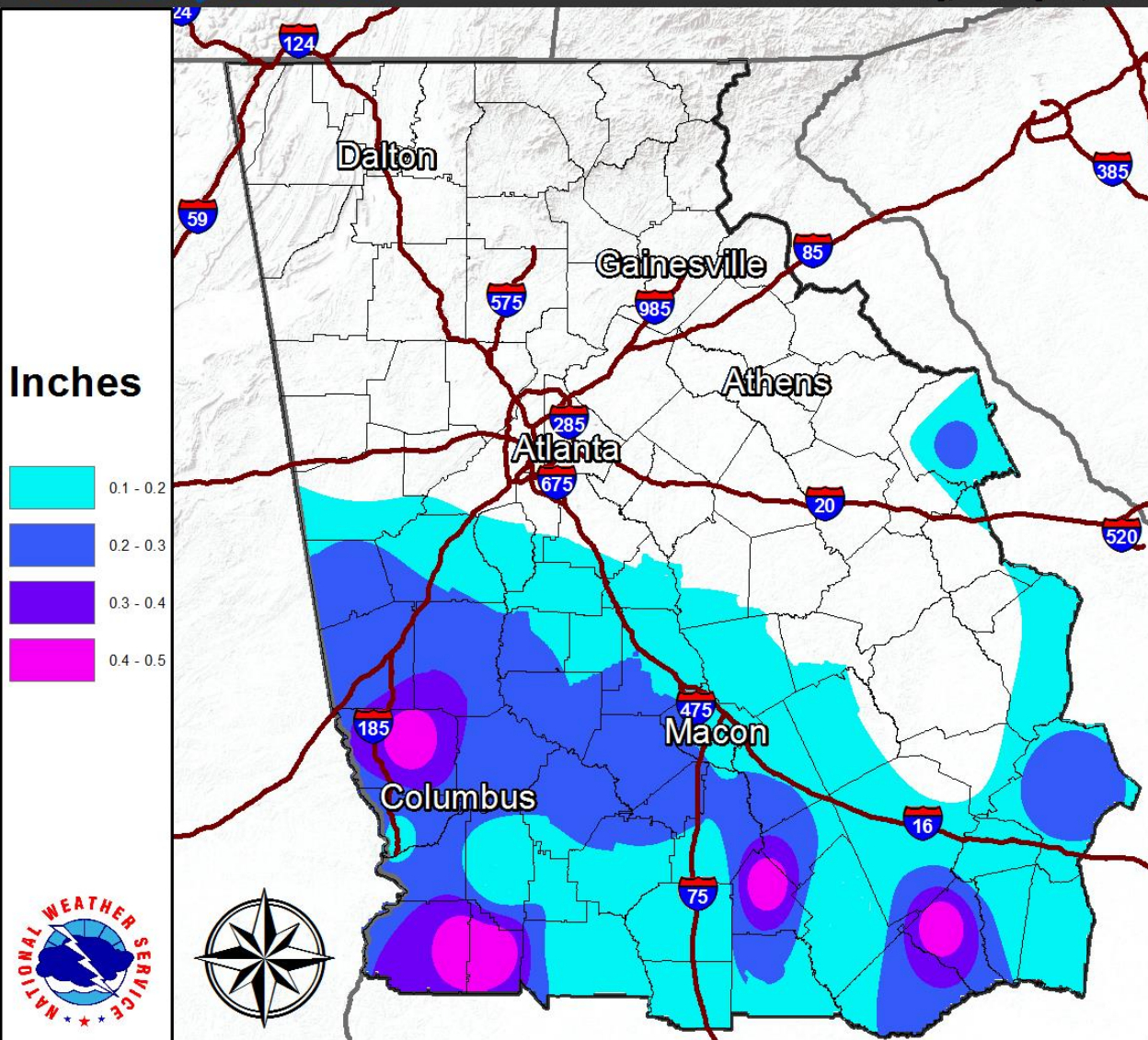
- Below freezing temps
- Mixed precipitation
- 1500 accidents
- 180 injuries, 2 deaths





Preliminary Ice Totals

Time: 2:01:01 PM
Date: Wednesday, January 29, 2014



2014
form

- Below
- Mixed
- 150
- 180

National Weather Service Peachtree City, GA

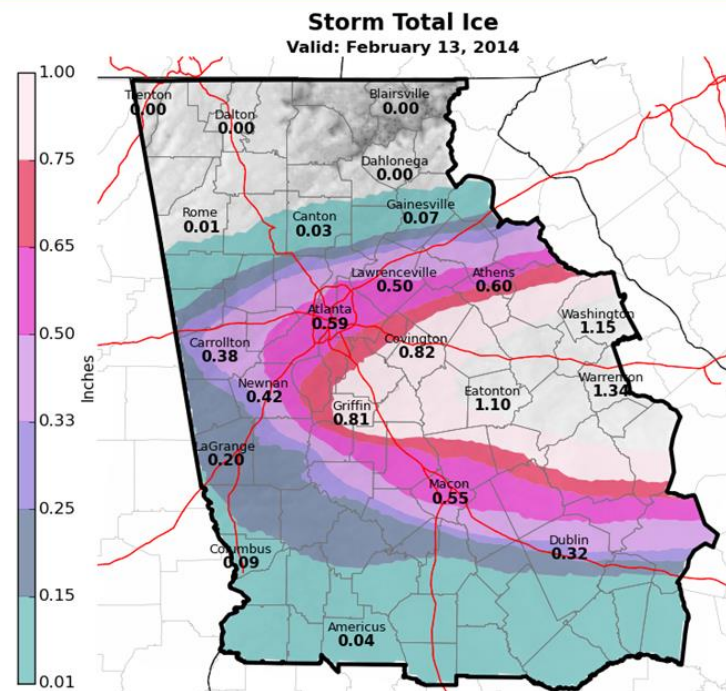


February 11-13, 2014 Snow and Ice Event



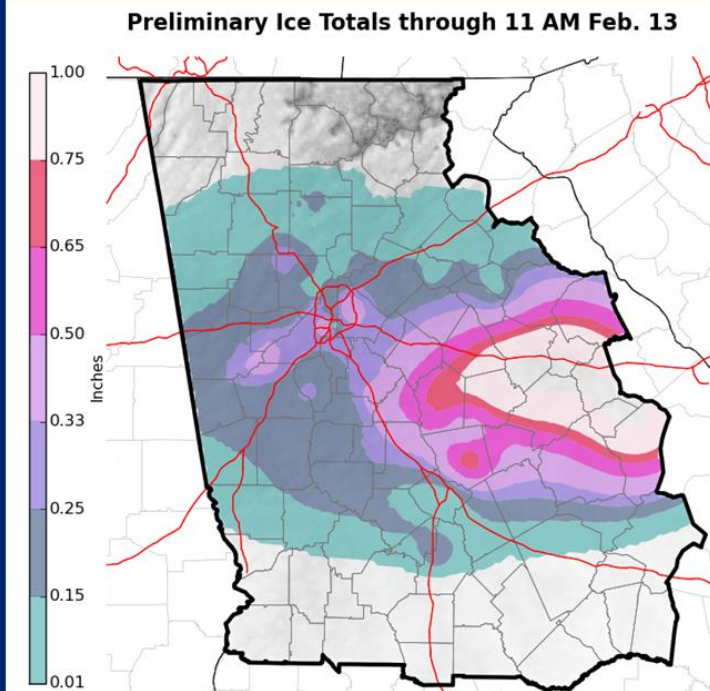
- Cold air damming
- 2 rounds of precipitation
- Record level ice

Comparison of Freezing Rain Forecast vs. Observed Accumulations



National Weather Service
Peachtree City, GA
02/12/2014 02:36 AM EST

Follow Us:
weather.gov/atlanta



National Weather Service
Peachtree City, GA
02/13/2014 03:50 PM EST

Follow Us:
weather.gov/atlanta

Forecast

Observed

February 16-17, 2015 North Georgia Ice Storm

- Cold air damming
- Below freezing temps

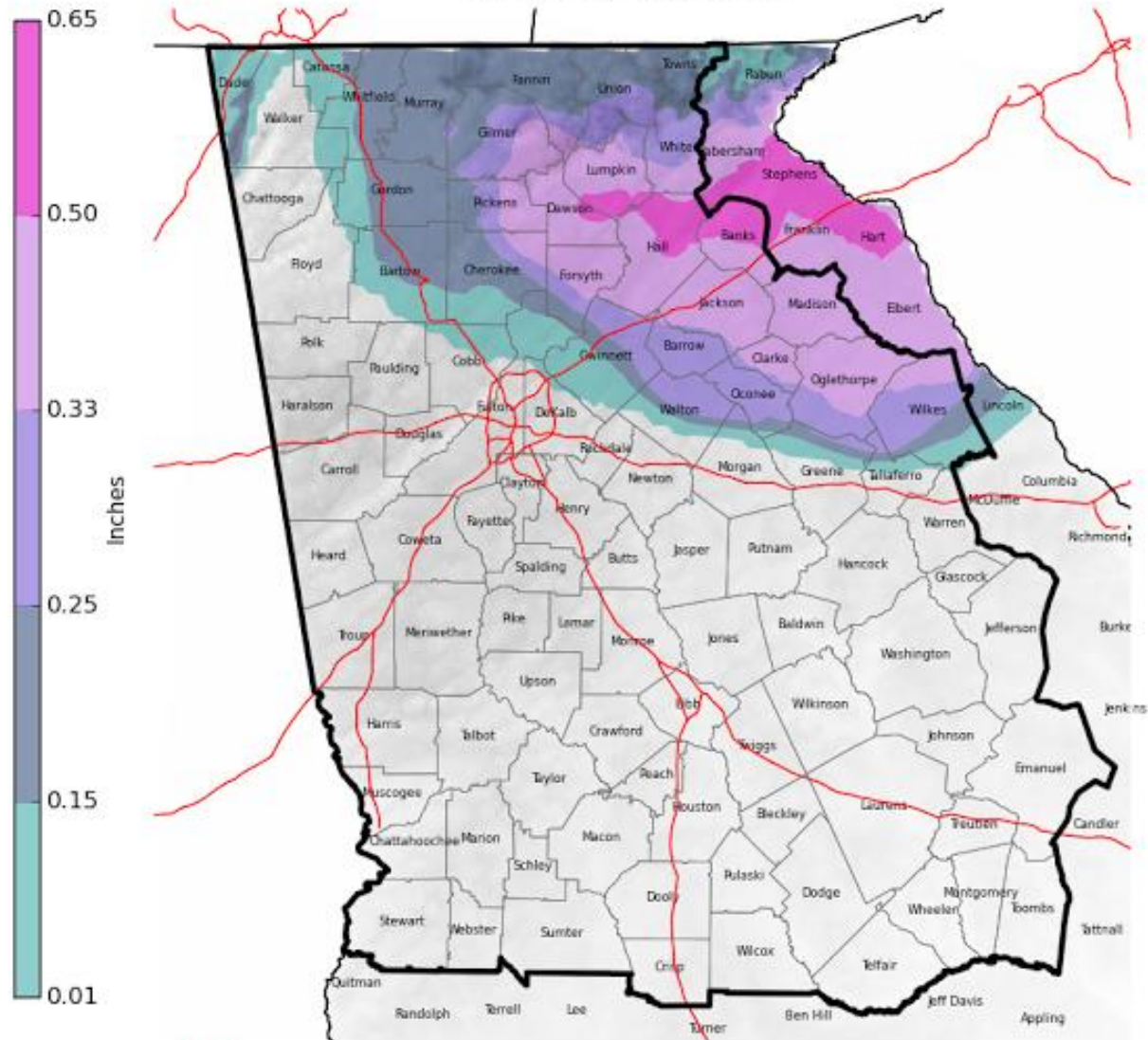


February
North

- Cold air
- Below

Total Observed Ice Accumulations (Feb 16-17, 2015)

Valid: February 27, 2015



National Weather Service

Peachtree City, GA

02/18/2015 04:59 PM EST

Follow Us:



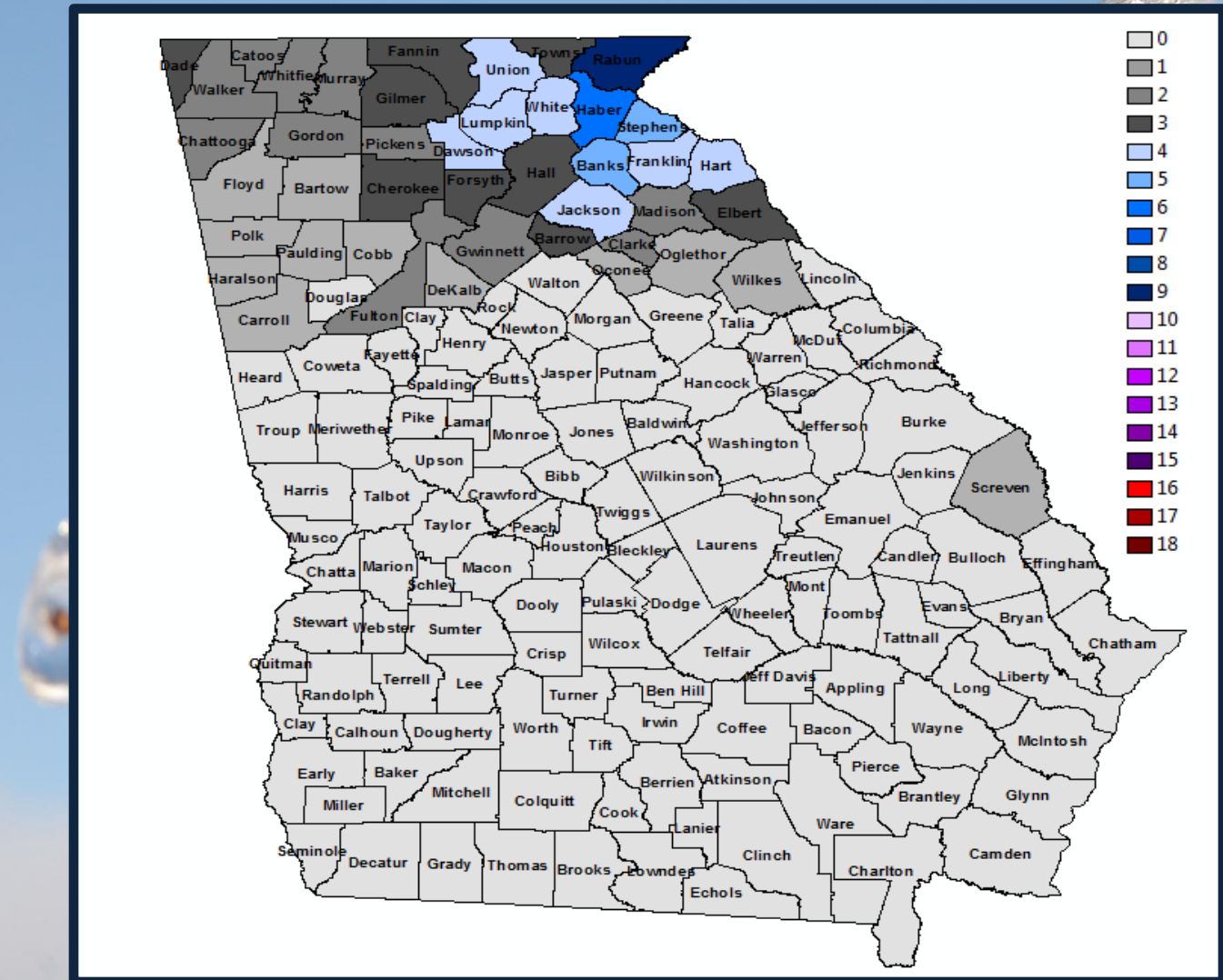
weather.gov/atlanta



How do these events relate to other ice events over the past decade?

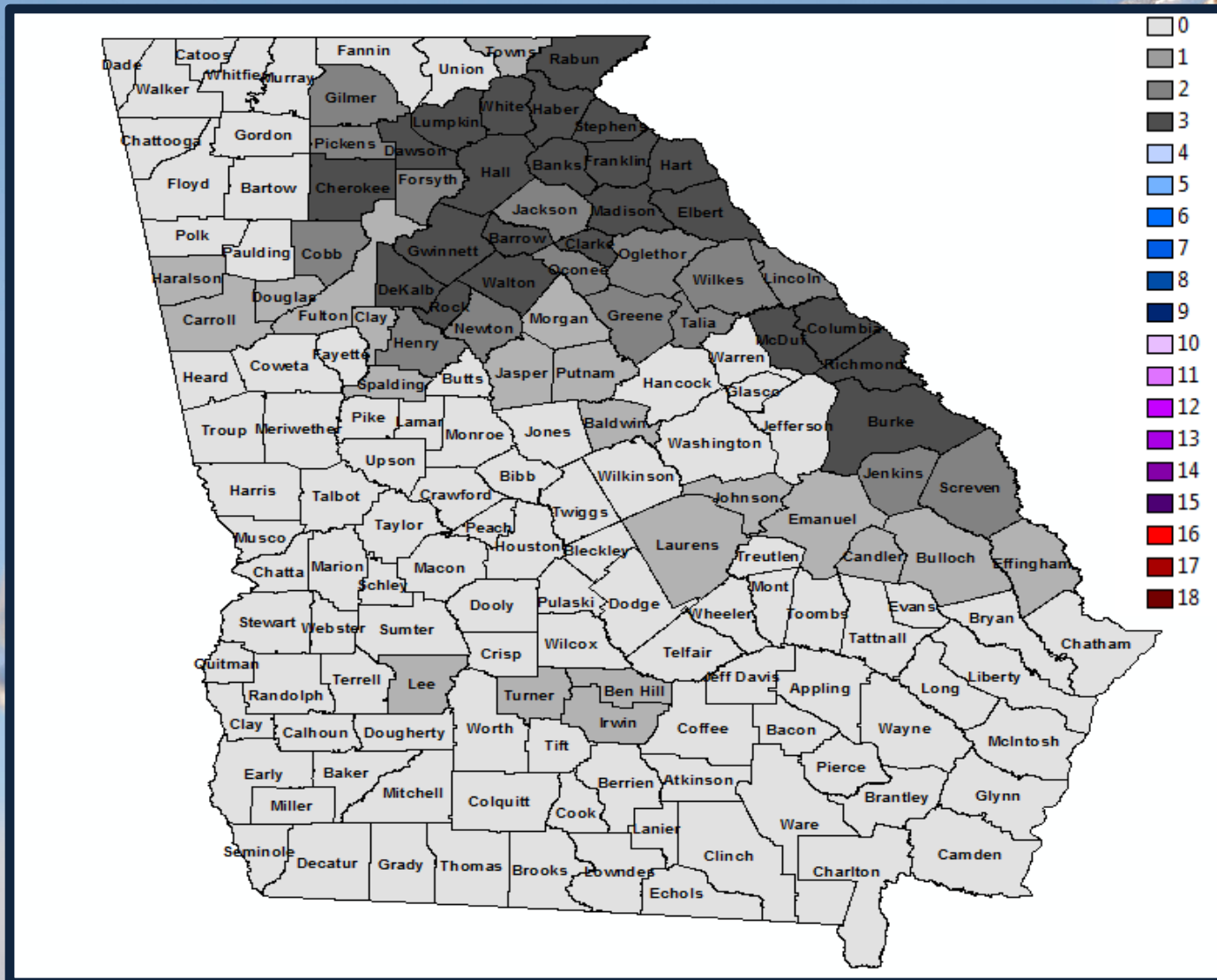


Number of Freezing Rain Events (2000-2014)
Ice Accumulation < .25 inches

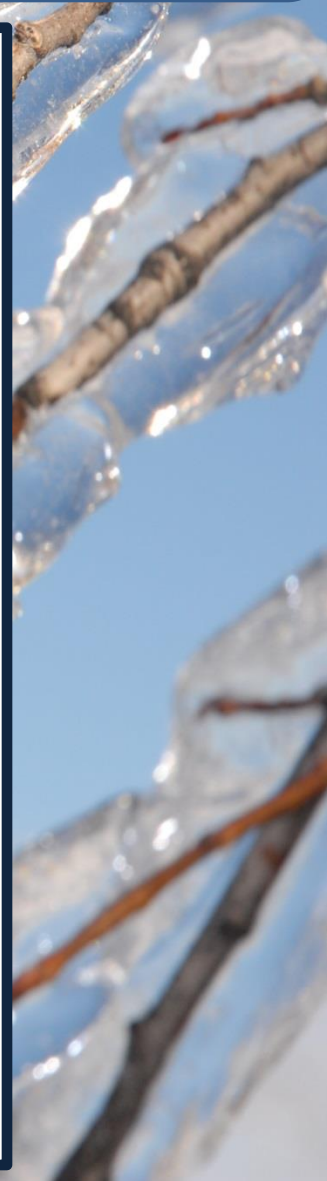
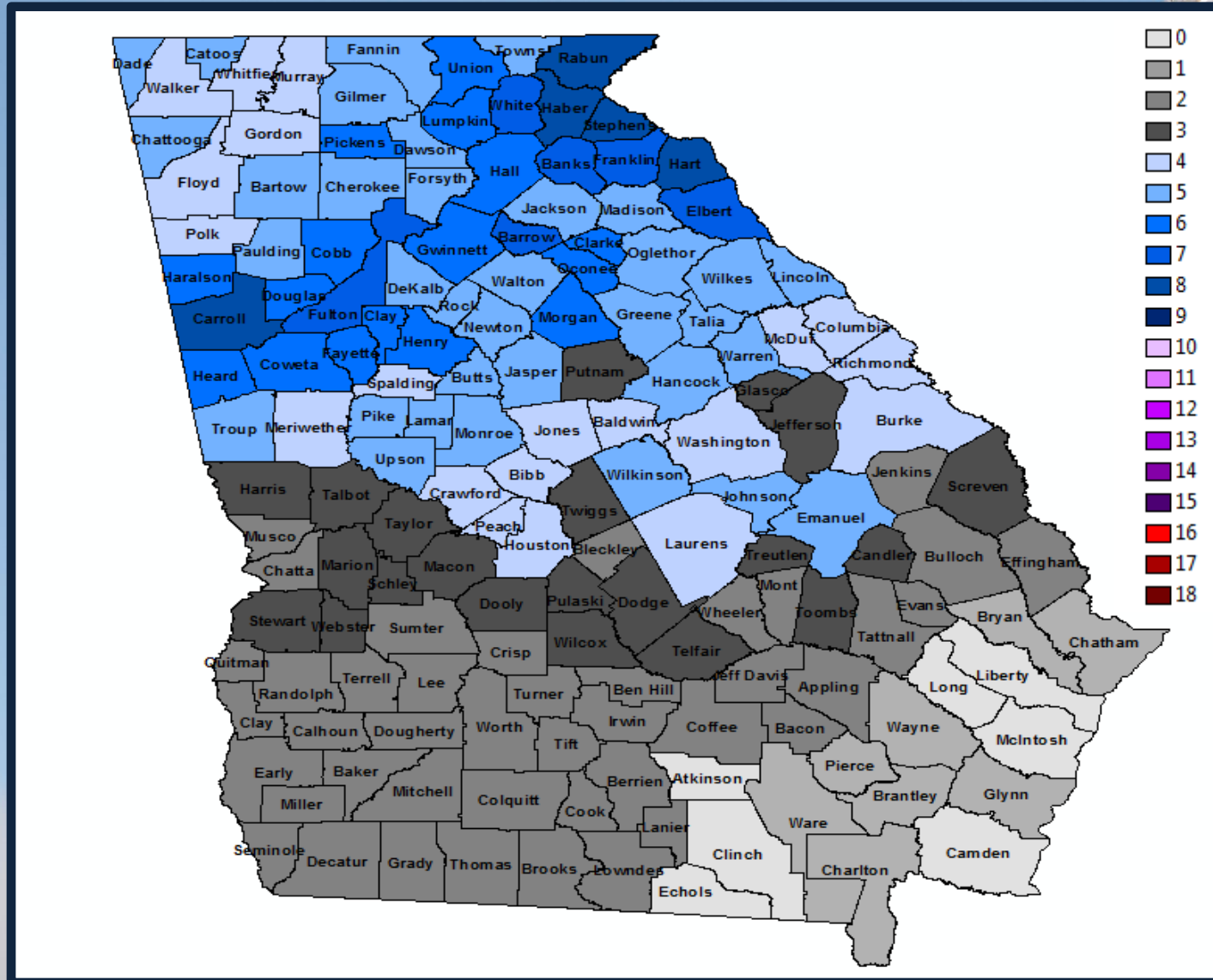


Number of Ice Storms (2000-2014)

Ice Accumulation $\geq .25$ inches

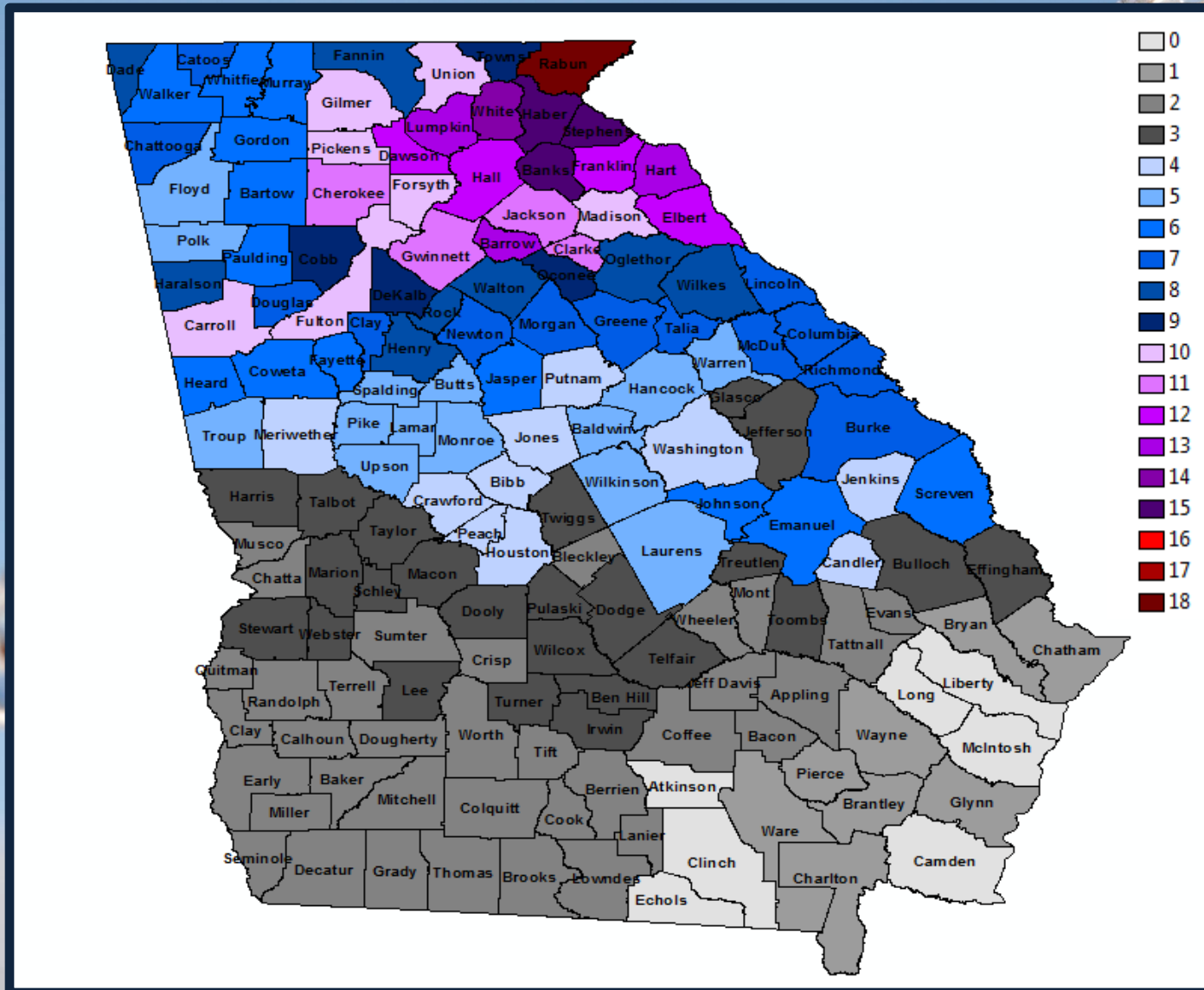


Number of Freezing Rain/Ice Events (2000-2014) Present with a Mix of Sleet and/or Snow



Total Number of Ice Events (2000-2014)

Freezing Rain, Winter Mix, Ice Storm



Cold Air Damming (CAD) Ice Events



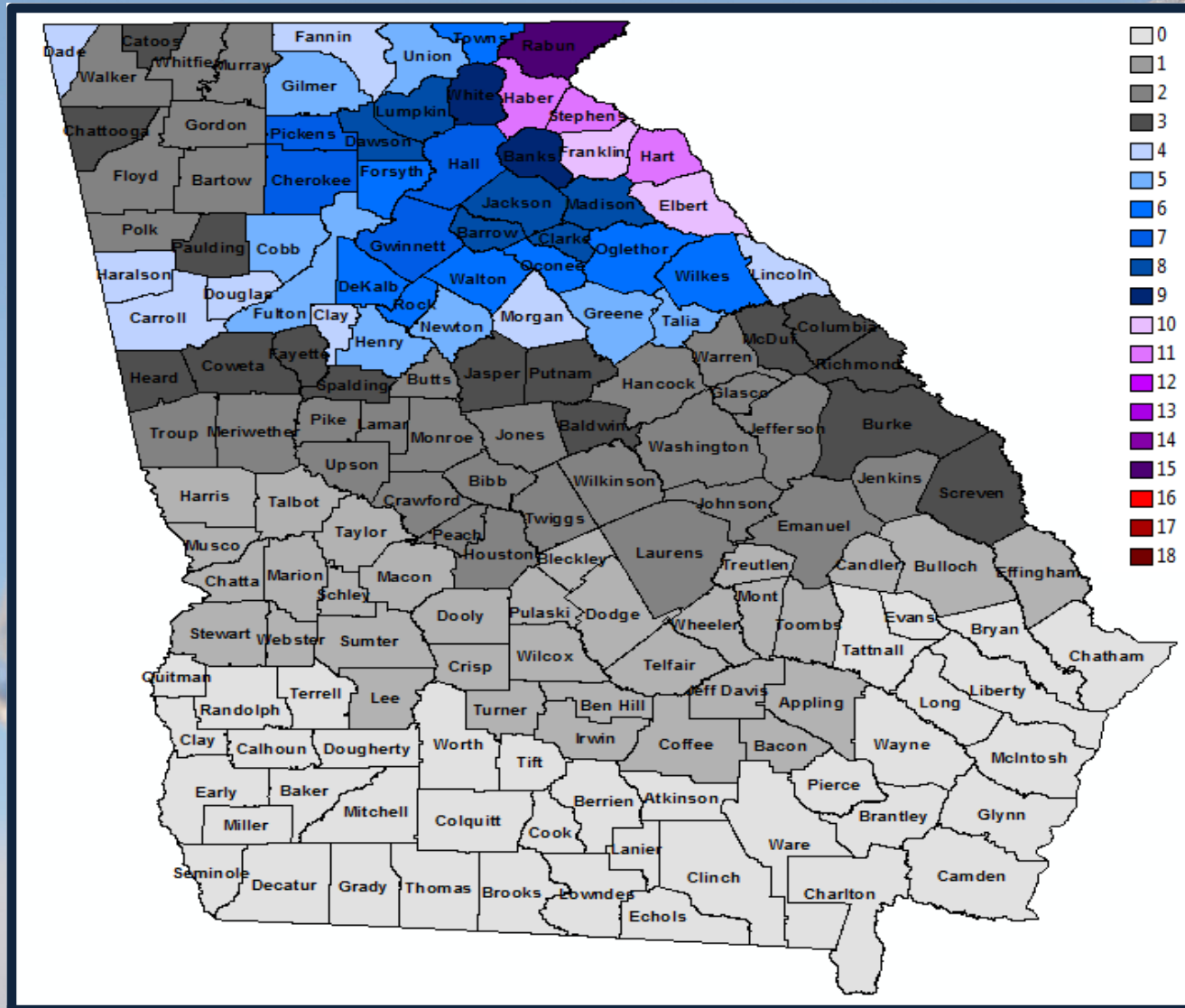
Classification based on characteristics of "parent high":



Total Number of Ice Events (2000-2014) During CAD Events

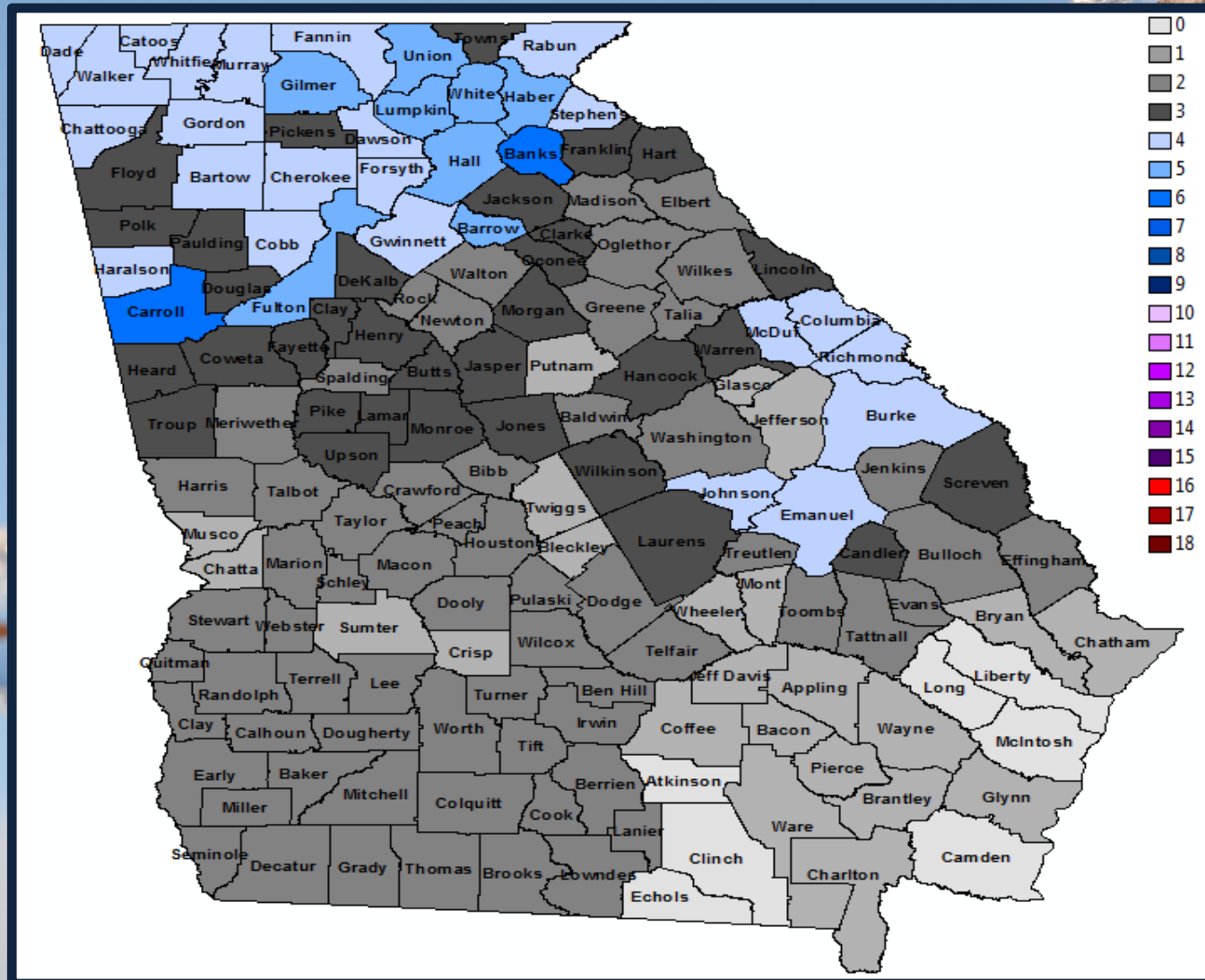
The map displays the total number of ice events (2000-2014) during CAD events across Georgia's counties. The color scale ranges from 0 (lightest) to 18 (darkest). The highest number of events (18) is recorded in Rabun County. Other counties with high event counts include Rabun (15), White (14), and Hall (13). The map also shows the names of all 159 counties in Georgia.

Count	Count	Count
0	10	18
1	11	
2	12	
3	13	
4	14	
5	15	
6	16	
7	17	
8	18	
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

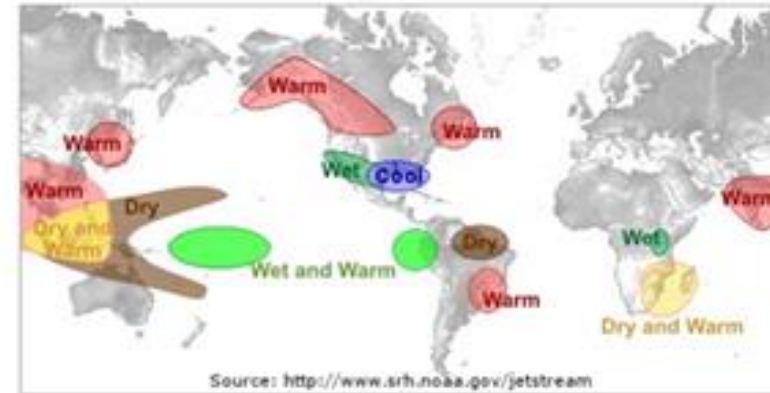


Total Number of Ice Events (2000-2014)

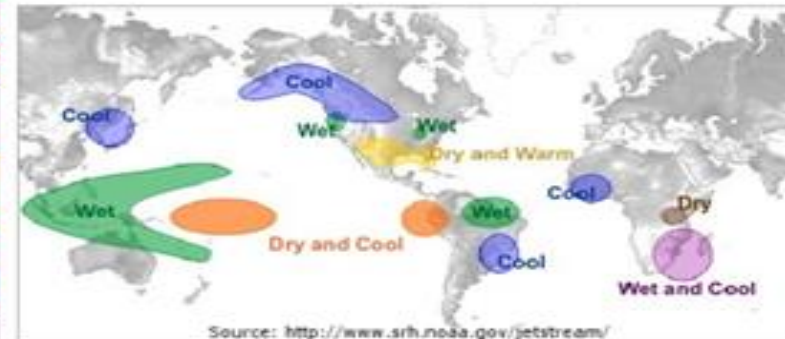
Without CAD



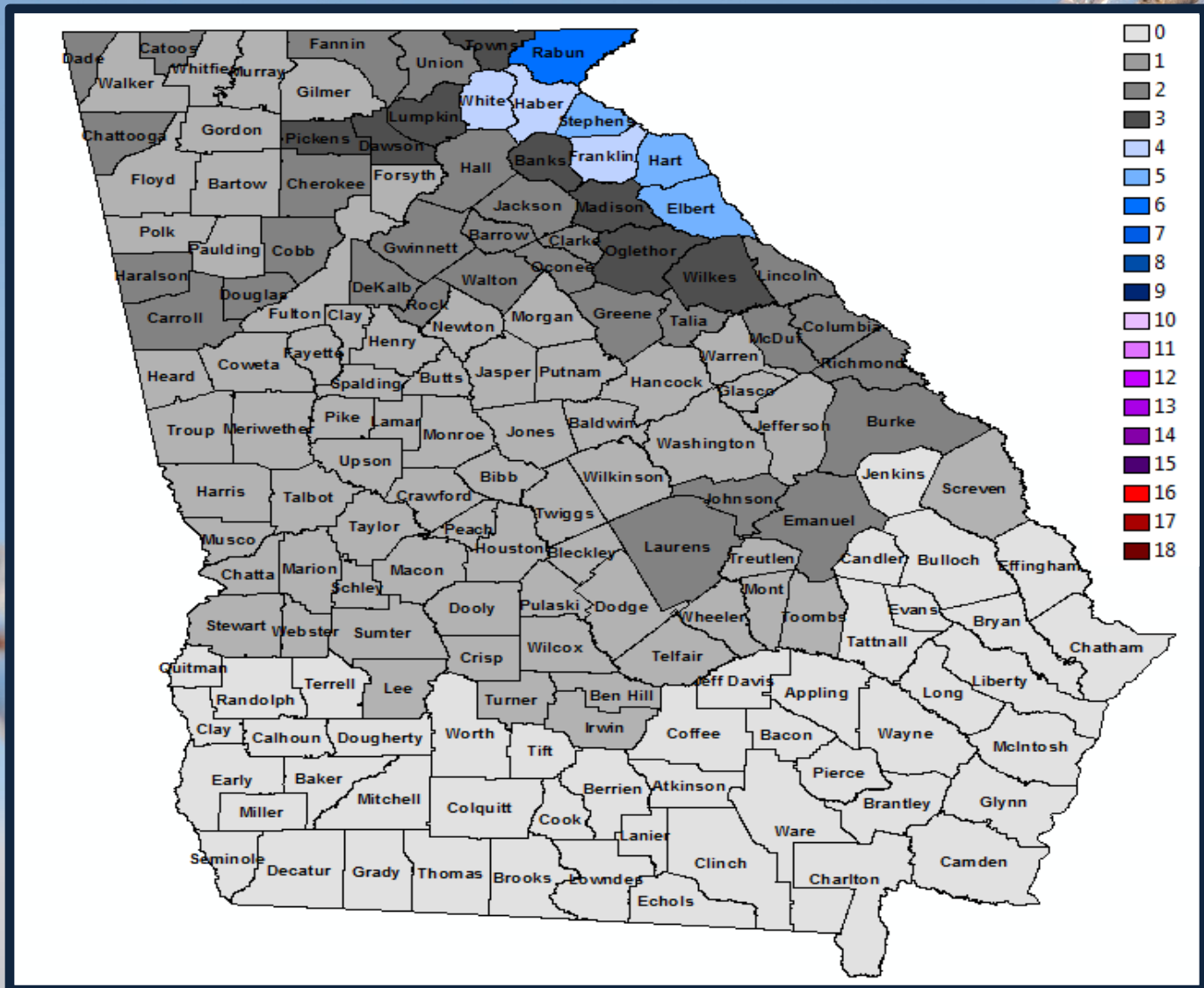
El Niño



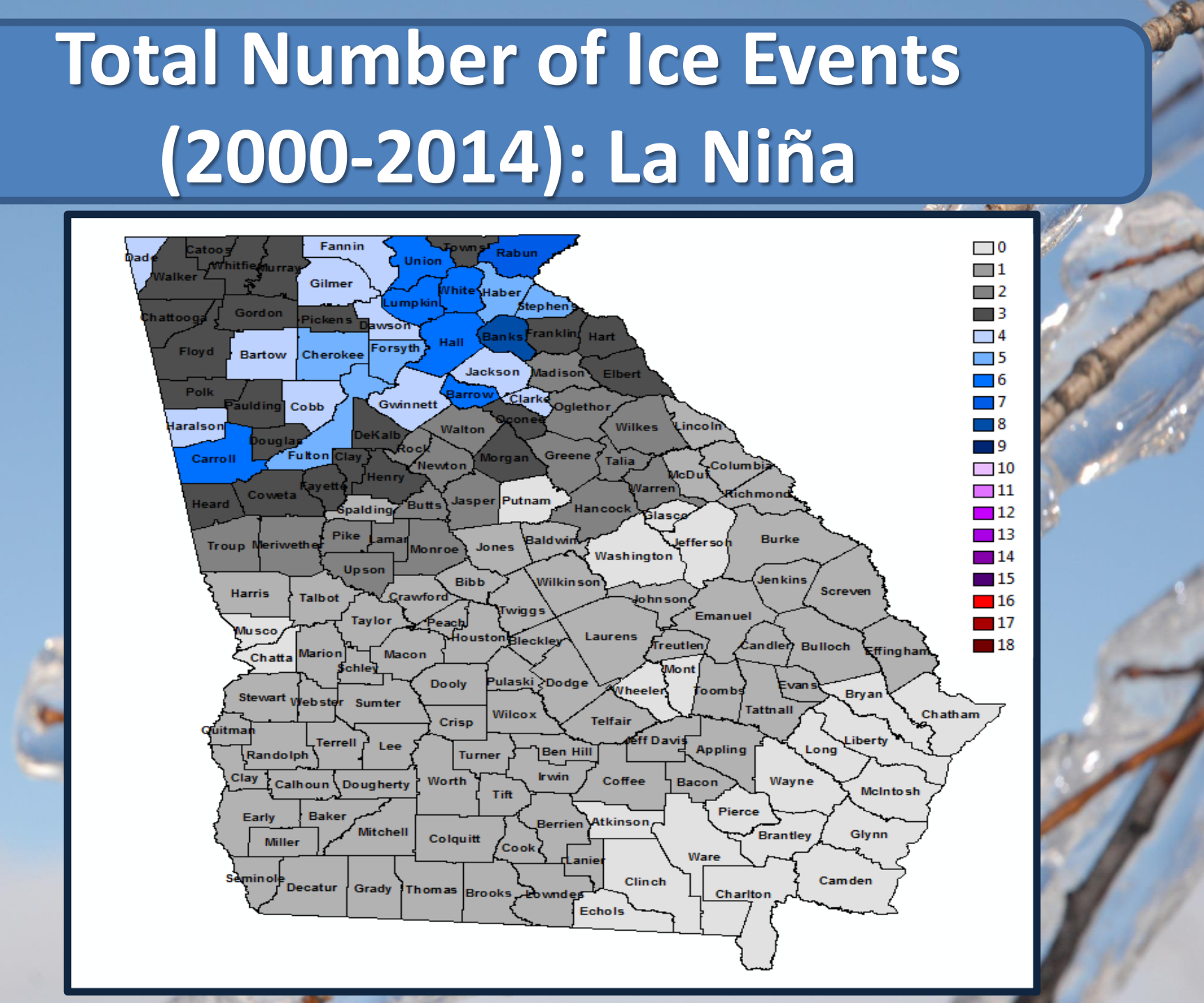
La Niña



Total Number of Ice Events (2000-2014): El Niño

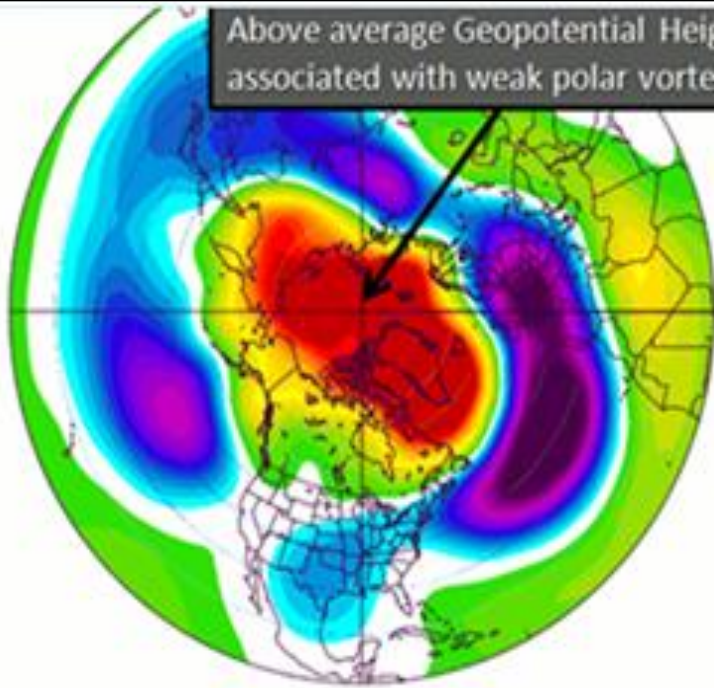


Total Number of Ice Events (2000-2014): La Niña

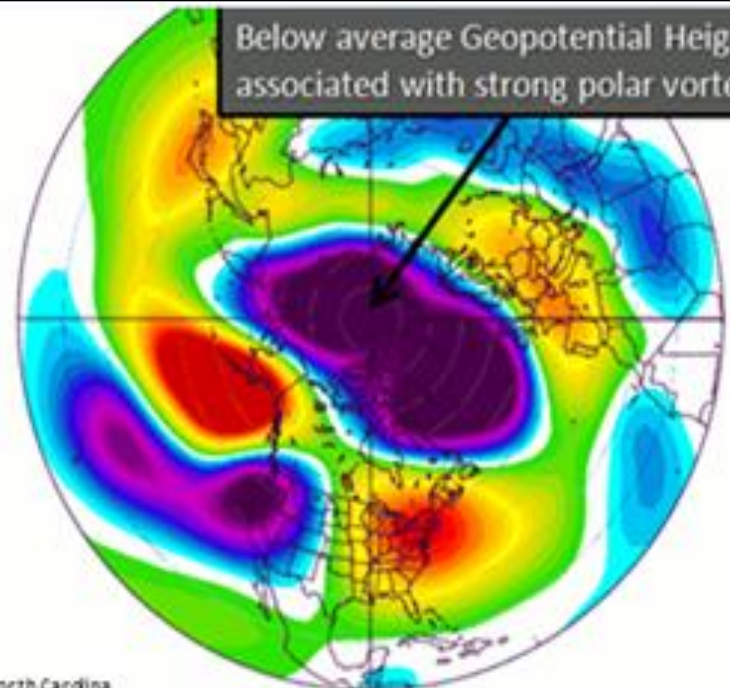


Arctic Oscillation (AO)

Above average Geopotential Heights
associated with weak polar vortex



Below average Geopotential Heights
associated with strong polar vortex



State Climate Office of North Carolina

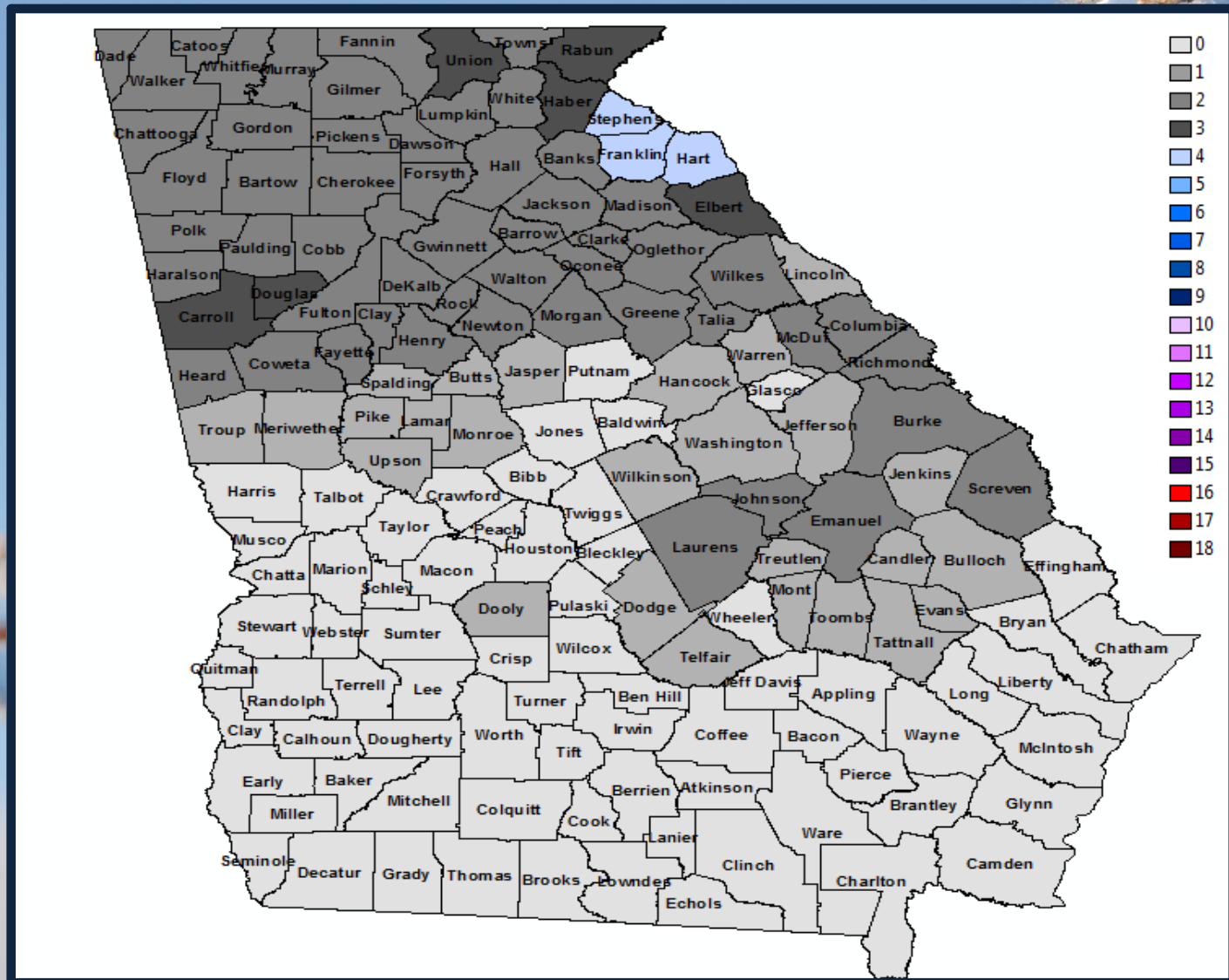
Negative AO

- Colder air surges south into the US

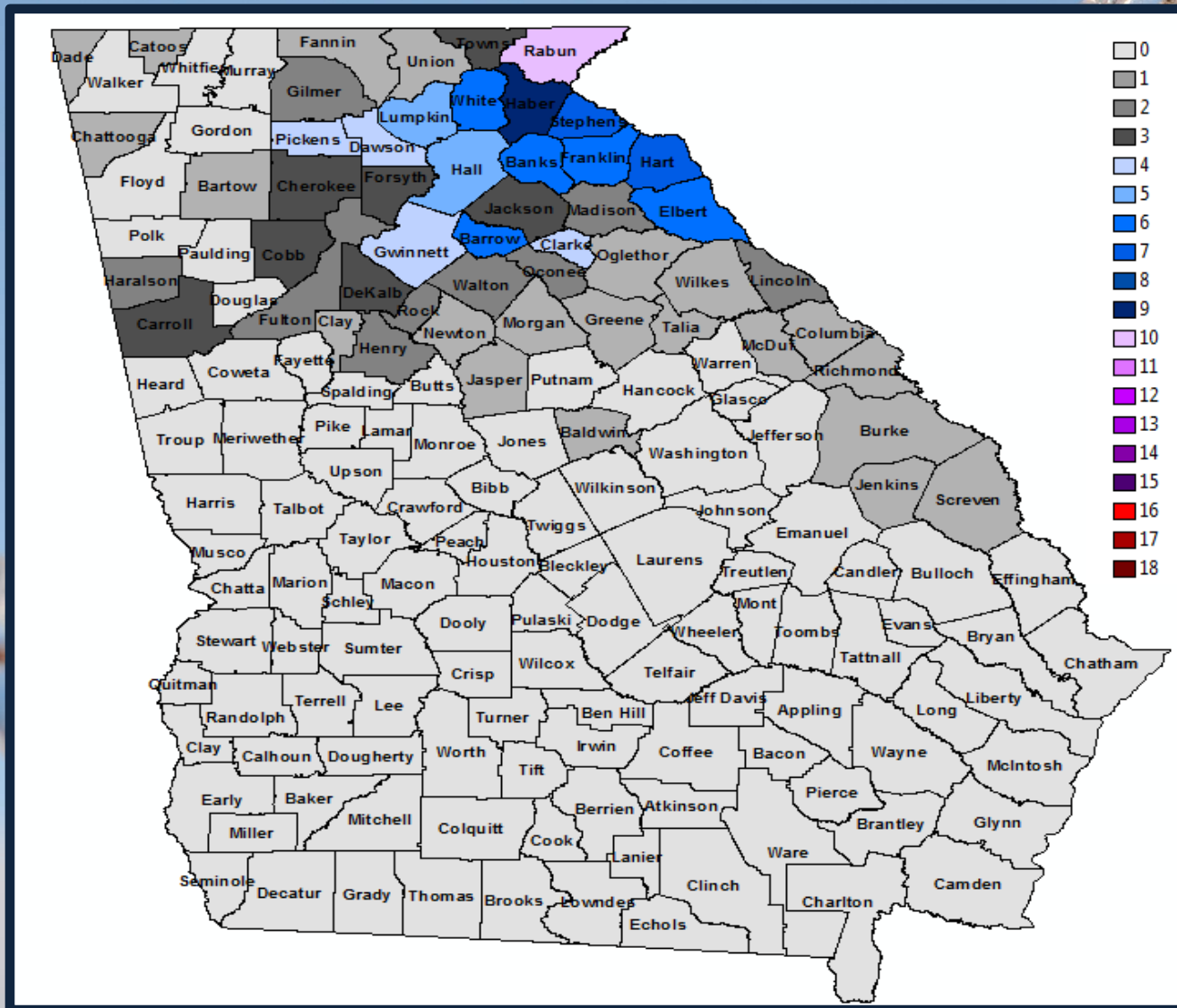
Positive AO

- Colder air confined to polar latitudes

Total Number of Ice Events (2000-2014): Positive AO



Total Number of Ice Events (2000-2014): Negative AO

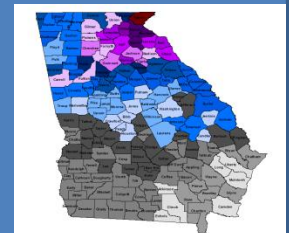





Summary



- More freezing rain events vs actual ice storms
- Most freezing rain/ice events present with sleet and/or snow (winter mix)
- Overall ice frequency is highest across northeast Georgia
- Ice frequency during CAD demarcates wedge front well with highest frequencies across northeast Georgia
- More ice events occur with CAD vs. no CAD
- Possible that ice frequency is higher during La Niña events vs. El Niño events
- Ice frequency may be higher during negative AO phases vs. positive AO phases
- Sample size makes it hard to draw solid conclusion
- Next step: Combine phases of oscillations



SPIA Index (<http://www.spia-index.com/index.php>)



What is the Sperry-Piltz Ice Accumulation Index?

The Sperry-Piltz Ice Accumulation Index, or SPIA Index™, is a forward-looking, ice accumulation and ice damage prediction index that uses an algorithm of researched parameters that, when combined with National Weather Service forecast data, predicts the projected footprint, total ice accumulation, and resulting potential damage from approaching ice storms. It is a tool to be used for risk management and/or winter weather preparedness.

The SPIA Index™ is to ice storms what the Enhanced Fujita Scale is to tornadoes, and what the Saffir-Simpson Scale is to hurricanes. Previous to this hazard scale development, no such 'forward-looking' ice accumulation and ice damage index had ever been utilized to predict – days in advance – the potential damage to overhead utility systems, along with outage duration possibilities, from freezing rain and/or ice storm events.

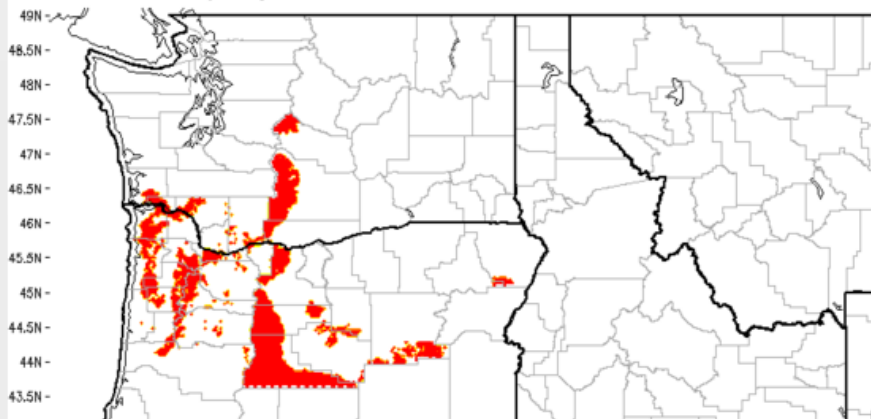
ICE DANGER INDEX	WEATHER AND IMPACT DATA
0	Minimal risk of damage to exposed utility systems as they are protected under the canopy of the canopy.
1	Some potential ice accumulation on exposed utility systems, but not enough to cause damage.
2	Some potential ice accumulation on exposed utility systems, but not enough to cause damage.
3	Some potential ice accumulation on exposed utility systems, but not enough to cause damage.
4	Some potential ice accumulation on exposed utility systems, but not enough to cause damage.
5	Some potential ice accumulation on exposed utility systems, but not enough to cause damage.

- Forward-looking ice storm damage index
- ***Impact-based*** for utility industry
- Several NWS test sites: FFC is one
- For more information, contact
- SidSperry@gmail.com



SPIA Ice Damage Index with NWS Total Ice Forecast

NW Sperry Piltz Ice Accumulation Index Forecast



NWS WFO NW Total Ice Accumulation Forecast (in)

