



Southern Forester Survey: Climate & Weather Observations

Mark Megalos, William Hubbard, Leslie
Boby, Rachel Greene, and Hilary Morris

Pine Integrated Network: Education, Mitigation, and Adaptation project (PINEMAP) is a Coordinated
Agricultural Project funded by the USDA National Institute of Food and Agriculture




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What We'll Cover

- Intro
- Hubbard's 2013 Forester Survey
 - Grad Student/Staff Involvement
- Digging Deeper (State by State)
- What's Next

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What is PINEMAP?

- \$20 million grant from USDA National Institute for Food and Agriculture- 5 year
- Integrated Research/Education/Extension”
- True Partnership
- 11 Universities, USFS, SREF, Forest Research Cooperatives




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Survey Overview

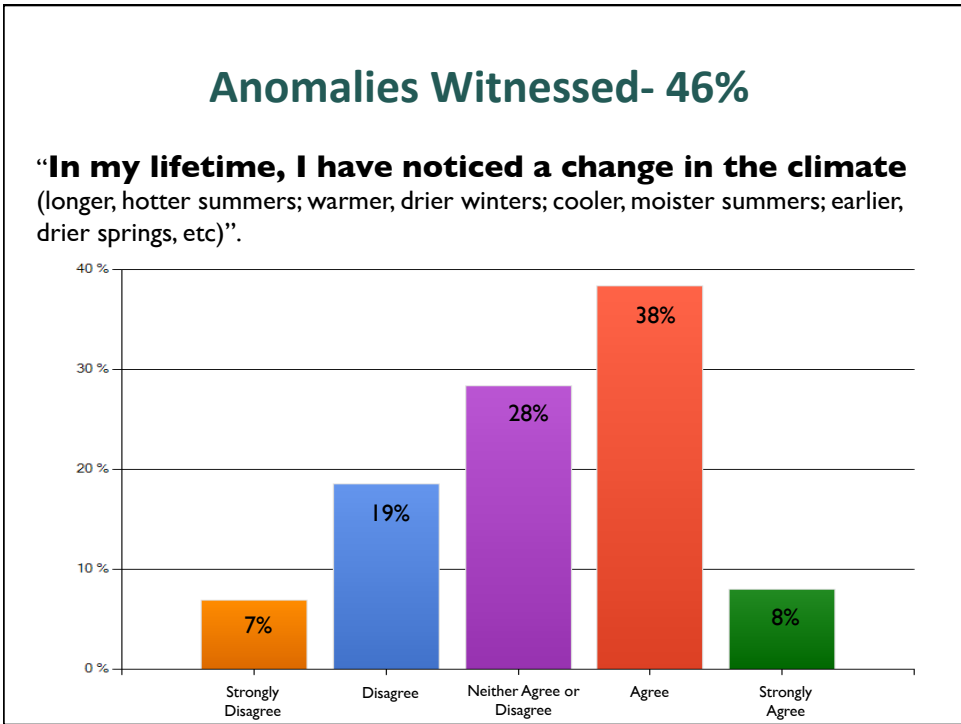
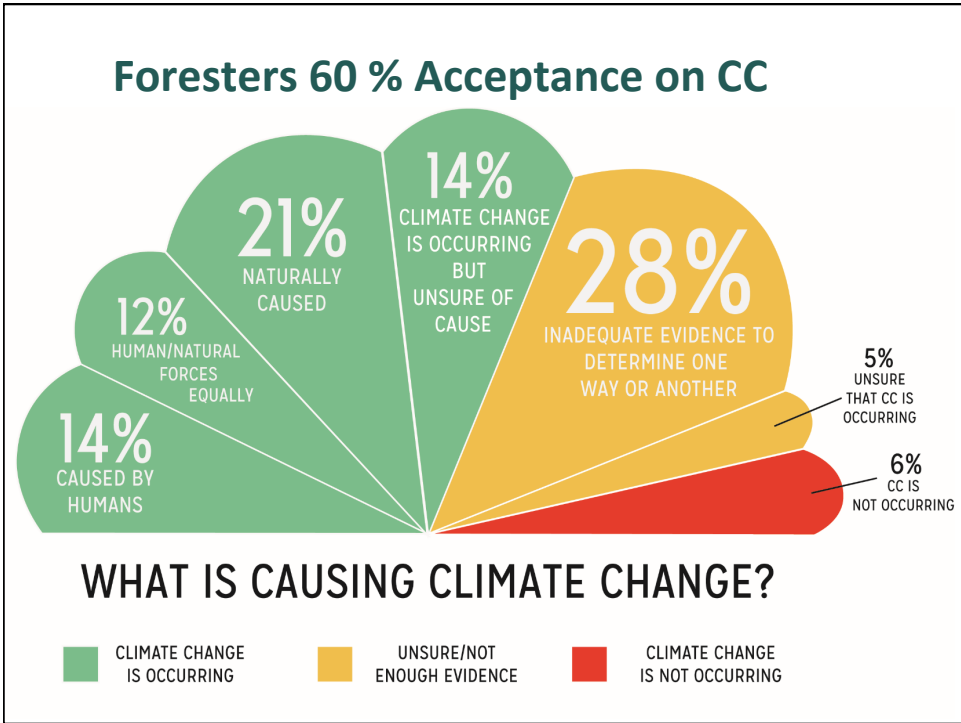
1. What climate and weather anomalies have Southern foresters witnessed? **OUR FOCUS TODAY!!**
2. How **knowledgeable** do they feel and how confident are they about climate change concepts?
3. To what degree are they **concerned** about climate change?
4. How **open** are they **to** new **information**, tools and technologies with regard to forest **resiliency**?
5. What types of **educational** programs are they **interested** in?

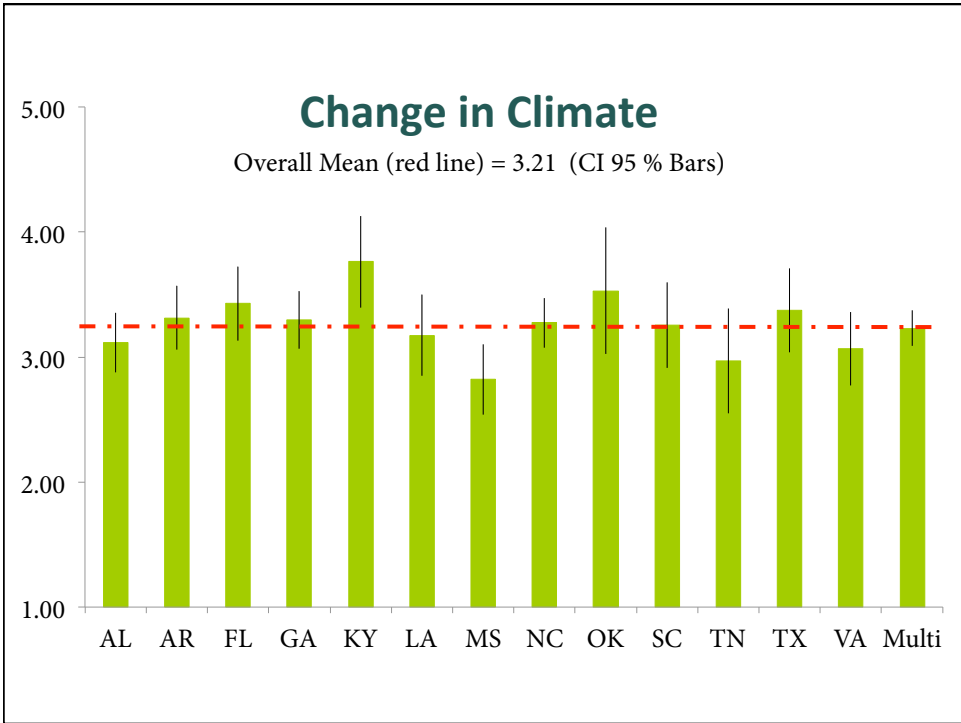
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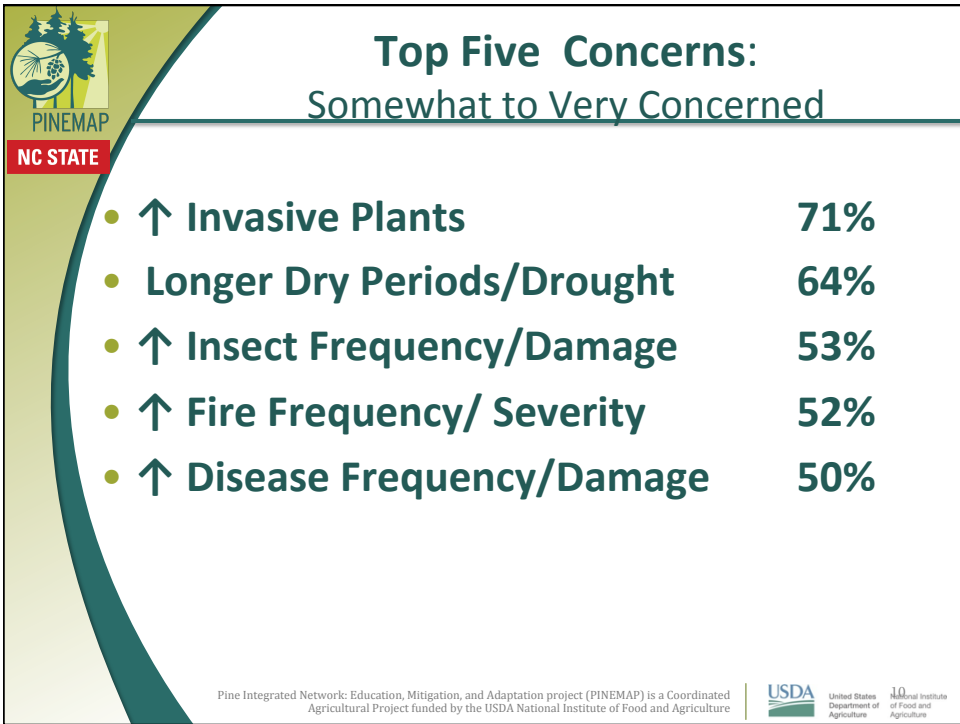
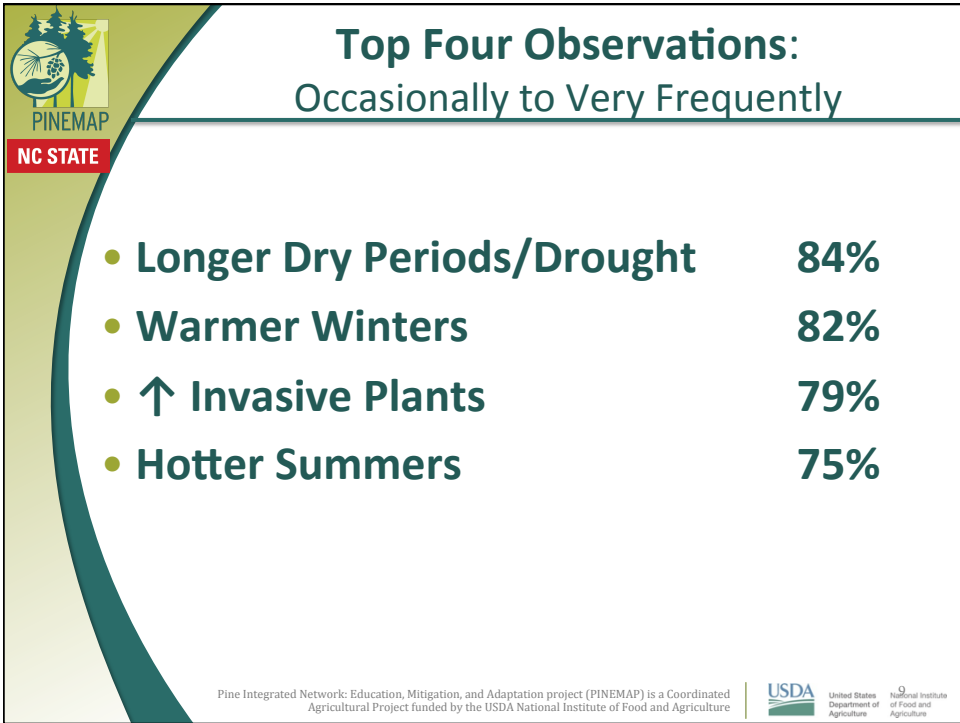



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NC STATE

Can the data tell us more???



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NC STATE



Spatial Analysis of Climate Obs.

- In-depth Analysis of State by State Observations
- Spatial Statistical Tests

“Are Foresters Seeing Similar Trends Across the South?”

If Yes.....Tie to Concerns and Teachable Moments

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TOP Climate Observations

“Have you experienced...?”	Mean	Standard Deviation
Greater frequency and/or severity of invasive plant infestations	3.36	1.05
Longer dry periods or drought conditions	3.27	0.90
Warmer winters	3.20	0.90

3.0 = Occasionally 4.0 = Frequently

BOTTOM Climate Observations

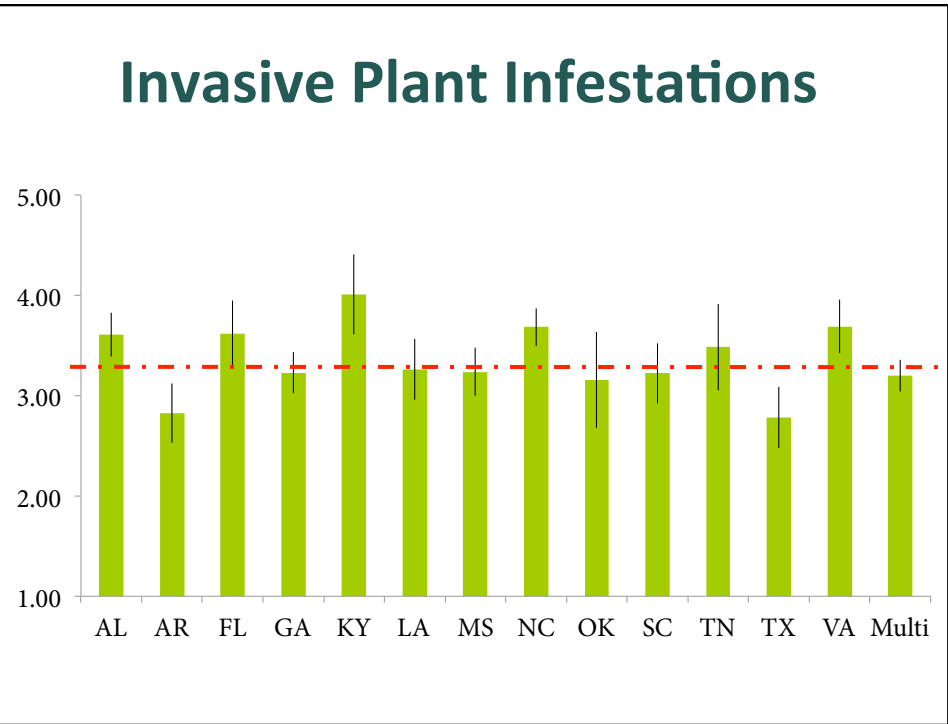
“Have you experienced...?”	Mean	Standard Deviation
Cooler winters	2.25	0.65
Increased soil erosion	2.16	0.80
Cooler summers	2.08	0.69

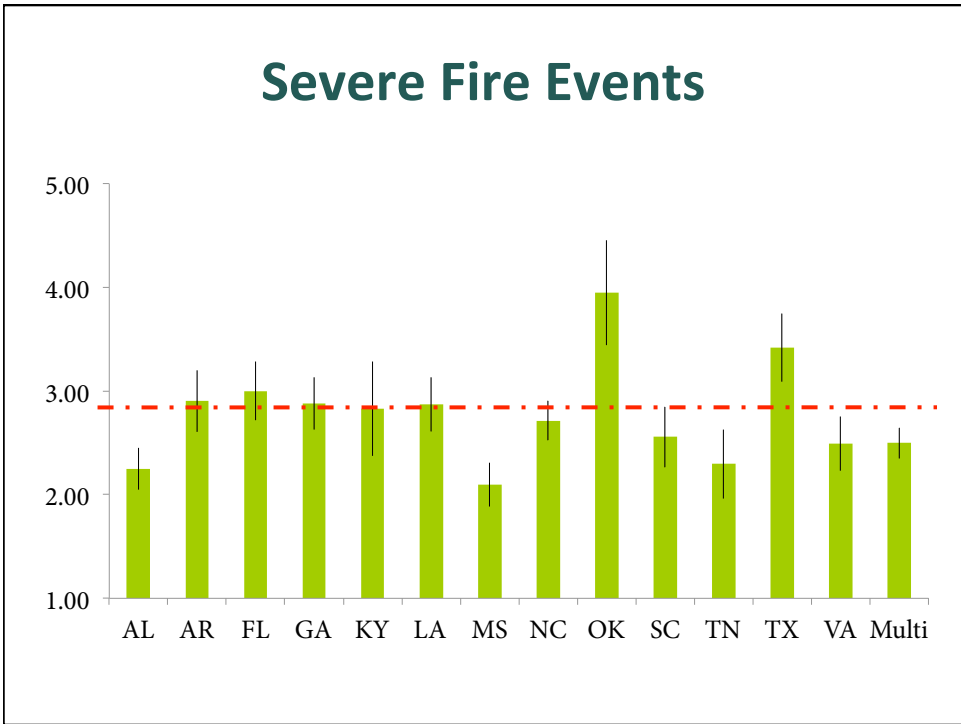
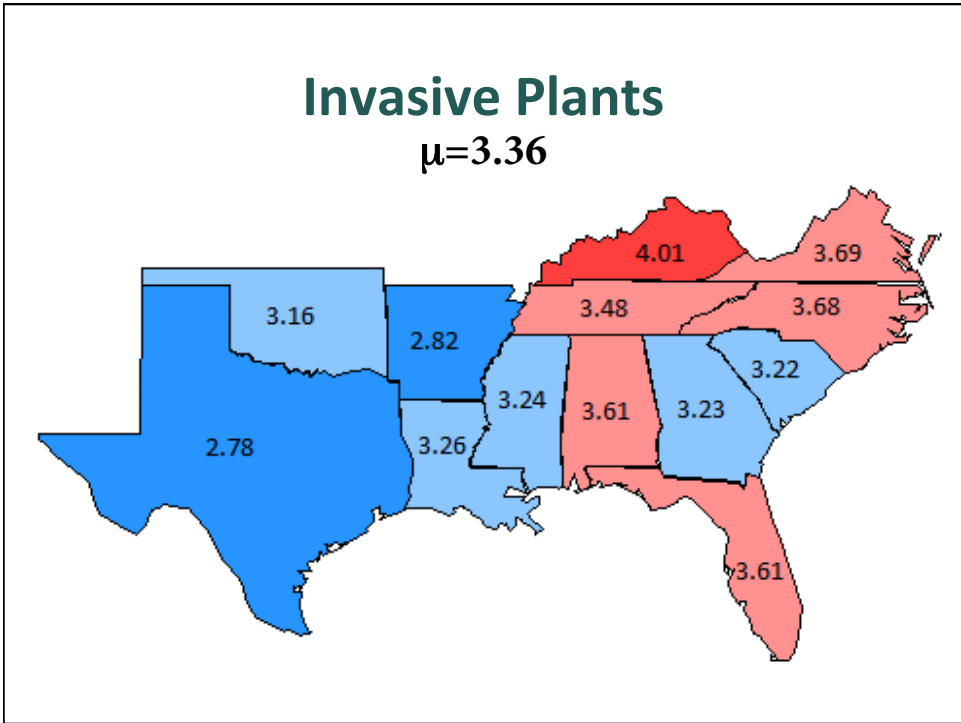
2.0 = Rarely

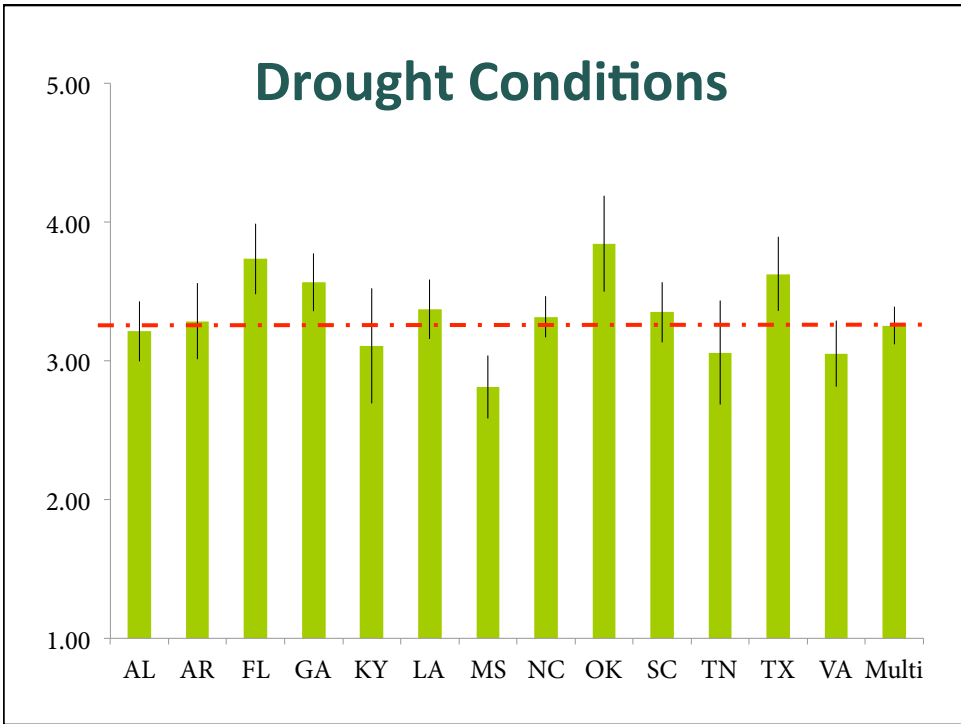
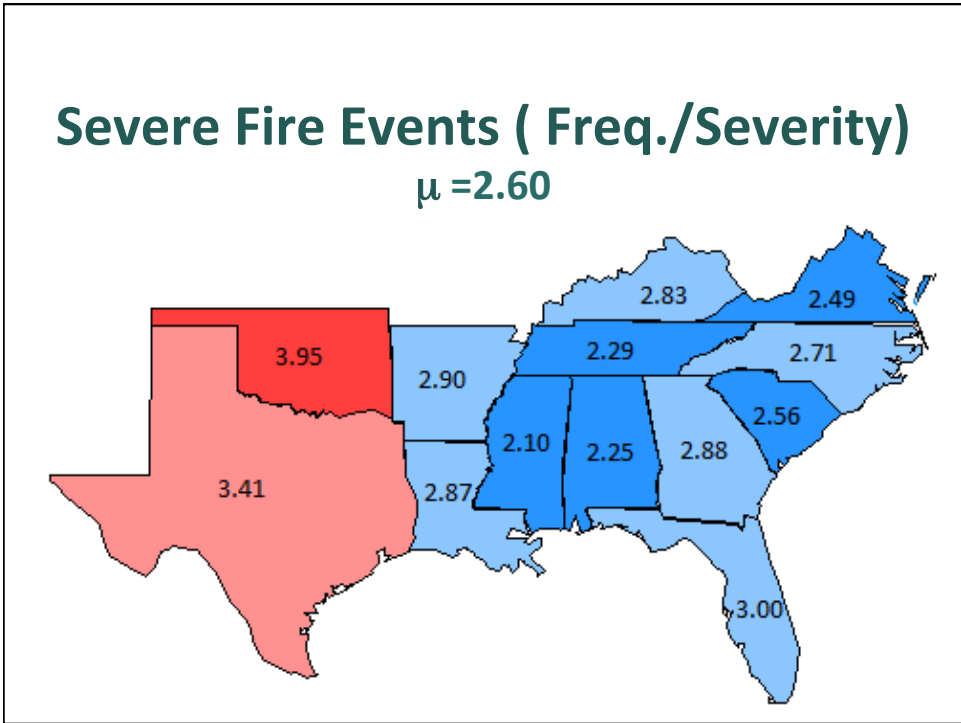
Significant Observations

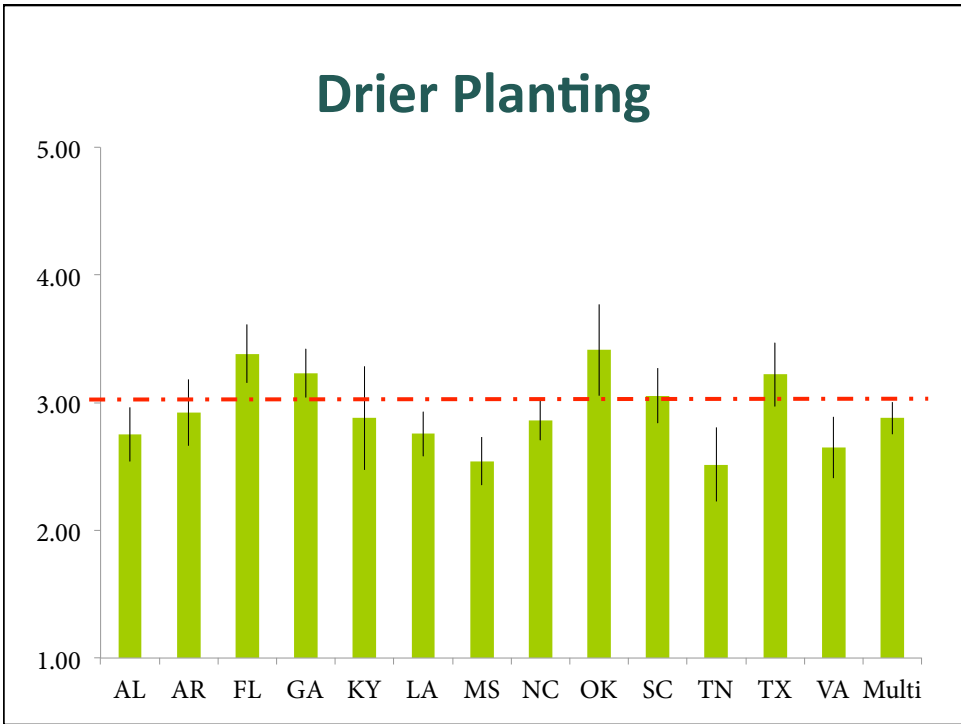
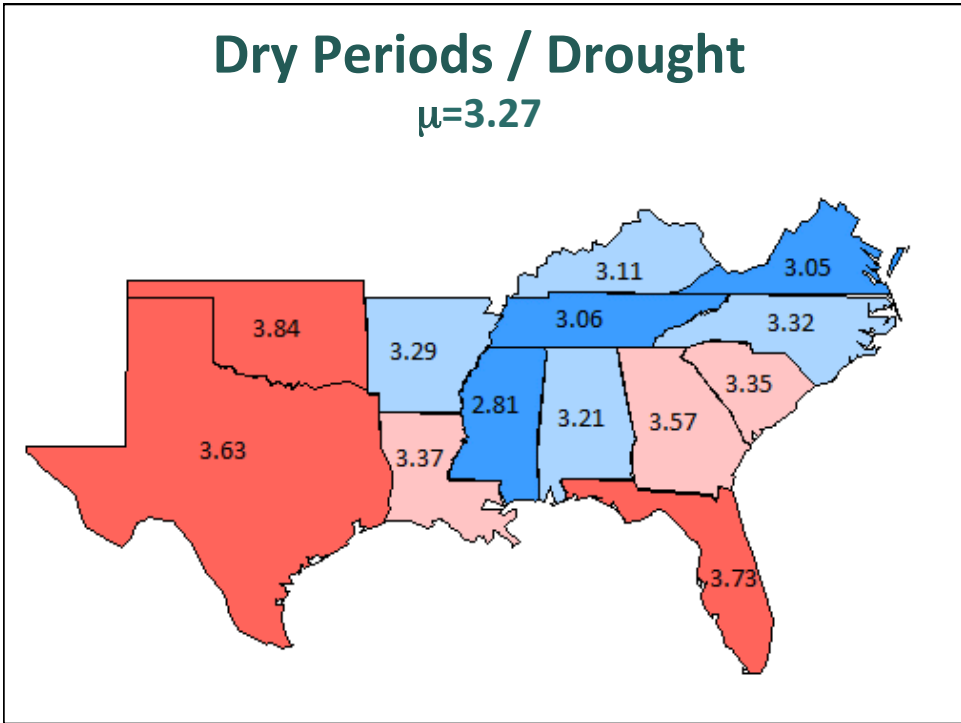
Forester Observations Of...	Moran's I (Region-wide differences)	Geary's c (Adjacent States differences)
Greater frequency and/or severity of invasive plant infestations	0.3931 ** (0.0274)	0.4766 ** (0.0453)
Greater frequency and/or severity of fire events	0.3330 ** (0.0246)	0.5057 * (0.0607)
Longer dry periods or drought conditions	0.2903 * (0.0277)	0.5718 * (0.0437)
Drier planting	0.2905 * (0.0288)	0.6654 * (0.0380)

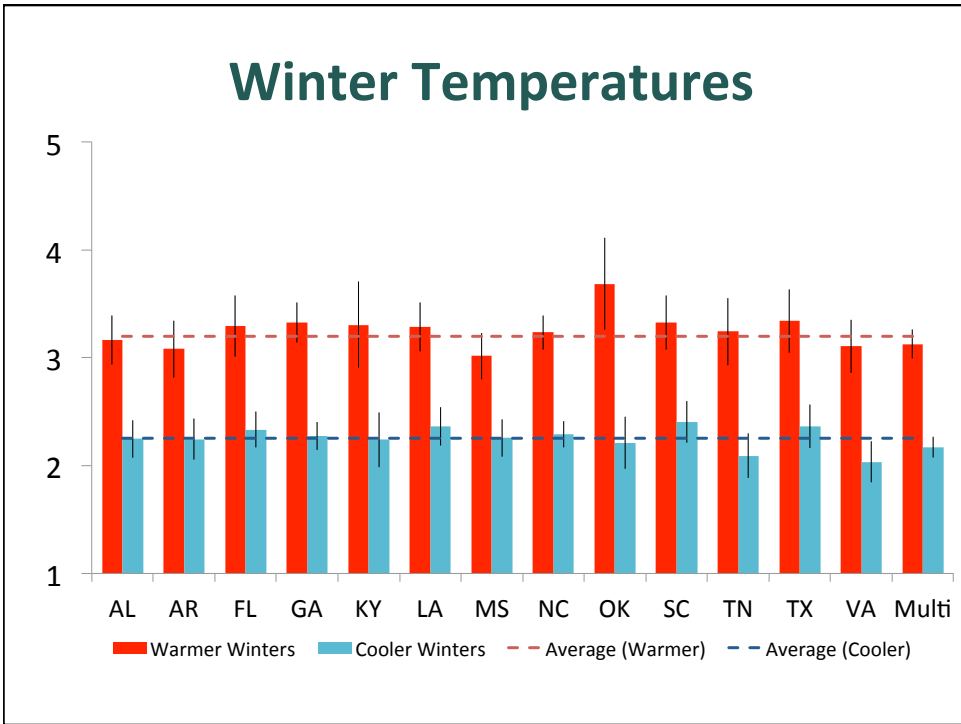
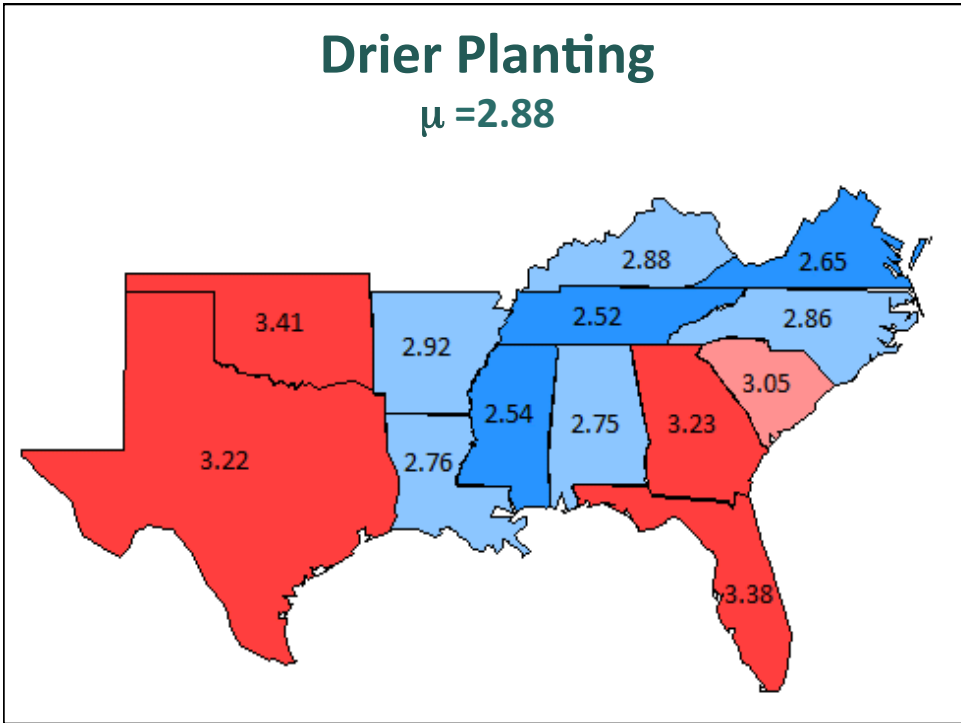
Invasive Plant Infestations

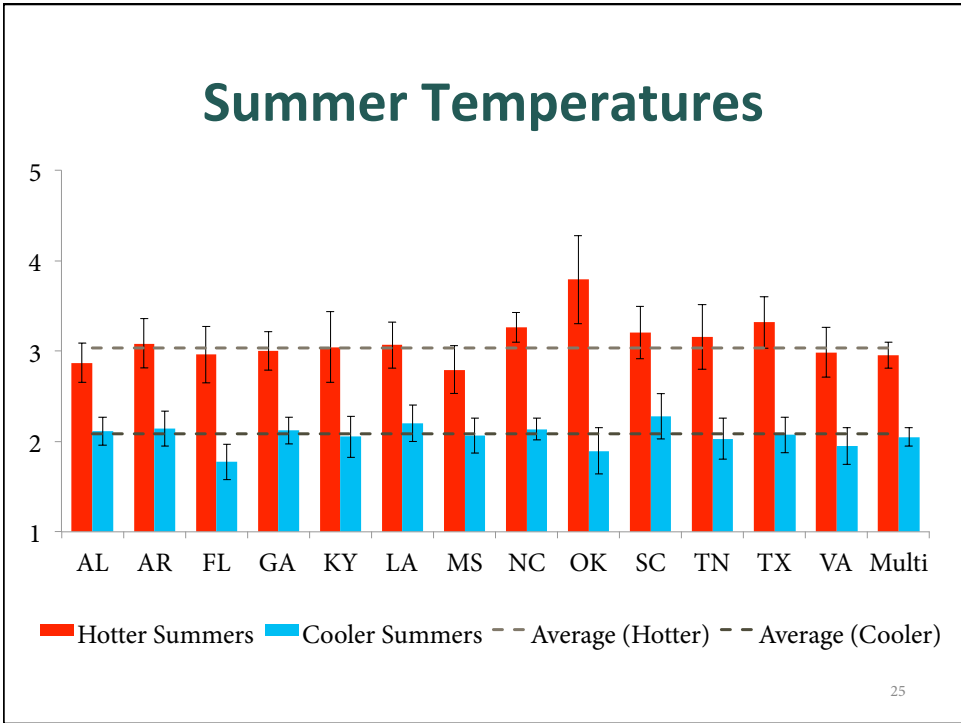

















Climatic Observations Frequency Differences By State (p<0.05)

- **Flooding:** Tennessee, Louisiana, and North Carolina
- **Drought:** Oklahoma and Florida
- **Extreme rainfall:** Kentucky
- **Insect damage:** Oklahoma and Kentucky
- **Disease damage:** Oklahoma
- **Invasive plant infestations:** Kentucky
- **Hotter summers:** Oklahoma
- **Drier planting:** Oklahoma, Florida, Georgia, and Texas
- **Fire:** Oklahoma, Texas, Florida, Arkansas, Georgia, Louisiana, & North Carolina

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Conclusions

- Real, significant observational differences exist in Southern Foresters
- We've got data to focus CC outreach in South
- We can now combine concerns *with* State-level climate observations
- Ultimate Goal: Resilient Actions

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Next Step

Peer-Review Preliminary Results

- Comments ?
- Questions ?

Mark Megalos
mamegalo@ncsu.edu



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