

Improving K-12 Instruction of Coastal Climatology and Tree-Ring Science with Louisiana sea Grant

Jill Trepanier, Clay Tucker, Pamela Blanchard, Mark Schafer, James Jordan, Andy Nyman, Ed Bush

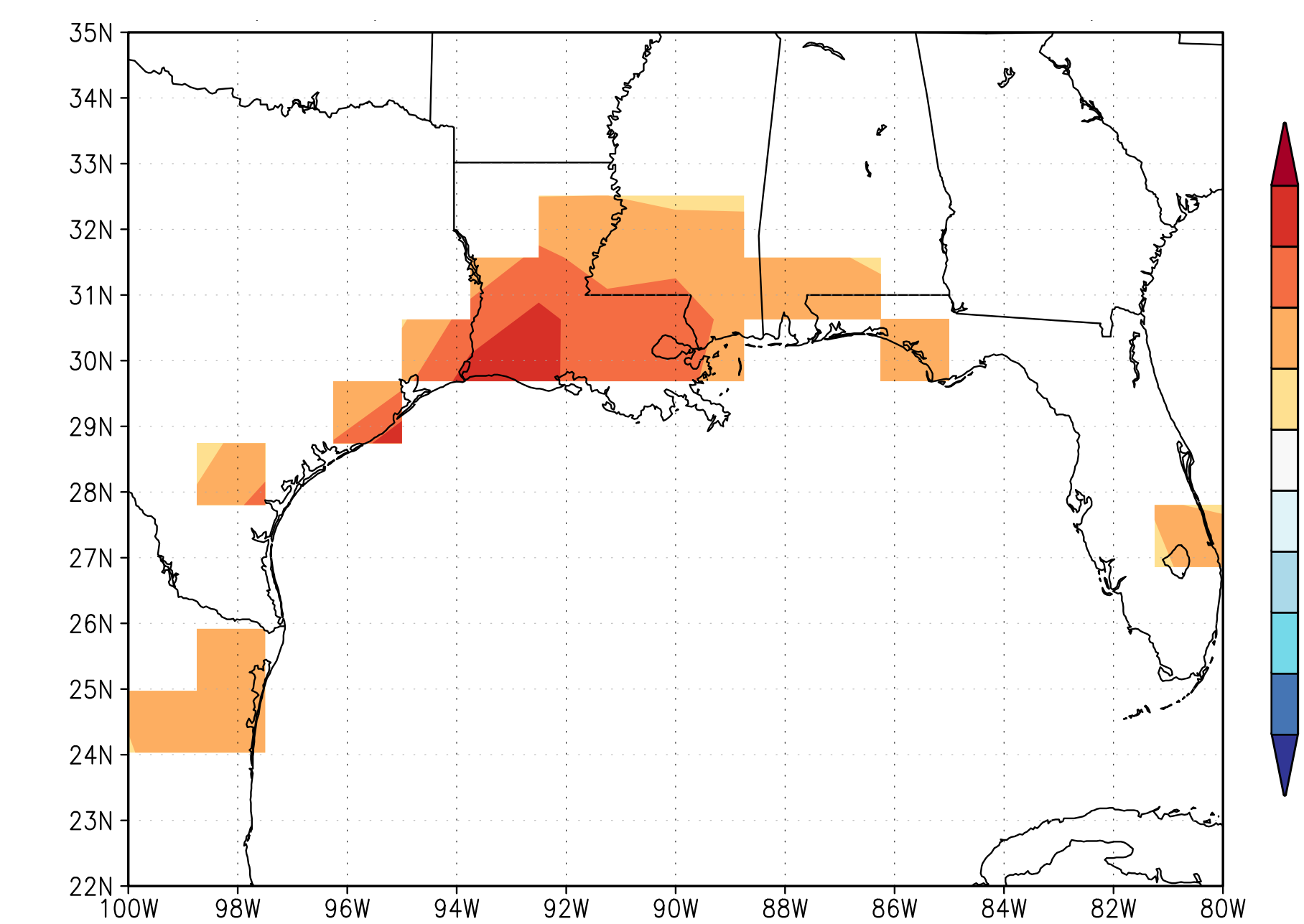


Tree-ring science is an effective tool to teach middle- and high-school students how science is conducted.

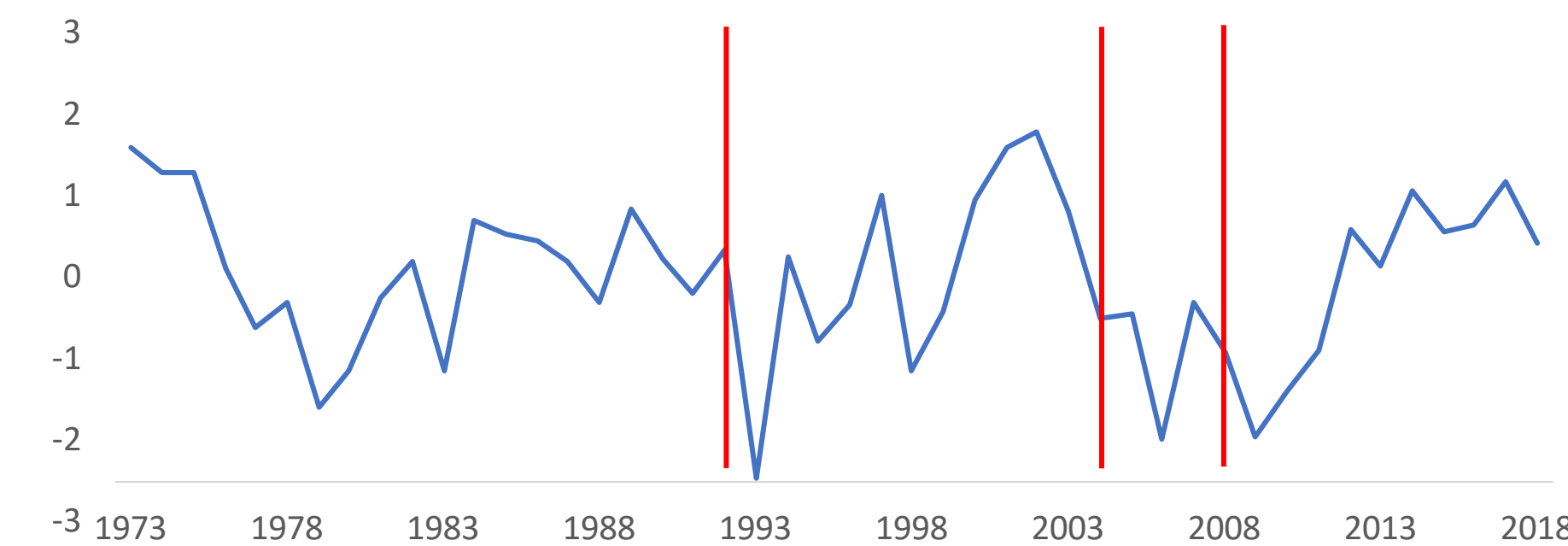
Students also act as citizen scientists by collecting valuable tree-ring data.



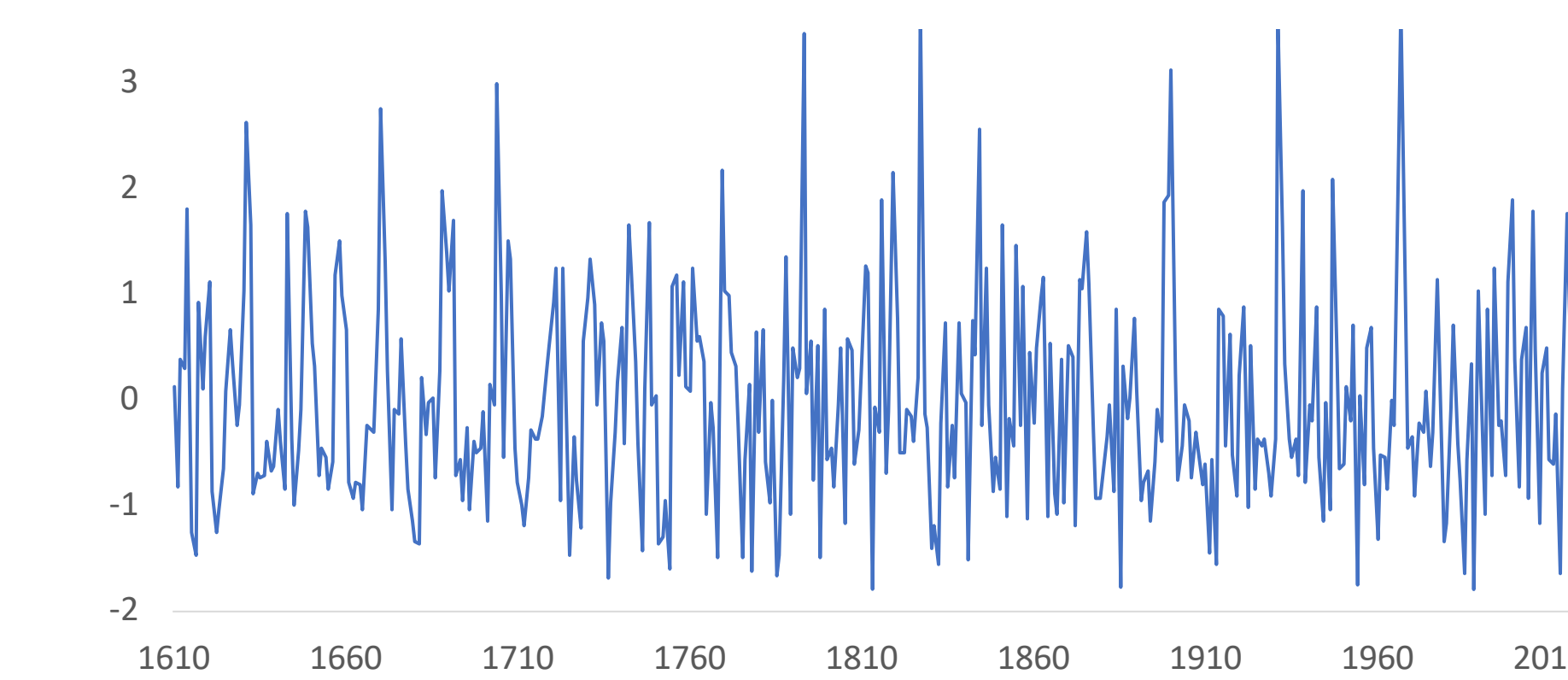
Fontainebleau State Park Cypress Trees vs. April Soil Moisture



BREC Oak Trees and Hurricanes (red lines)



Long Term Cypress Tree-Ring Width Data



Students' Learning Gains Assessed by Survey

Areas of Student Understanding	Average gains in understanding (0 to 100 scale)	Standard Deviation
Tree coring and tree growth analysis	47.17	22.04
Coastal and environmental science	44.23	22.85
Features of science	35.23	23.66



INTRO:

- Middle- and high-school students learn the scientific process in the classroom, but they rarely have any real-world research experiences to back up that learning.
- Tree-ring science uses tangible methods outside and inside the classroom that students can perform to better understand the scientific process.

METHODS

- We selected 180 students from 2 middle schools and 3 high schools to participate in tree-ring science fieldwork.
- After processing samples in a lab at Louisiana State University, we showed students the results of their labor and asked them patterns that they could see in the data.
- To assess learning gains, students were later tested via online surveys about what they learned.

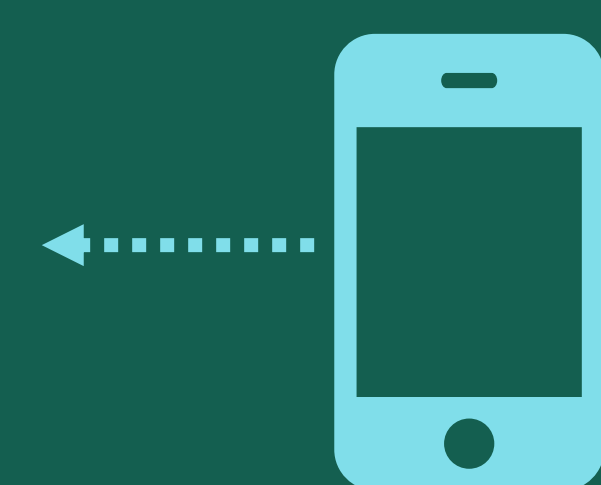


RESULTS

- Students show increased learning gains from survey results for both tree-ring research and the scientific method..
- Tree-ring data were gathered for 5 sites totaling more than 30 trees.
- Tree-ring data show significant correlations to various environmental parameters (e.g., hurricane occurrence, drought, natural succession)



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