

Climate Change Research at TTU: potential for collaborations to build a better future

Nick Smith

Associate Professor, Biology

Director, TTU Climate Center

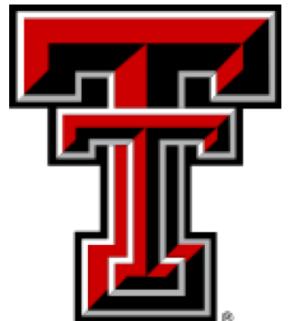
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Climate Center

Outline

- Brief introduction to me and my background
- TTU Climate Center
 - Who we are
 - What we do
 - Where we are going
- Time for discussion



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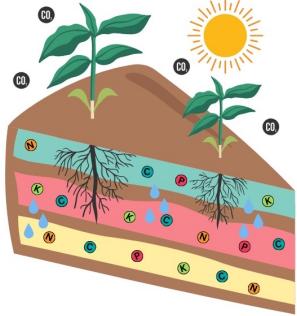
Nick's background

- PhD from Purdue University in Biology (2016)
- Postdoctoral training at Lawrence Berkeley National Lab (2017)
- Tenure track at TTU in Biology since 2017
- Appointed Climate Center Director in 2024
- Expertise
 - Plant ecophysiology
 - Terrestrial ecosystem ecology
 - Biosphere-atmosphere feedbacks

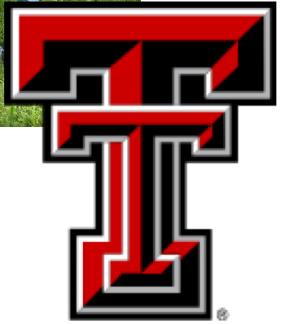


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PhUnFETTy Lab: overview



- PHysiology for UNderstanding the Functioning of Ecosystems at TTU
- Feedbacks between global change, plants, and ecosystem services
 - Focus on plant physiology: what do plants do and does it matter?



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PhUnFETTy Lab: current projects

- LEMONTREE: Land Ecosystem Models based On New Theory, obseRvations, and ExperimEnts
 - Funding: Schmidt Futures, \$10 million/\$800k to TTU (2020-2025)
 - Goal: develop a terrestrial biosphere model from first principles
- Improving understanding and prediction of photosynthetic acclimation to global change
 - Funding: US Natl. Science Foundation, \$1.1 million/100% TTU (2021-2026)
 - Goal: improve understanding and ability to predict photosynthesis
- Defining the mechanisms and consequences of mutualism reorganization in the Anthropocene
 - Funding: US Natl. Science Foundation, \$3.6 million/\$1.2 million to TTU (2022-2027)
 - Goal: understand mechanisms underlying plant species invasion

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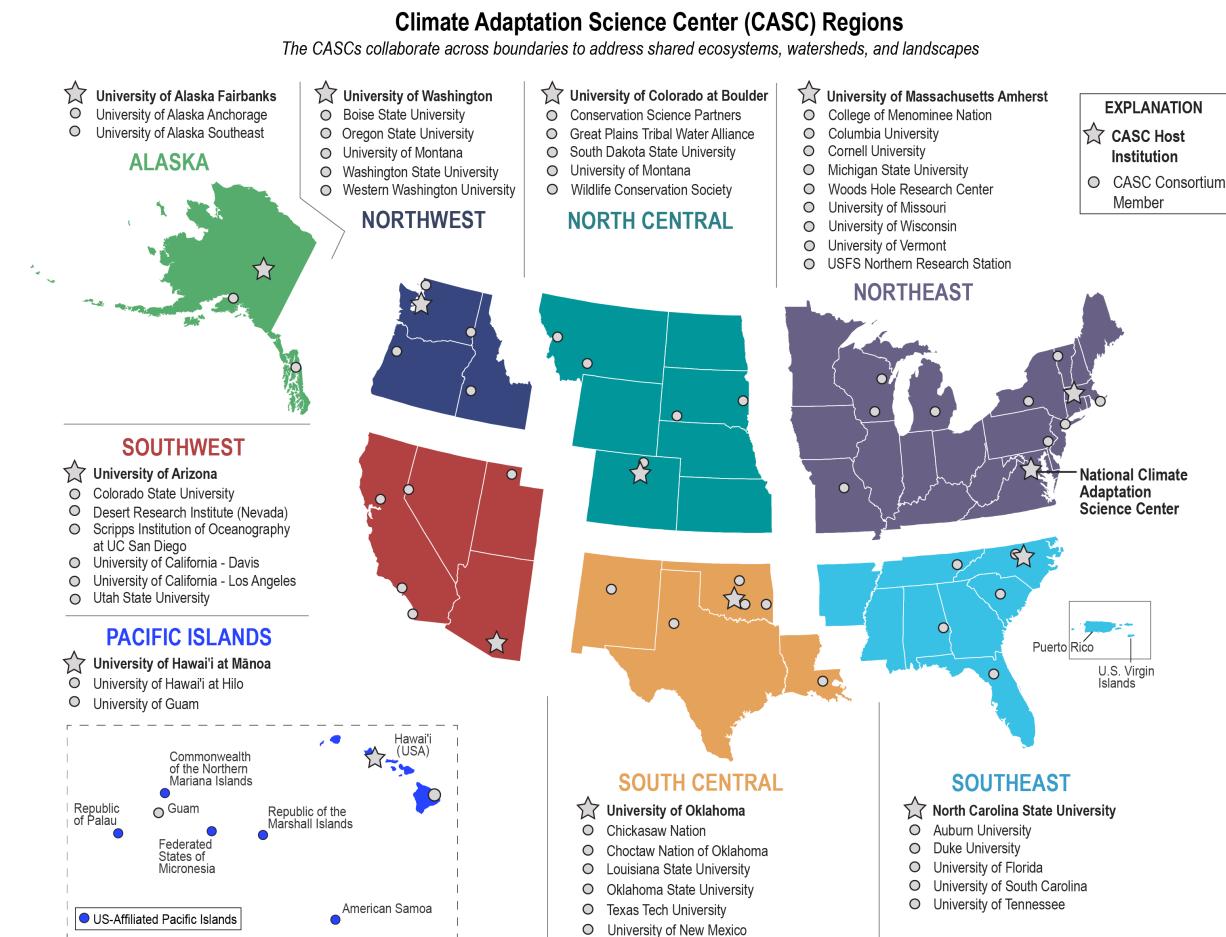
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TTU Climate Center: Who we are

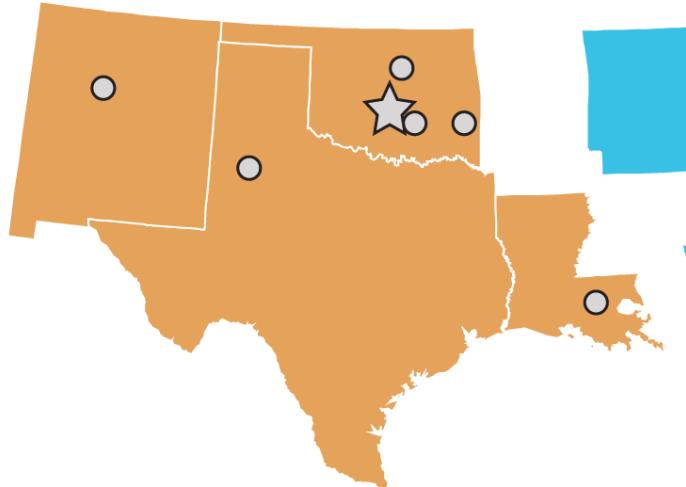


- Member of USGS-funded Climate Adaptation Science Centers (CASCs)



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TTU Climate Center: Who we are



SOUTH CENTRAL

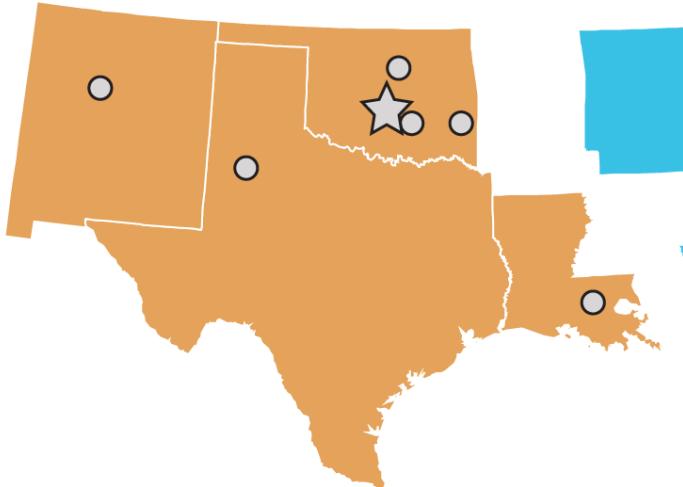
- ★ University of Oklahoma
- Chickasaw Nation
- Choctaw Nation of Oklahoma
- Louisiana State University
- Oklahoma State University
- Texas Tech University
- University of New Mexico

- Consortium institution of the South Central CASC (SC-CASC)



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TTU Climate Center: Who we are



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SC-CASC:

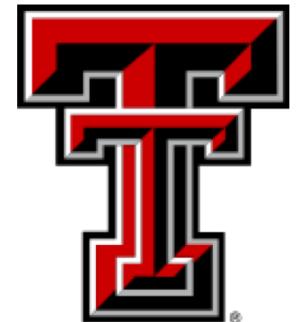
- Provide decision makers with the science, tools, and information they need to address the impacts of climate variability and change
- Transform how climate science is conducted and applied in the south-central US
- Support big thinking, including multi-institutional and stakeholder-driven approaches to assessing the impact of climate on natural and cultural resources



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TTU Climate Center: Who we are

- >100 active members
 - Mostly faculty
 - Students and postdocs
- 12 TTU Colleges
- 36 TTU Departments
- Open to anyone interested in, passionate about, or doing climate-related work



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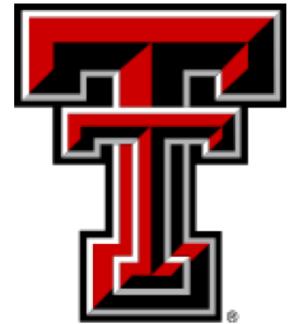
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TTU Climate Center: What we do

- Serve as regional hub for climate change
- Work with community members and stakeholders
- All areas of research that intersect with climate
- Monthly research and outreach meetings
- Events
 - Informational events on and off campus
 - Science by the Glass



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TTU Climate Center: Where we are going

Goal: bolster climate-related
research and outreach at TTU



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TTU Climate Center: Where we are going (research)

- Fostering interdisciplinary collaborations
 - Physical climate science (ala IPCC WG1)
 - Climate impacts (ala IPCC WG2)
 - Climate mitigation and adaptation (ala IPCC WG3)
- Engaging with stakeholders
- Promoting research
 - Climate research symposium (AY 2024-25)
- Enhancing student education
 - Travel grants
 - Research scholarships



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TTU Climate Center: Where we are going (research)

- Foster interdisciplinary collaborations
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Would love to see us expand our scope and develop more international projects!



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TTU Climate Center: Where we are going (outreach)

- Continue ongoing outreach activities
 - Science by the Glass
 - Tabling events
- Engage more with students
 - Sponsored events
 - Research integration opportunities
- Engage more with local, state, national, and international communities
 - Social media



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Presentation available at:
www.github.com/SmithEcophysLab/seminar/2024_cars



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