

Hooking Pirates on the Weather

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ECU Scholar-Teacher Award 2015

*Department of Geography, Planning and
Environment*



Thank you

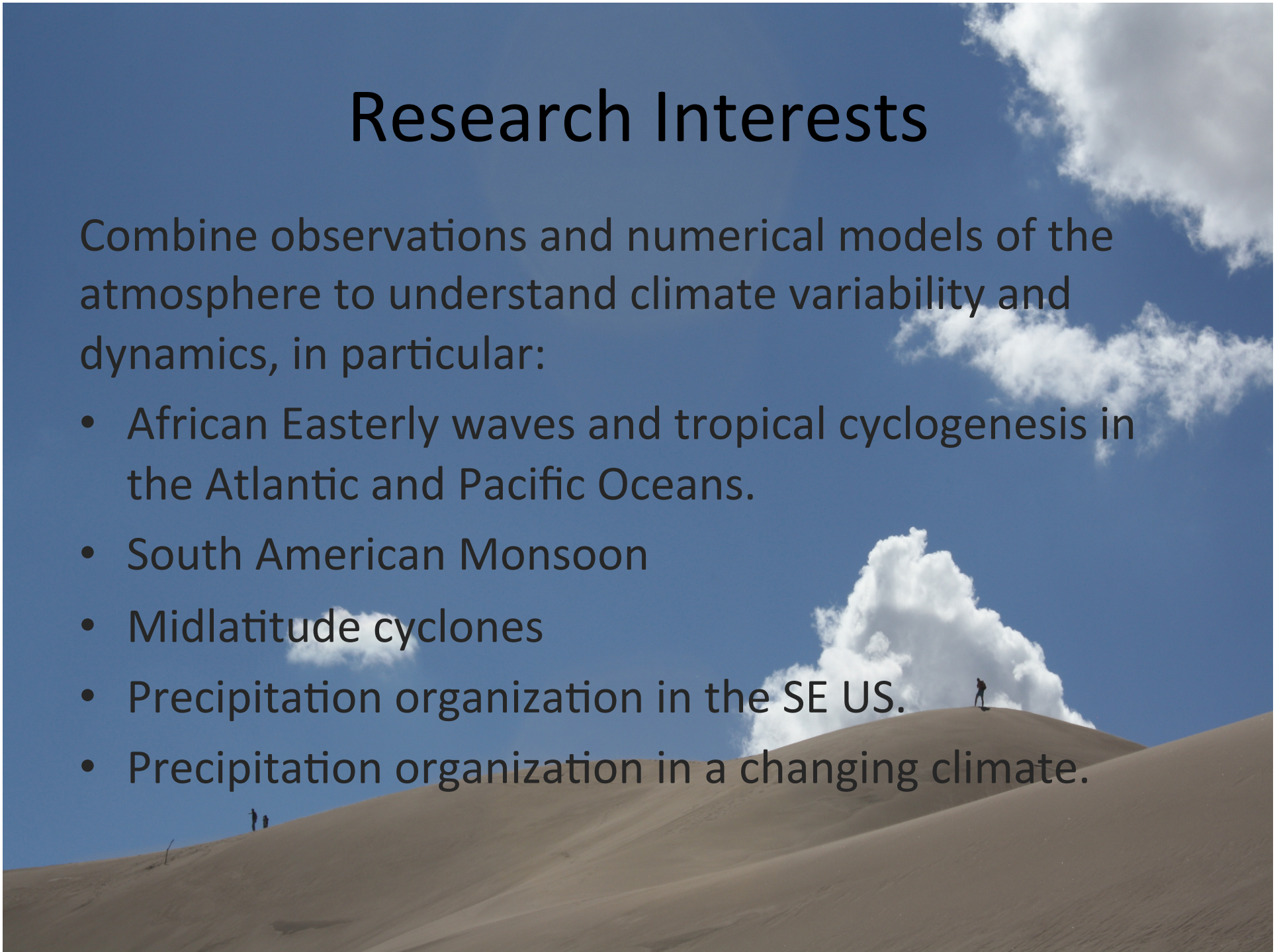
- My colleagues in the Department of Geography, Planning and Environment
- My students (Lin Hall, Nick Luchetti, Joel McAuliffe, Mark Nissenbaum, Emily Wright, Chris Zarzar)



Research Interests

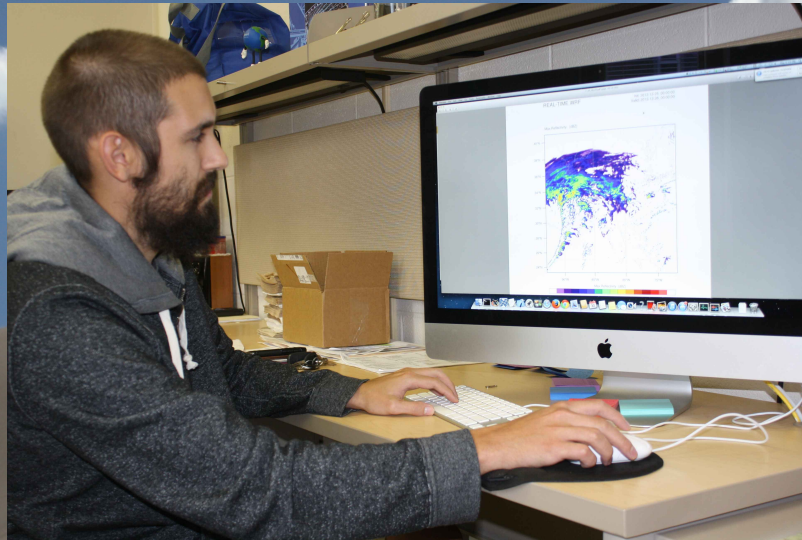
Combine observations and numerical models of the atmosphere to understand climate variability and dynamics, in particular:

- African Easterly waves and tropical cyclogenesis in the Atlantic and Pacific Oceans.
- South American Monsoon
- Midlatitude cyclones
- Precipitation organization in the SE US.
- Precipitation organization in a changing climate.



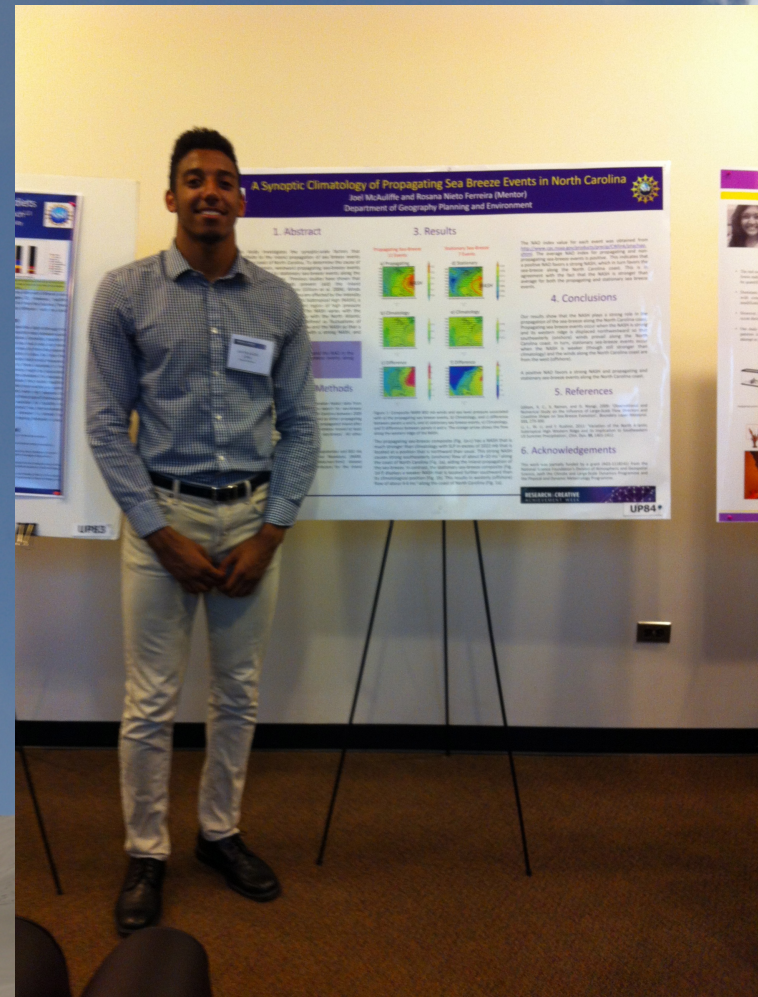
Graduate Student Advising

- Integrally involved in my research program
- Independent study to learn how to program
- Publish in internationally recognized journals
- Local, national and international conferences
- Help them become scholars



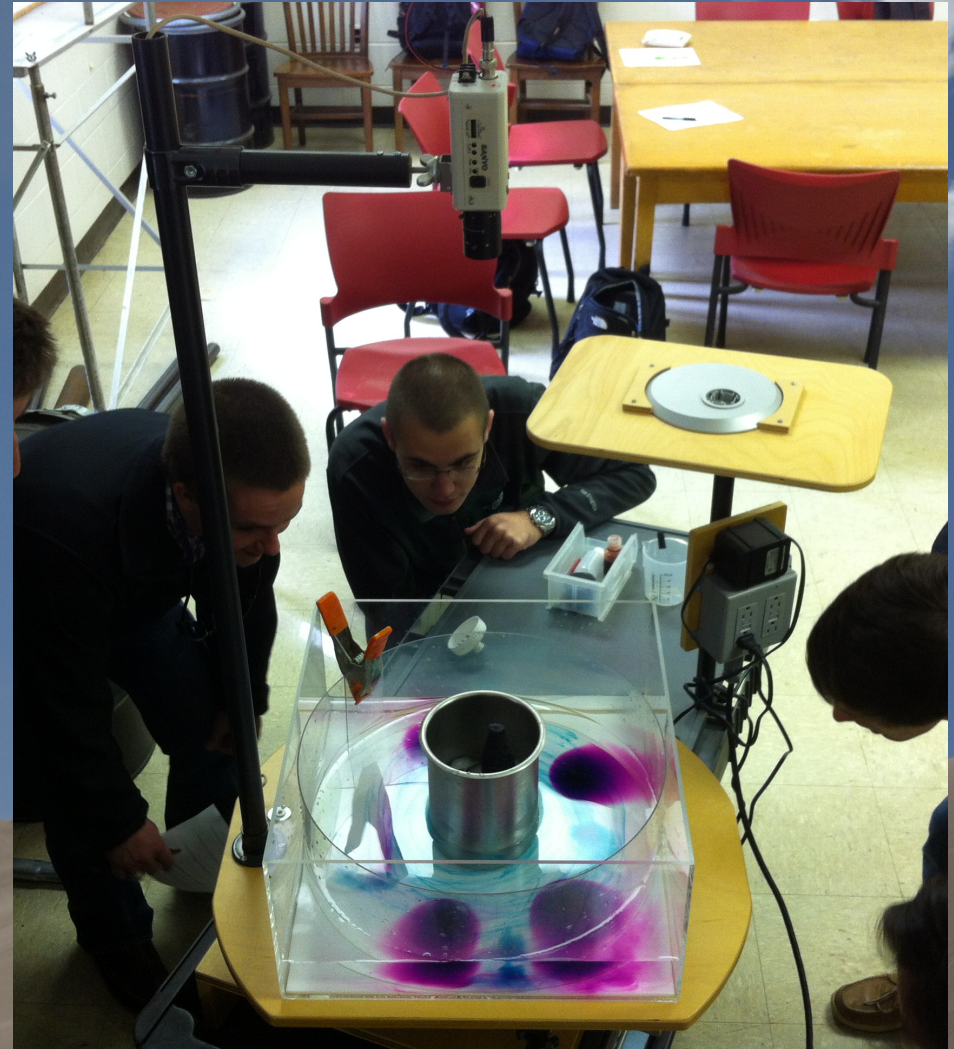
Undergraduate Student Advising

- Engage students in research
- Basic programming skills
- Present their work at the RCAW



Teaching

- In-class experiments and labs
- Re-takes
- Field trips





ECU Global Classroom Global Climate Change(GEOG3230)

Six universities, one challenge:

Find common ground in the climate
change discourse



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U.S. Department of State Prominent Speaker Series

- Dr. John Holdren –
Director of the White
House’s Office of Science
and Technology Policy
- Dr. Marcia McNutt –
Director of the USGS
- Dr. Jonathan Pershing
– DOS Deputy Special Envoy
for Climate Change
- Mr. Gabe Klein - DC
Department of Transportation



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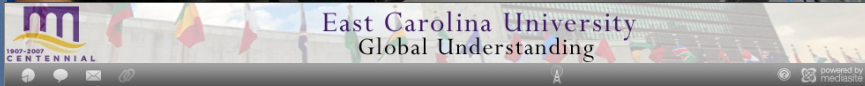


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global comparison of electricity consumption data

electricity use at universities in the united states, china, brazil, and india

About The Project

Global Competition

Student Profile



“ University Students, one by one, reducing dependence, and making the world a brighter place. ”

This is Bob, one of our Chinese partners.

[<<] [<] [>] [>>]

Pages

About The Project



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ECU Student Chapter of the American Meteorological Society



2013-2014 ECU Teaching Grant

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Supporting Fellow Teachers

ECU Faculty Senate rewards innovation in the classroom



[Features Archive](#)

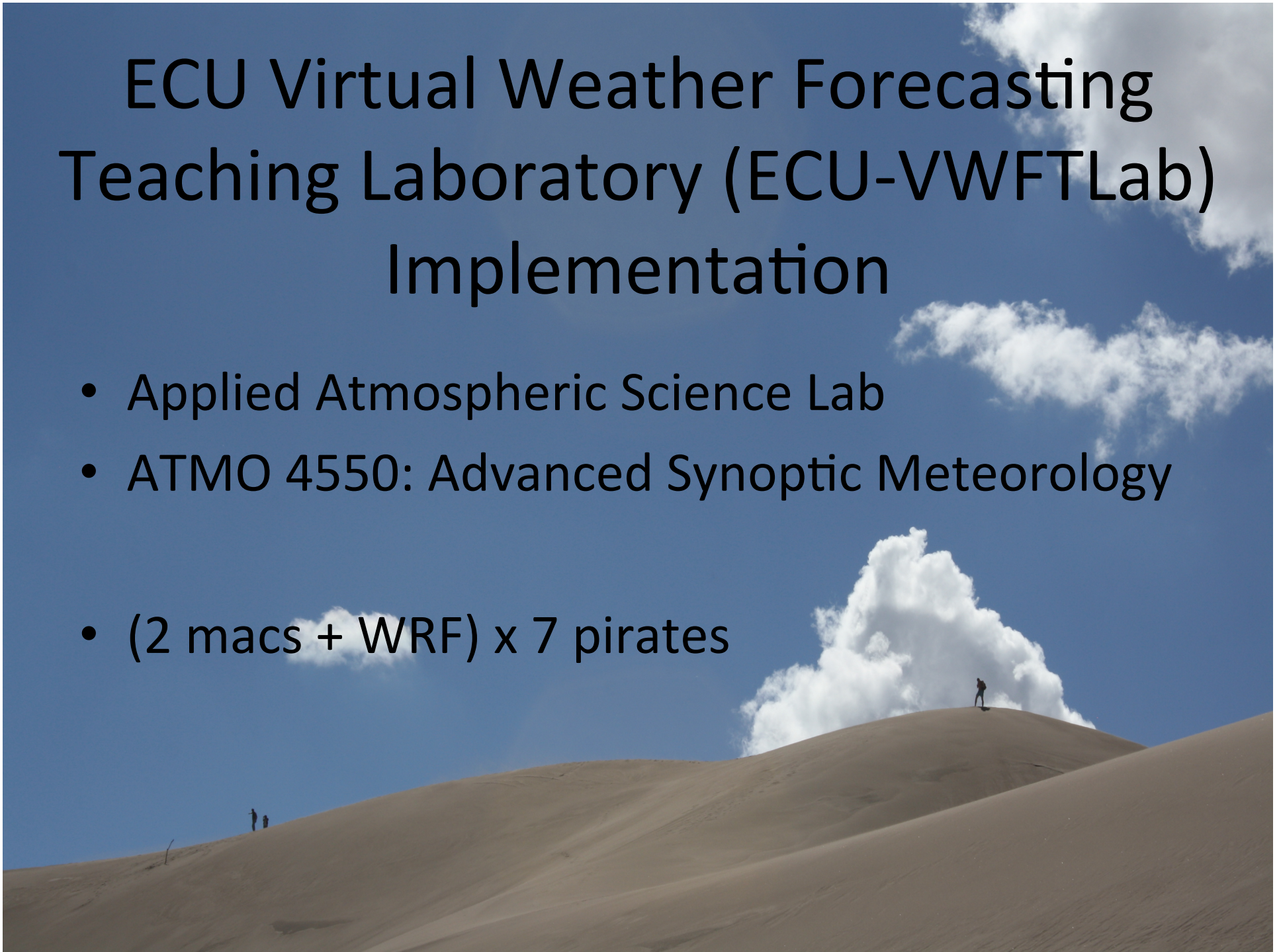
2013-2014 ECU Teaching Grant

“Development of the ECU Virtual Weather Forecasting Teaching Laboratory (ECU-VWFTLab)”

- Objectives: Incorporate student training in the use of a state-of-the-art numerical weather forecasting model AND create a community of numerical weather forecasters at ECU
- Learning outcome: enhance theoretical understanding of weather phenomena, and train students to produce a numerical weather forecast simulation from beginning-to-end.

ECU Virtual Weather Forecasting Teaching Laboratory (ECU-VWFTLab) Implementation

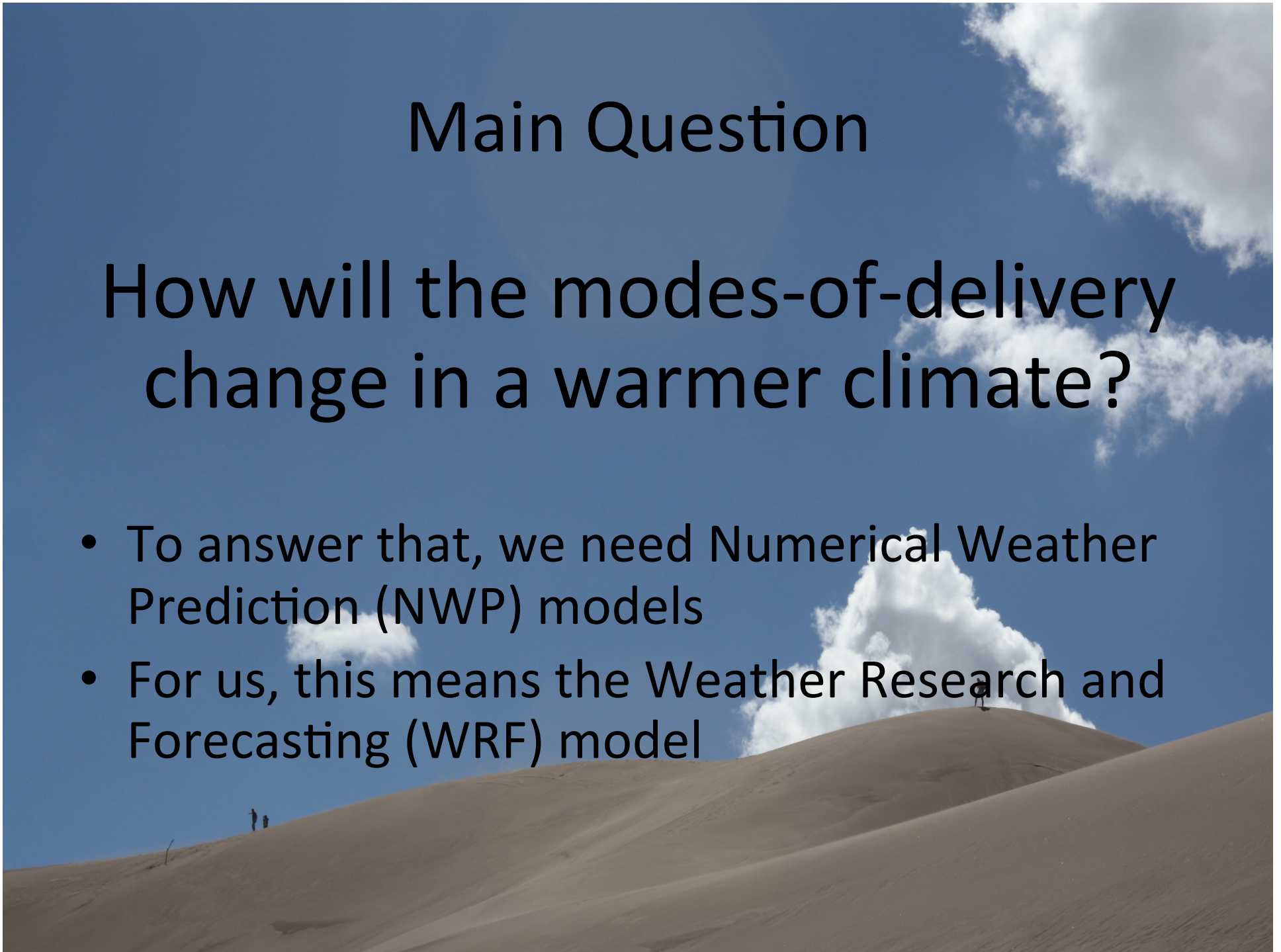
- Applied Atmospheric Science Lab
- ATMO 4550: Advanced Synoptic Meteorology
- (2 macs + WRF) x 7 pirates



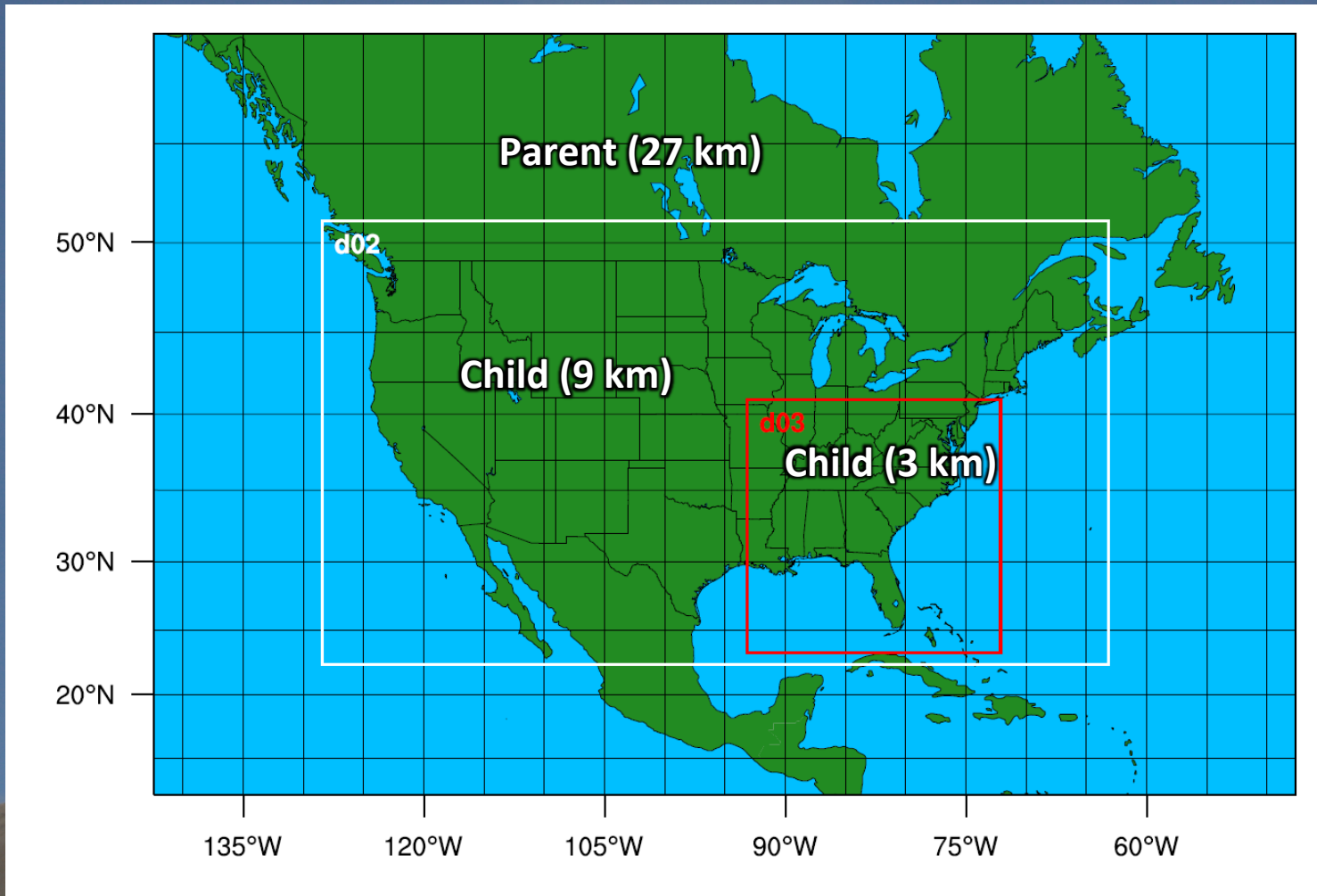
Main Question

How will the modes-of-delivery change in a warmer climate?

- To answer that, we need Numerical Weather Prediction (NWP) models
- For us, this means the Weather Research and Forecasting (WRF) model



WRF Simulations



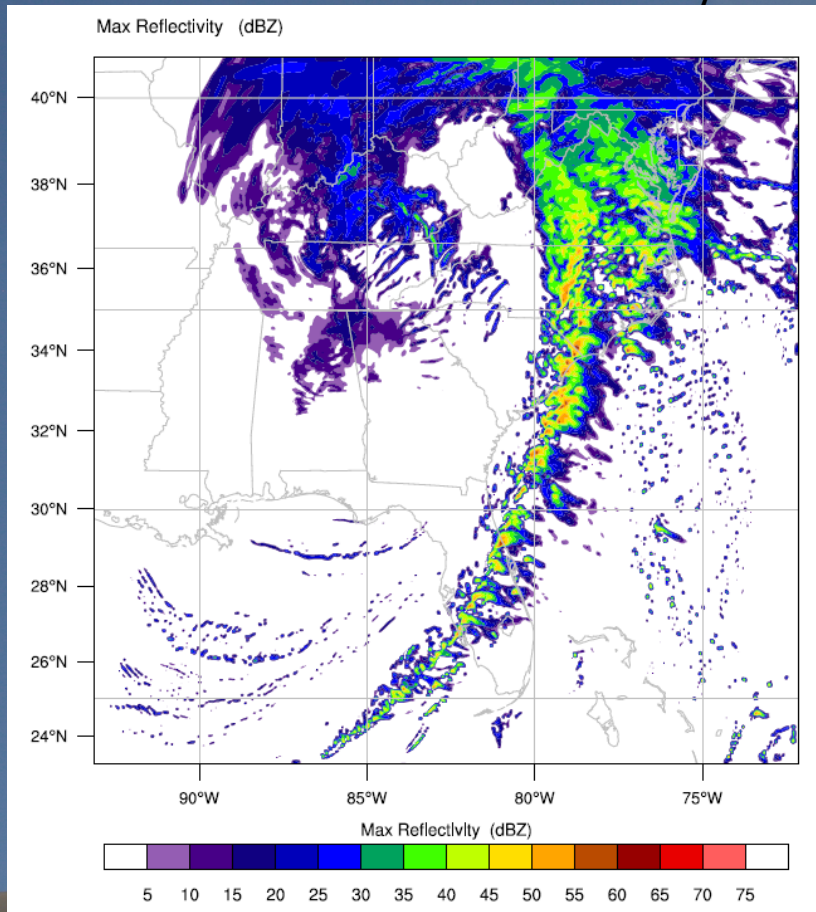
WRF Simulations



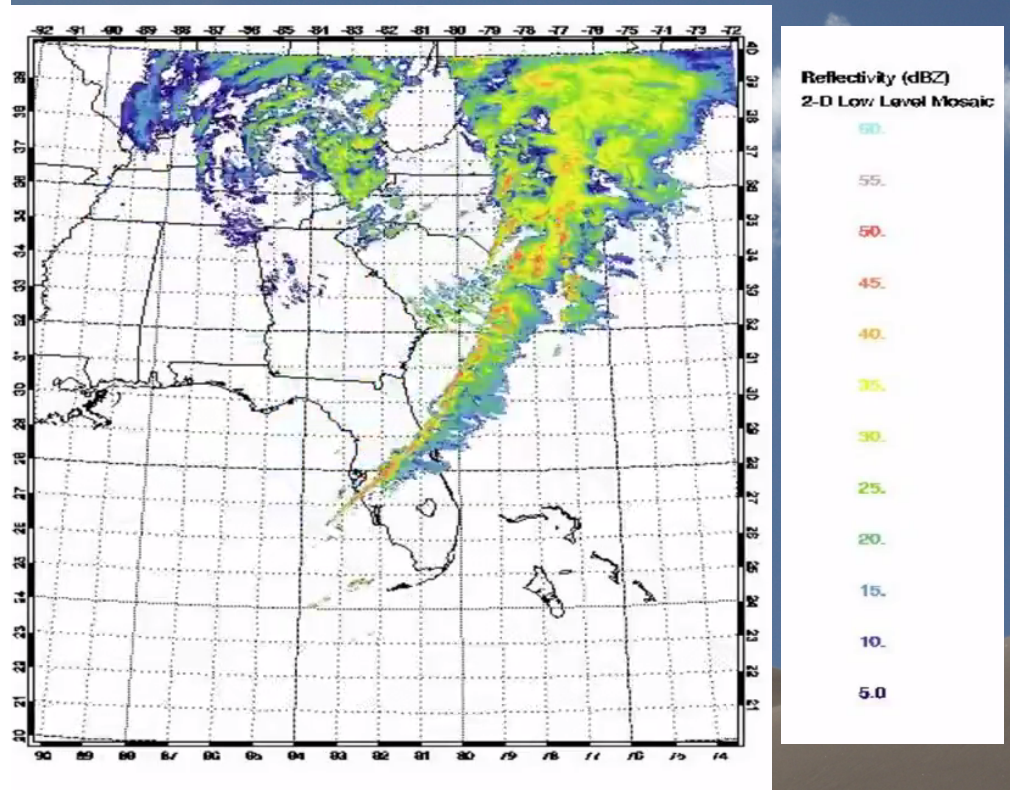
Sample Present Climate Simulation: December 25-27, 2012

2012 12-26 18z

WRF Simulated Reflectivity



Actual Observations

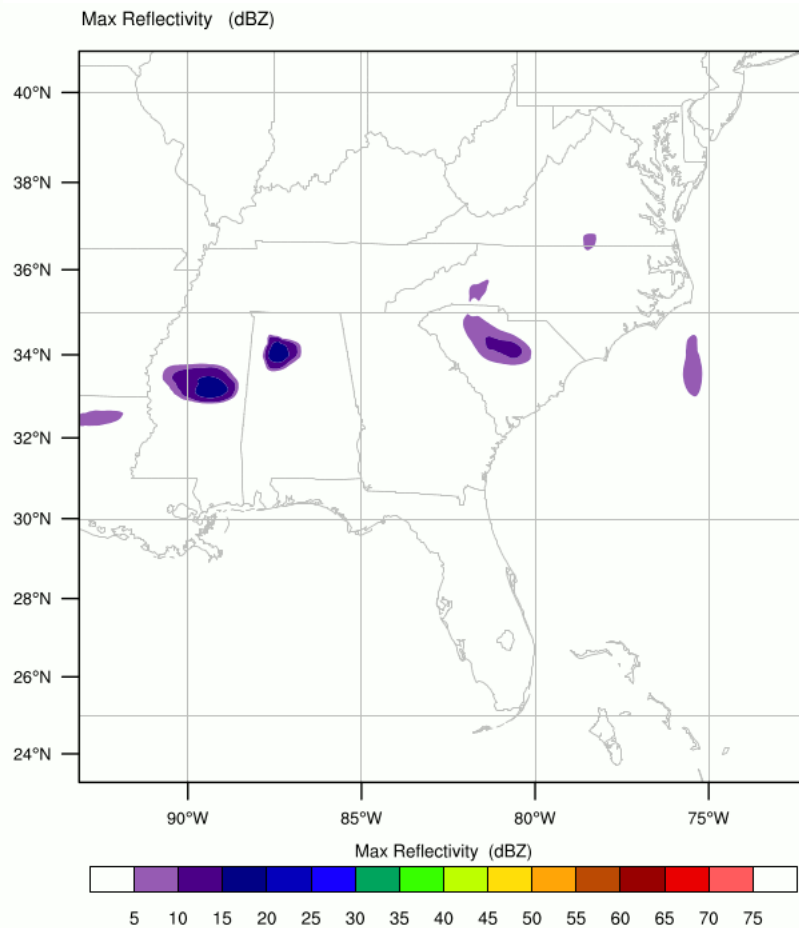


Disclaimer: Color scales and projections differ between images

Sample Present Climate Simulation: July 12-14, 2012

Init: 2012-07-12_00:00:00
Valid: 2012-07-12 00:15:05

WRF Simulated Reflectivity

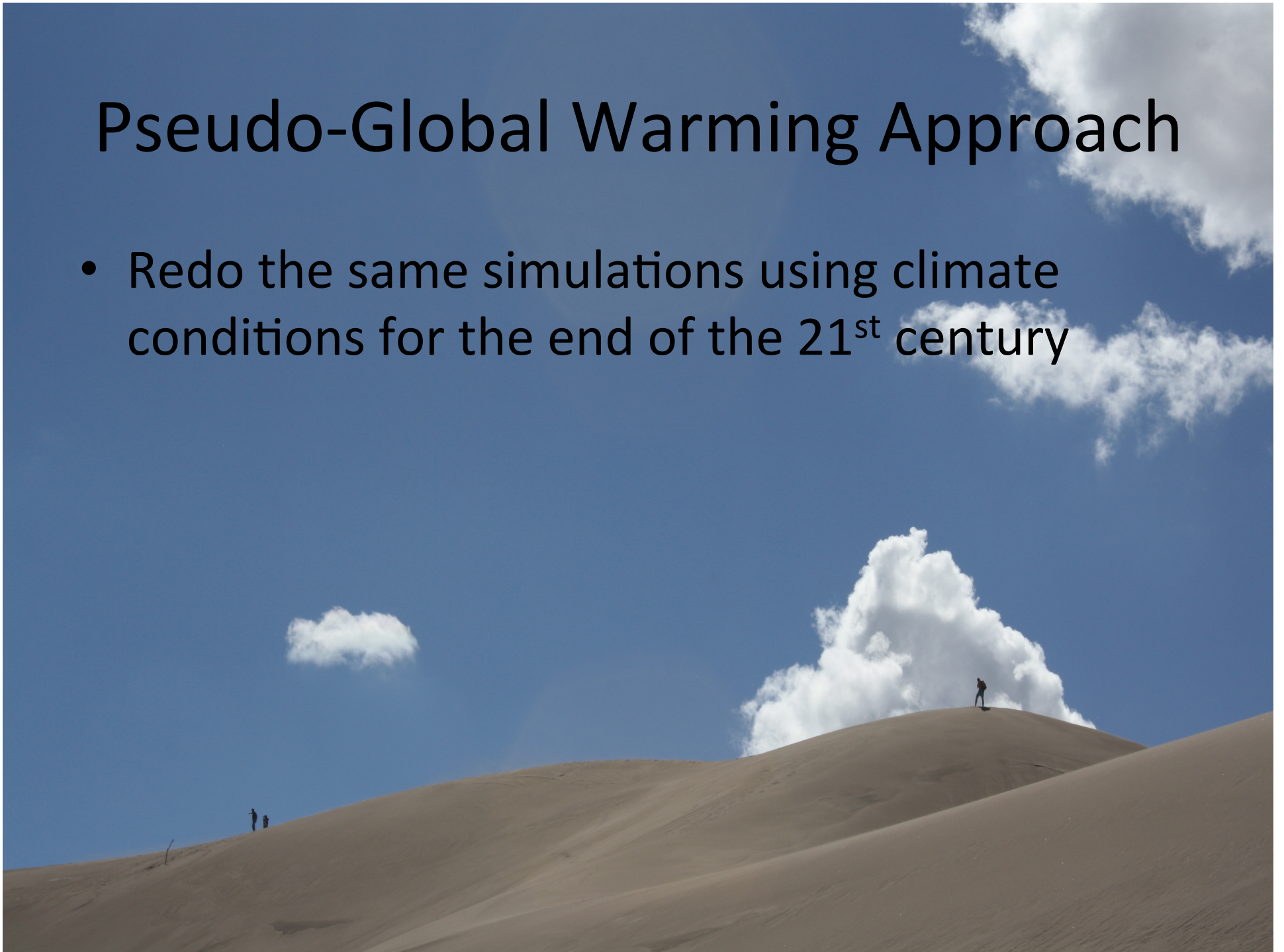


- 48 hour forecast
- GFS 1° Analysis data
- 3 km grid spacing
- 3 days 17 hours to complete



Pseudo-Global Warming Approach

- Redo the same simulations using climate conditions for the end of the 21st century





Thank you!

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