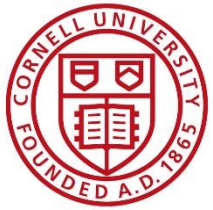


Research&Innovation
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# I-WRF: Containerized Framework for Weather Modeling, Verification, and Visualization

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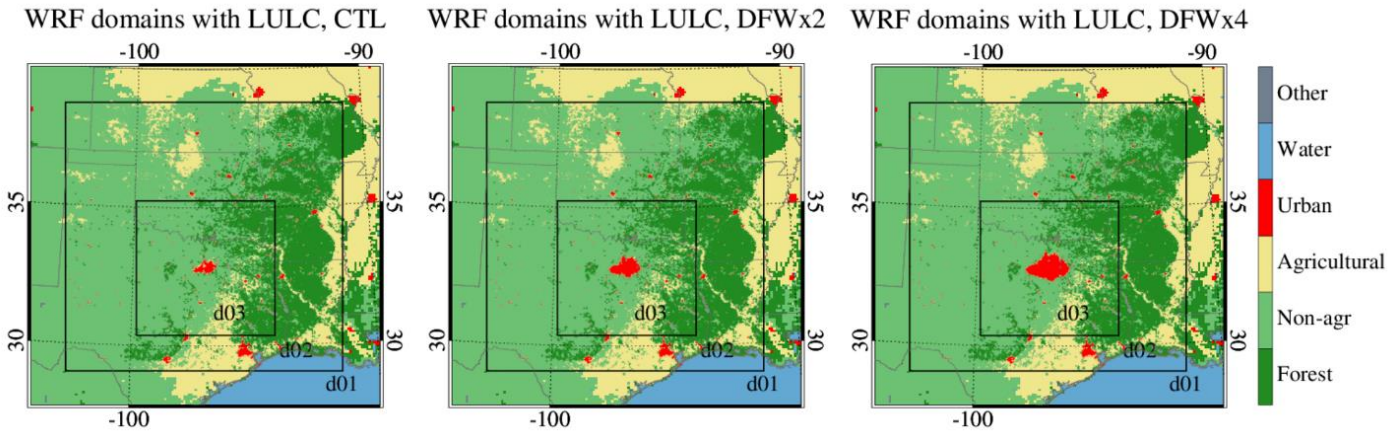
# WRF Software




- WRF is weather modeling software with a broad range of applications
  - Weather prediction, climate modeling
  - Simulation of events based on characteristics such as land use or cover
  - Chemistry, wildfire, renewable energy generation
  - Validation and visualization tools for verifying and seeing results
- In development since 2000, with a user base of more than 30,000
- Deployment across a wide range of HPC systems, so much as to be included in benchmark suites

# WRF Challenges

Stanczyk, Jan Matejko, 1862. Wikimedia commons

- Despite this, around *50% of users* attending tutorials at NCAR report difficulty configuring the software for use
- Compiling WRF software requires understanding multiple compiler frameworks, a wide range of WRF configuration options
- Output from WRF is not immediate ingestible by verification and visualization tools

- These technical barriers mean that potential researchers and scholars run into hurdles before they can even get to the weather and climate stuff

# I-WRF Goals

**Application containers support simplicity, portability, and scalability**

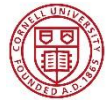
- Run on a wide range of systems without installation/configuration issues
- Include data management and interoperability with validation and visualization tools
- Allow for large-scale problems with multi-node processing

**Another goal is to bring more researchers into Atmospheric Science**

I-WRF allows a user to try WRF without dealing with installing and compiling software

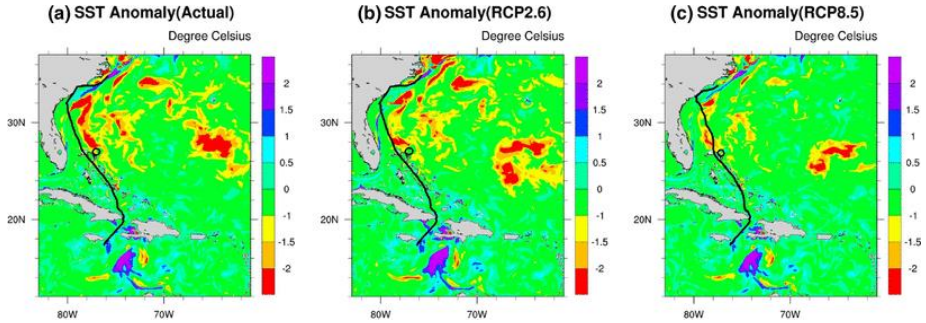
Model weather on your laptop, in the cloud, or on an HPC resource

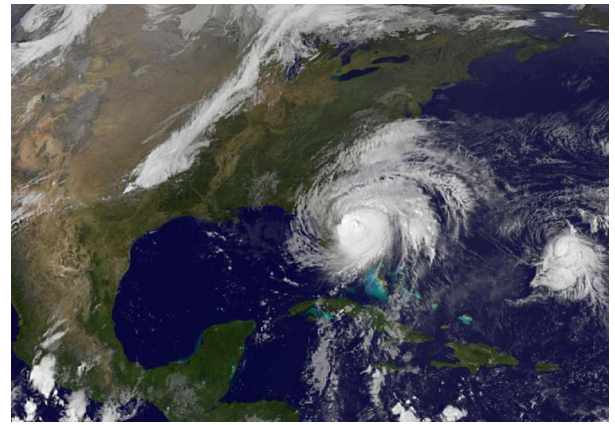




# Supporting broader engagement in Atmospheric Science

- Users can run sample WRF simulations on a laptop or free cloud resource
- Sample simulation is an event used for NCAR tutorials:
  2016 Hurricane Matthew event



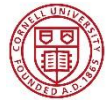



- Making the WRF software easier to run - and relevant to
- Increasing recruitment into Atmospheric Sciences
- Building a pipeline of researchers into the discipline
- Bridging the diversity gap in weather and climate research

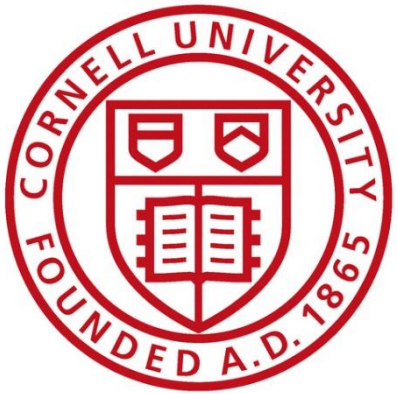
# I-WRF details

- Run it yourself on Jetstream: https://bit.ly/iwrf-matthew
- Overview website: https://i-wrf.org
- User guide: https://i-wrf.readthedocs.io/en/latest/Users_Guide/index.html
- Github site: https://github.com/NCAR/i-wrf
- Help through help@cac.cornell.edu





*This presentation available at the MS-CC annual meeting site and at*
*https://docs.google.com/presentation/d/16wb9V-K9mOjQLQg1QQLdtTBzu3NjlXvY*

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