Geophysical Fluid Dynamics Laboratory

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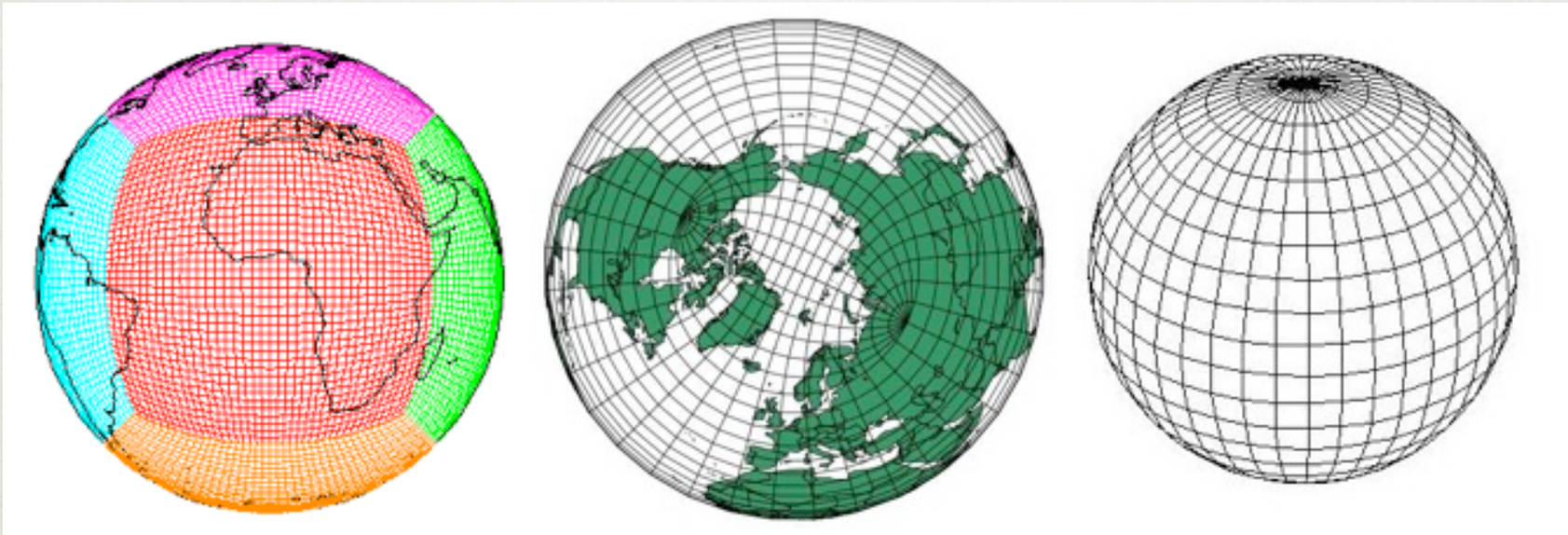
GFDL/NOAA OVERVIEW

- GFDL's Mission
  - Production of **timely** and **reliable** knowledge and **assessments** on natural climate variability, anthropogenic changes and earth system model development.
- NOAA Mission
  - **Understand** and **predict** changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs.

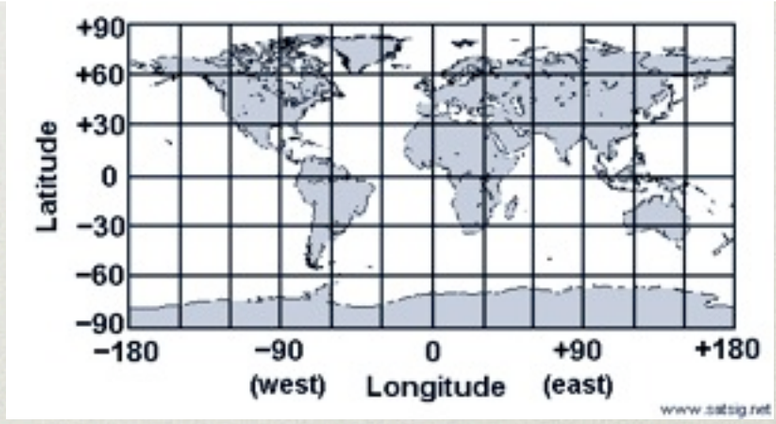
The Challenge

- The Why:
  - Understanding & Prediction
  - Water Resource Management &Agriculture
  - Urban Planning & Transportation, etc
- The How:
  - Climate Modeling & Simulation
  - HPCS Infrastructure
  - Dedicated Scientists and supporting staff

Data Needs: Grid Issues



- Different Grids, Different Analysis, how do we compare?



Data Needs: Facilitating Collaborations

- IPCC
- CMIP5
- PCMDI

- NCAR
- NASA
- PMEL
- GFDL

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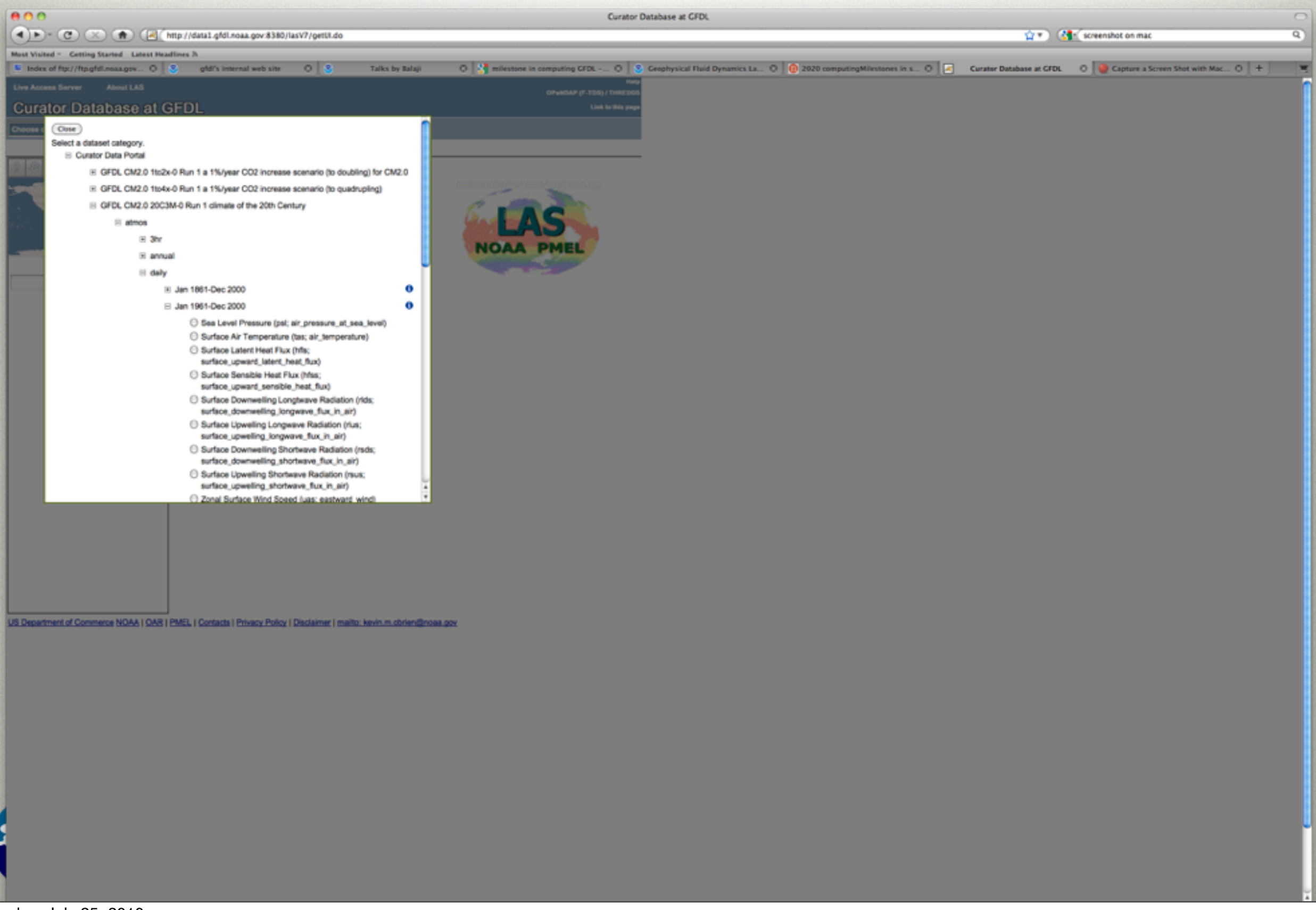

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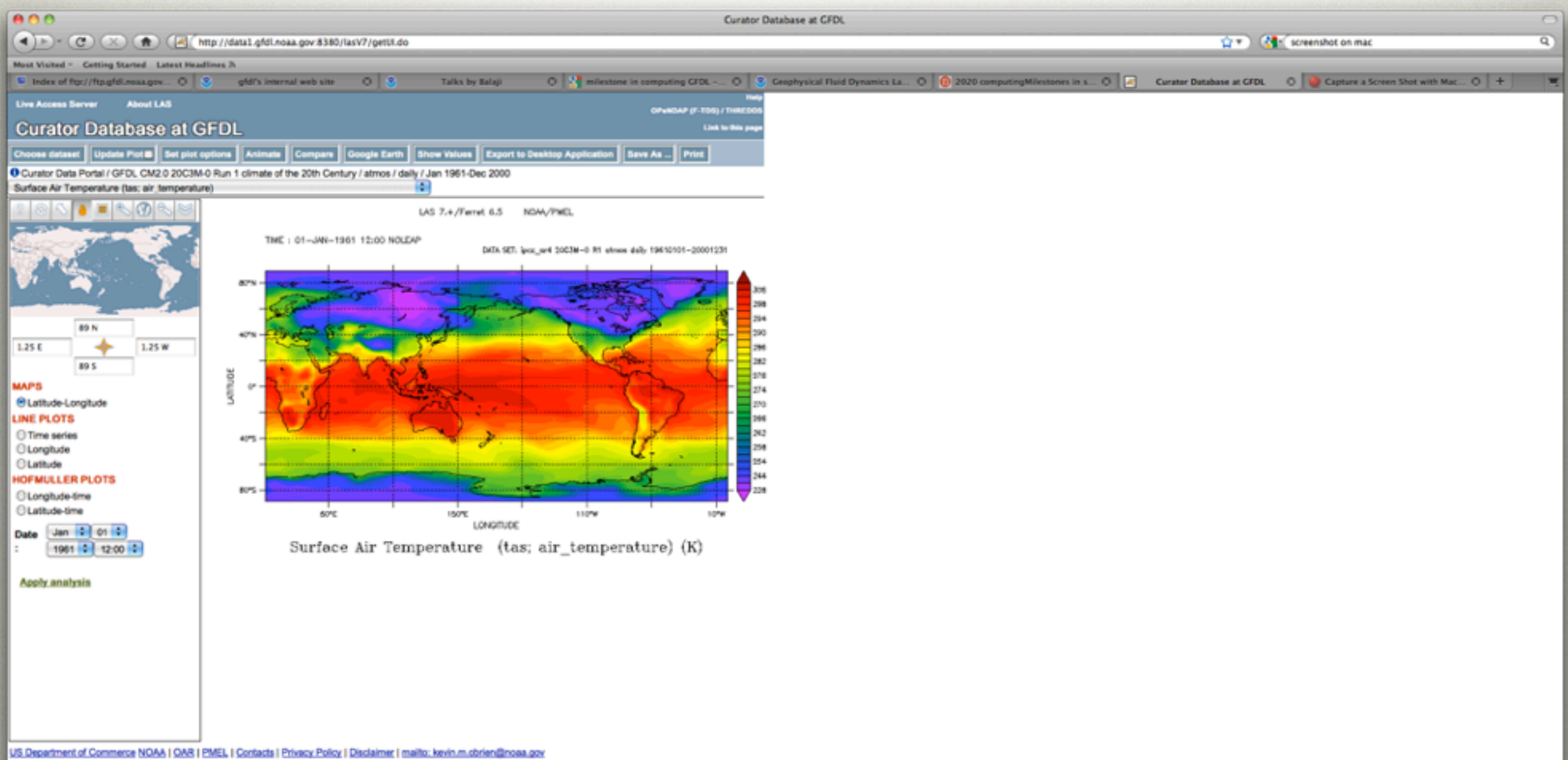

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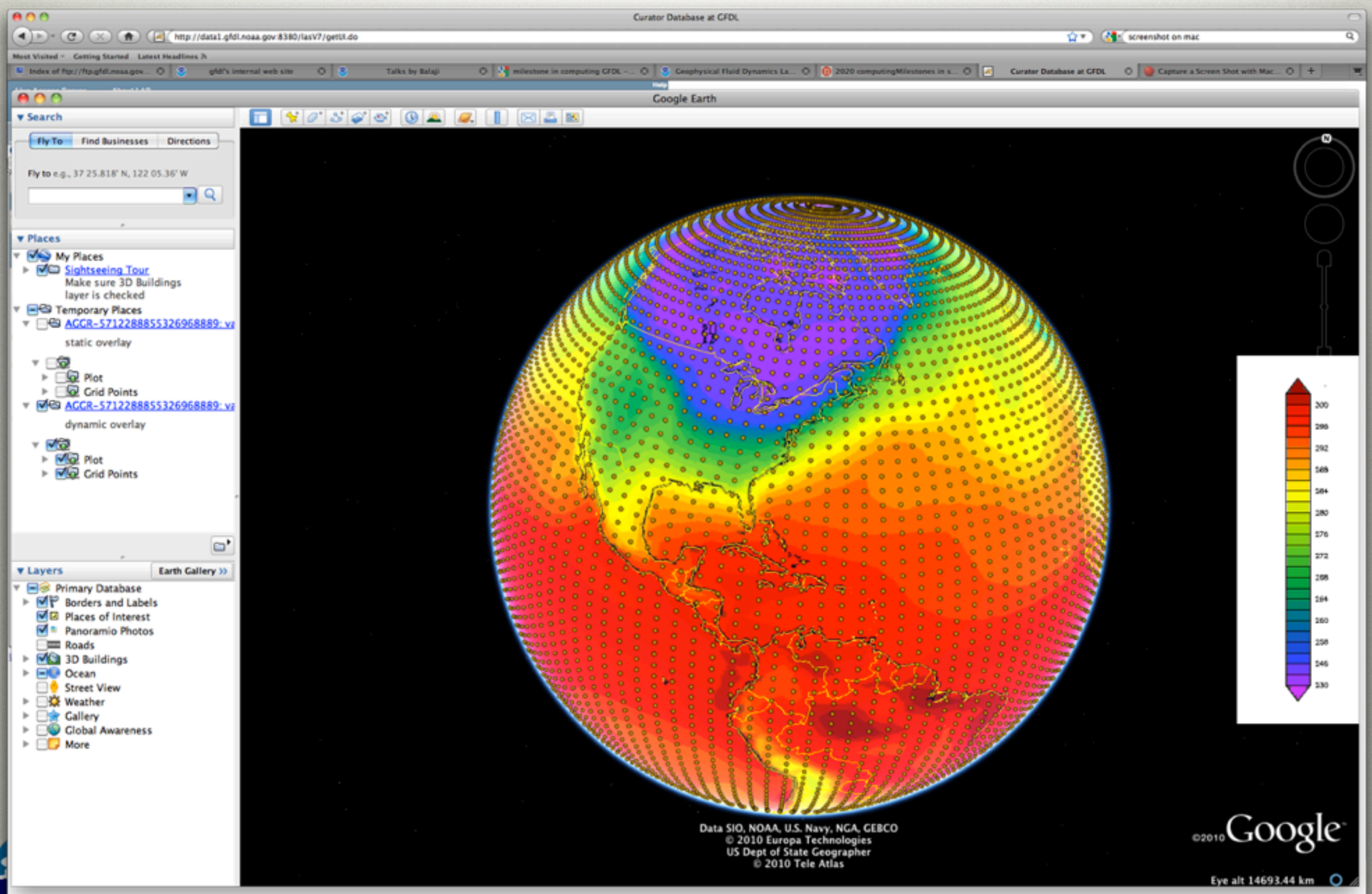

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Data Needs: Higher Resolution Models

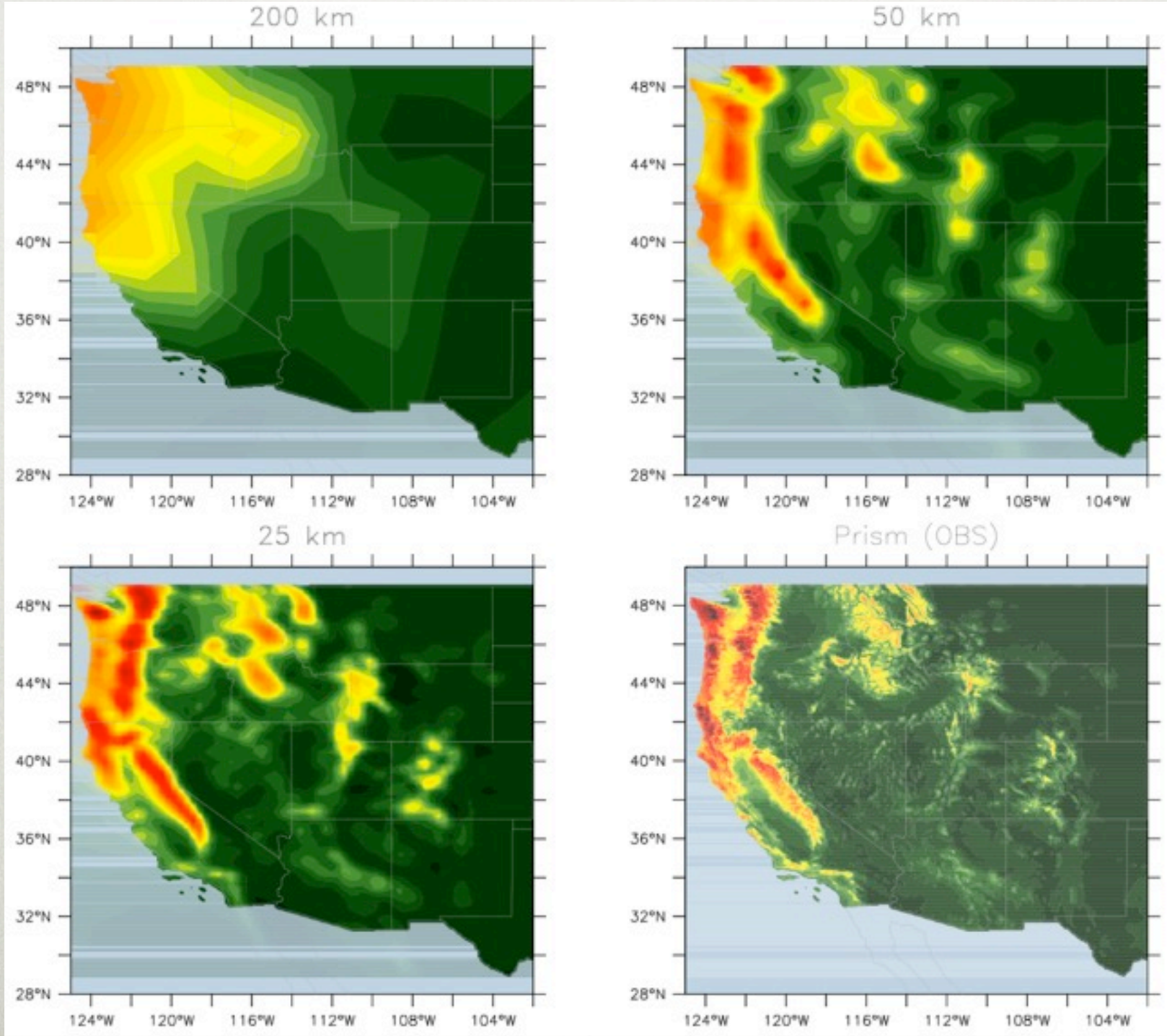


Image courtesy of Isaac Held GFDL.

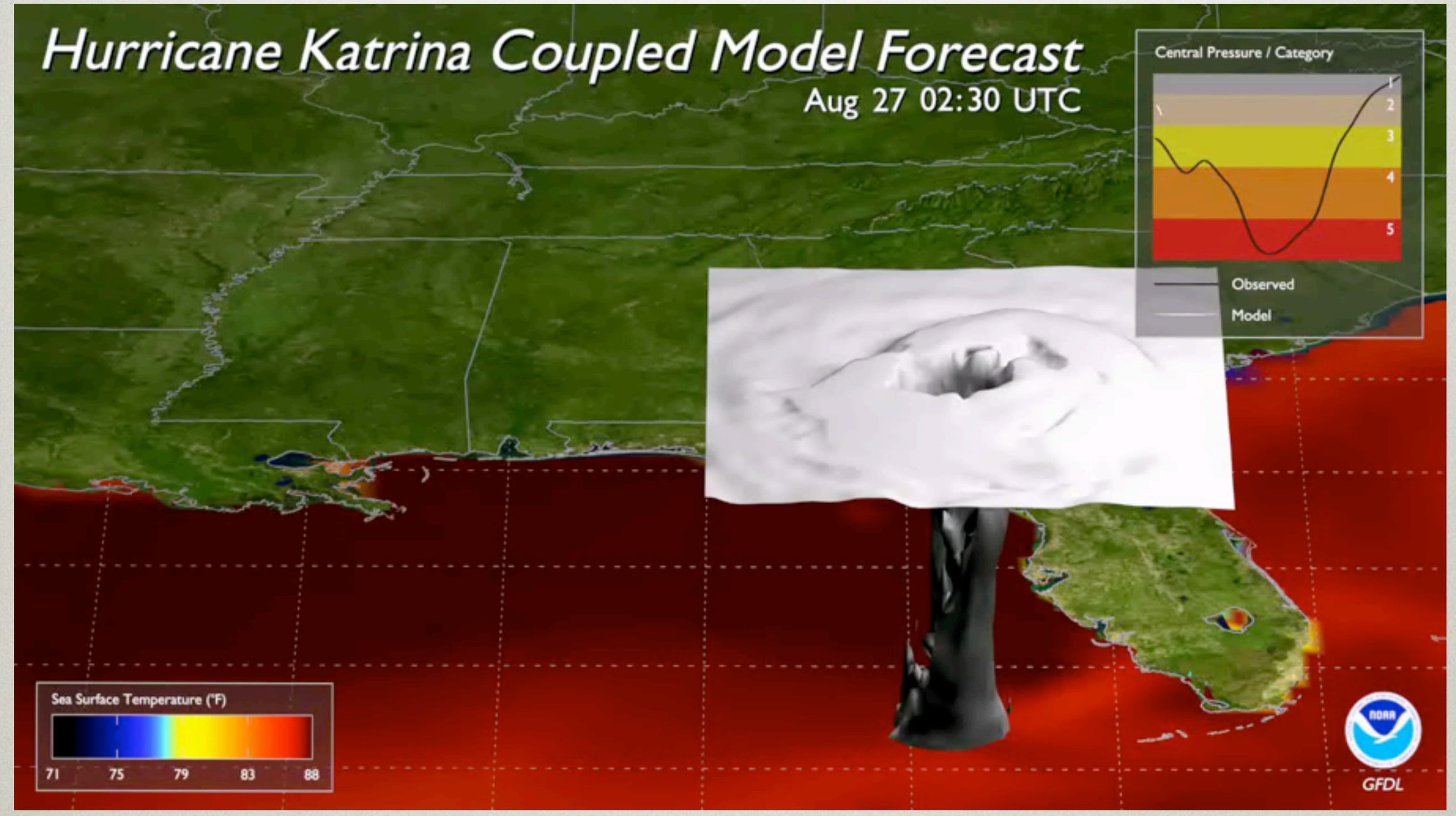
Visualization Needs: Importance

- Quick incisive summary
- Easier Comprehension
- Impact
- Immediate Pattern Recognition
- Time varying phenomena understood

Visualization Needs: Dynamics

- More versatile viz tools (file types and size, grid spec, etc)
- Easier intuitive interfaces (gui)
- Journal standard output (fonts and formats)
- Interactive tools
- Better rendering quality and speed

Visualization Examples



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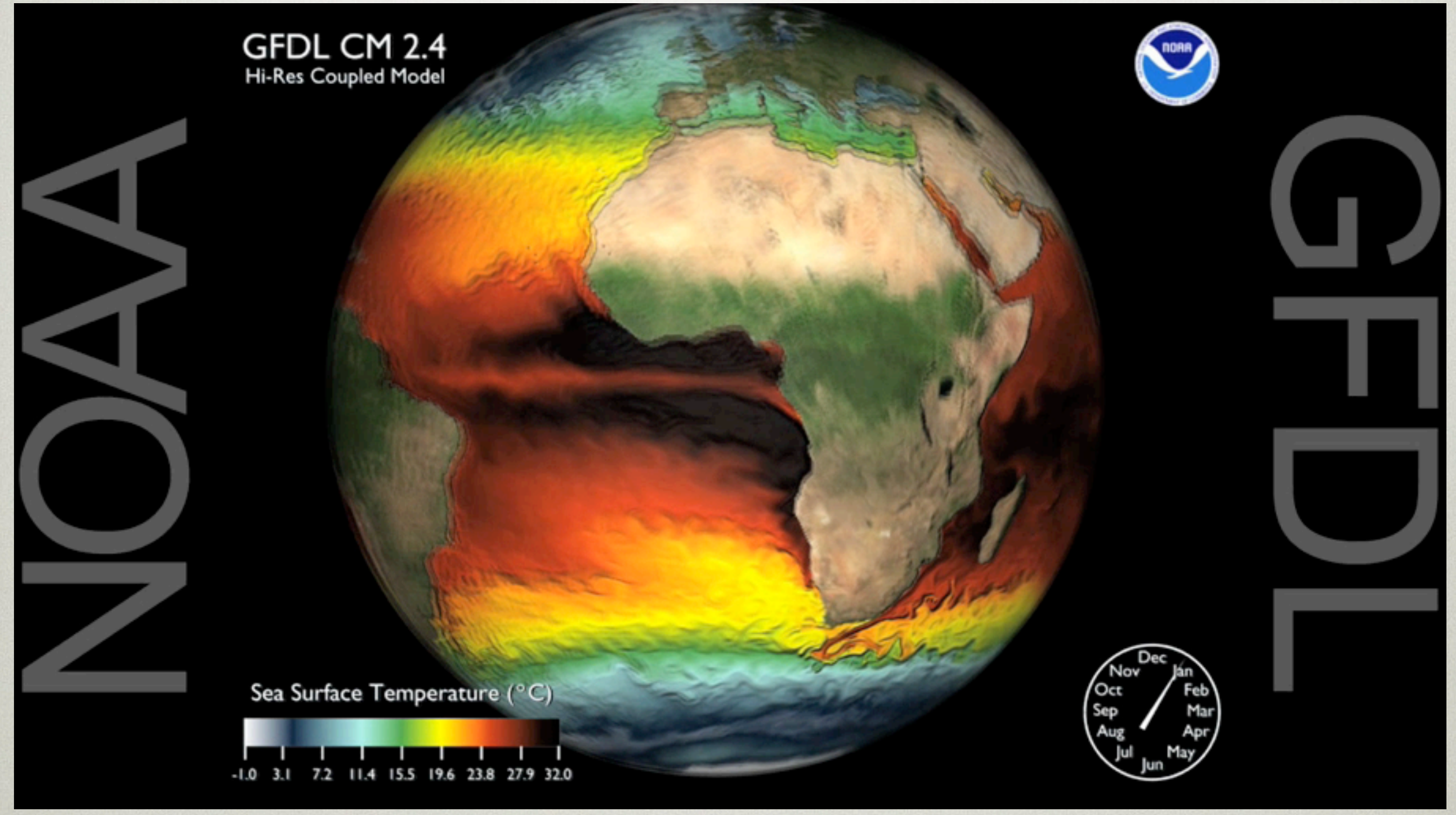

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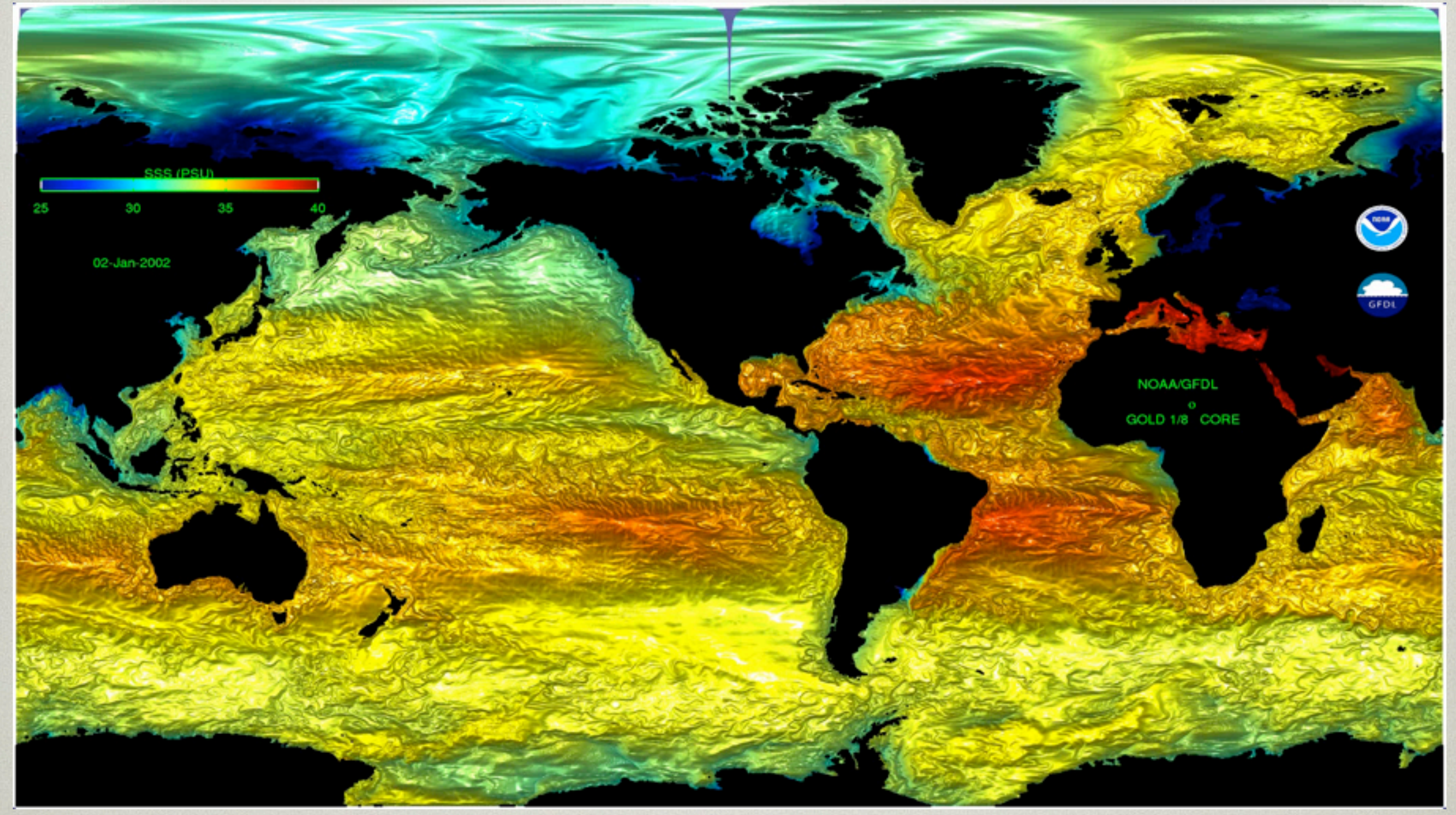

Summary

- Climate Research is essential to human development.
- Data analysis and Visualizations will continue to remain pivotal in Climate Research.
- Analytical tools will have to continue evolve with changes in Data, Format or Computing Standards.
- Analytic tools that boast capabilities of working in Distributed Parallel Environments will do well.

Questions