



# **Toward Petascale Research in the Geosciences**

**Tim Killeen**

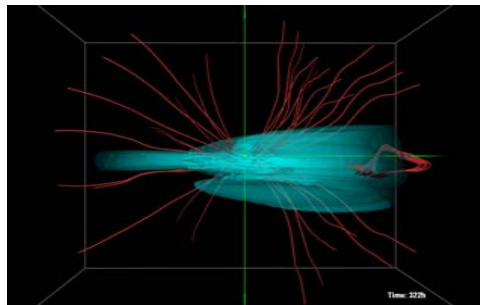
**NCAR Director and AGU President**



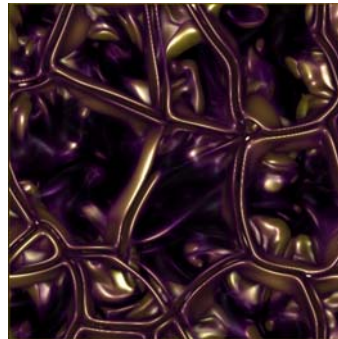
# Geoscience really does need Petascale Computing (and Beyond)



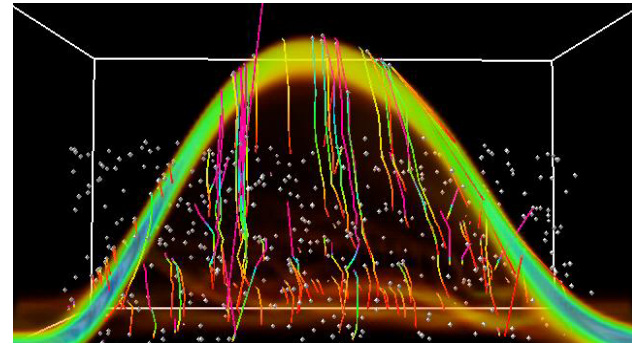
*In a wide variety of domains...*



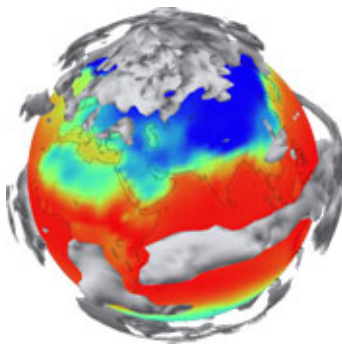
Space Weather



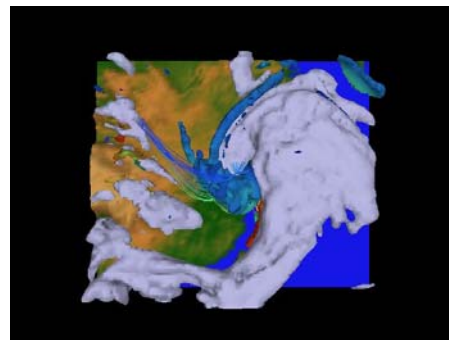
Turbulence



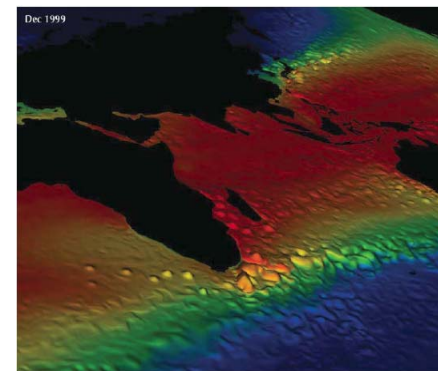
The Sun



Climate



Weather

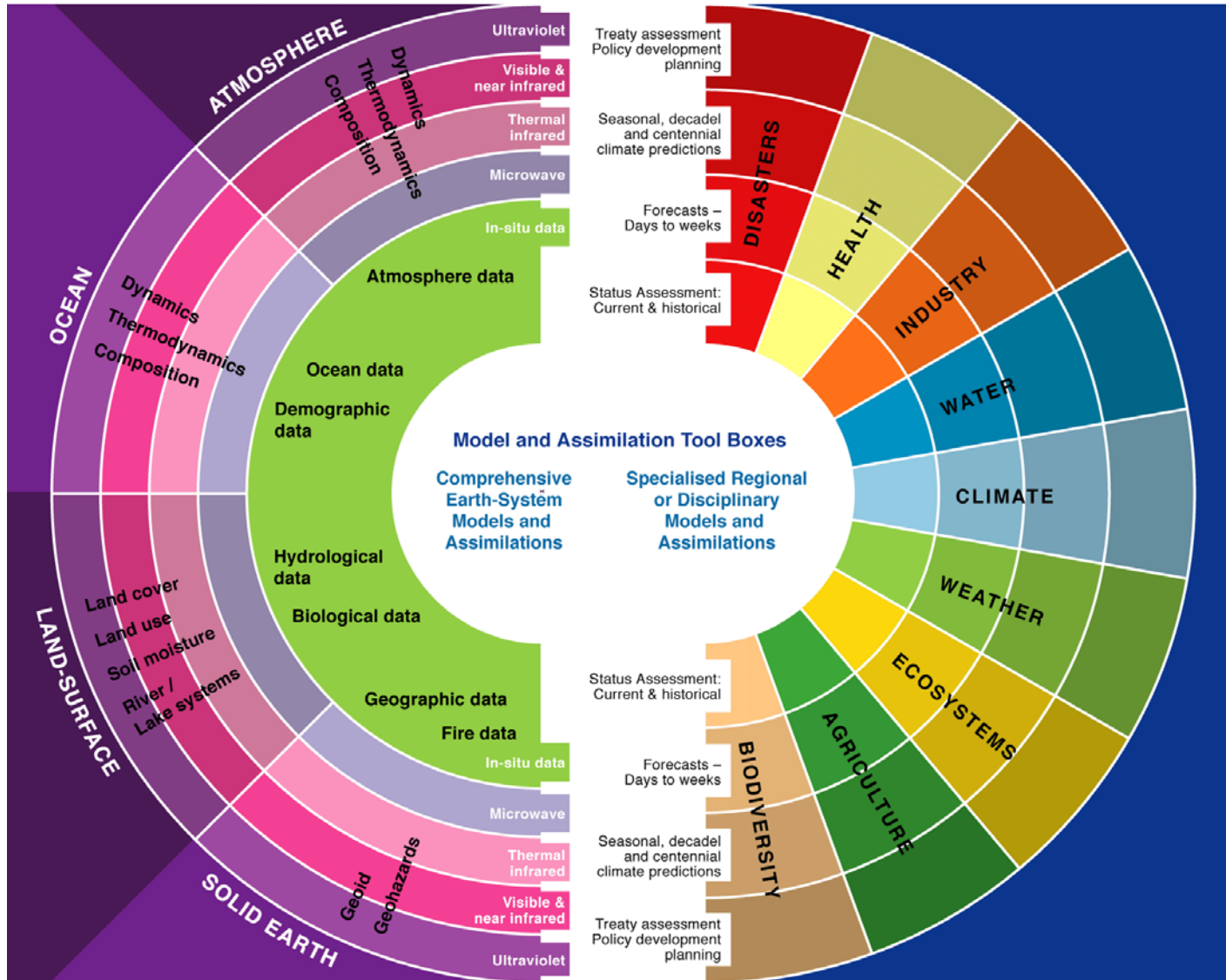


Oceanography



NCAR

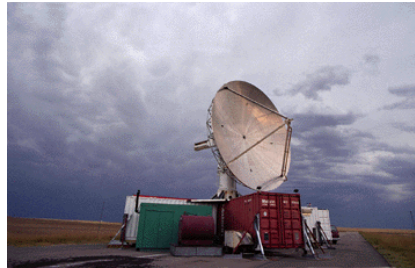
### The transformation of observations into predictive and current-status information



# Welcome



- NCAR is an integrator, innovator, and community builder
- The *facilitation* of community-wide discussions is a key component of our mission



# Workshop Focus



Goal: To develop a compelling plan – supported by the geosciences research community – to implement the “Petascale Collaboratory for the Geosciences” vision.

## Community dialogue about.....

- **Common needs for cyberinfrastructure, workforce development, community building, coordination and collaboration**
- **Developing the petascale scientific cyberinfrastructure to address unmet interdisciplinary and grand-challenge problems**
- **Positioning the geosciences community within the larger HPC landscape and integrating your community vision into a focused scientific research enterprise**



# Overarching Workshop Questions



1. What governing and allocation models make sense for the full Geosciences community?
2. How should a high-capability computing node be designed and optimized to support the geosciences community?
3. What is the “sweet spot” for capability computing in the geosciences that balances budgetary realities against geosciences research requirements?
4. What research opportunities, in addition to those described in the petascale reports, are being missed due to constraints of the current NSF computing infrastructure?
5. What is the best balance between capability and capacity for the geosciences?