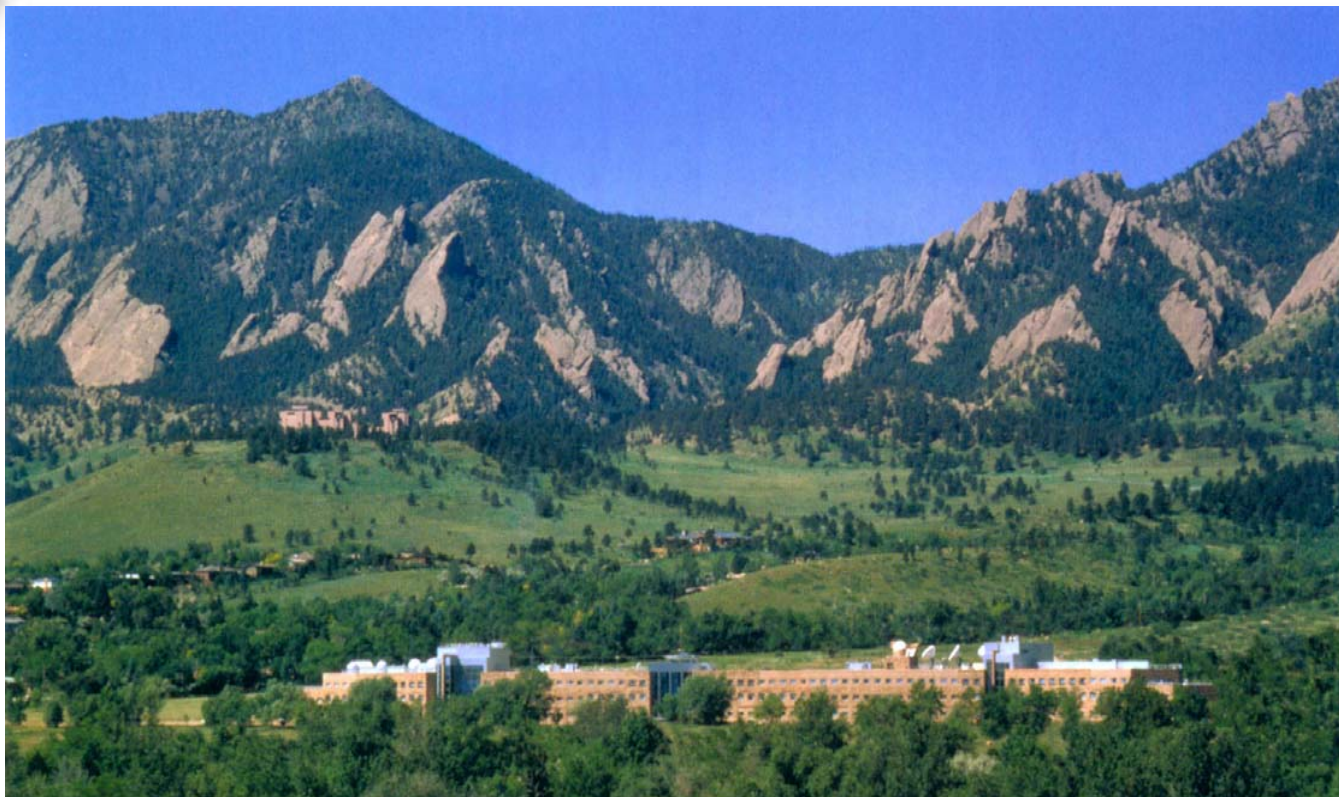




# Earth System Research Laboratory



**Mission:** To observe and understand the Earth system and to develop products through a commitment to research that will advance NOAA's environmental information and service on global-to-local scales.

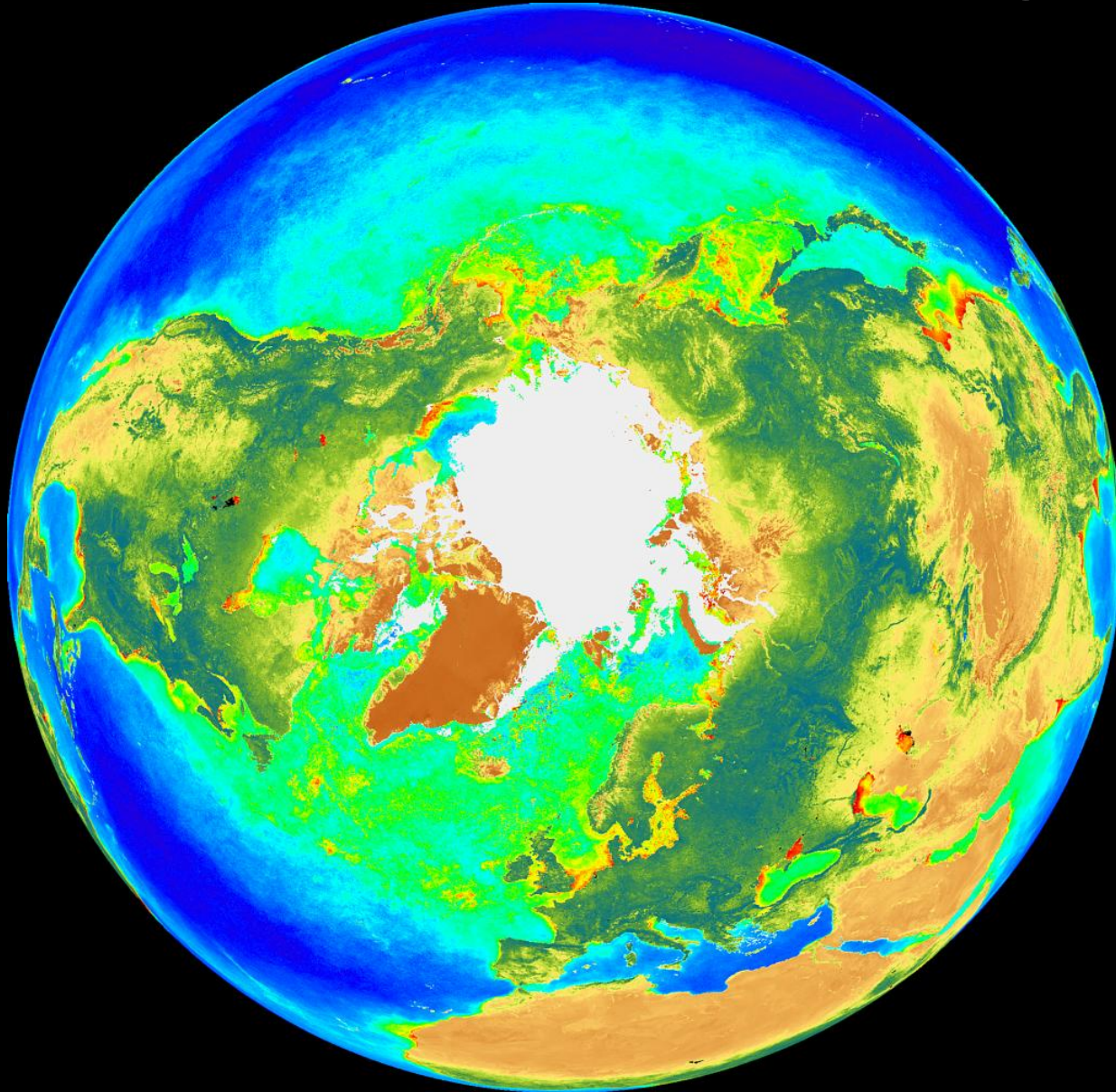




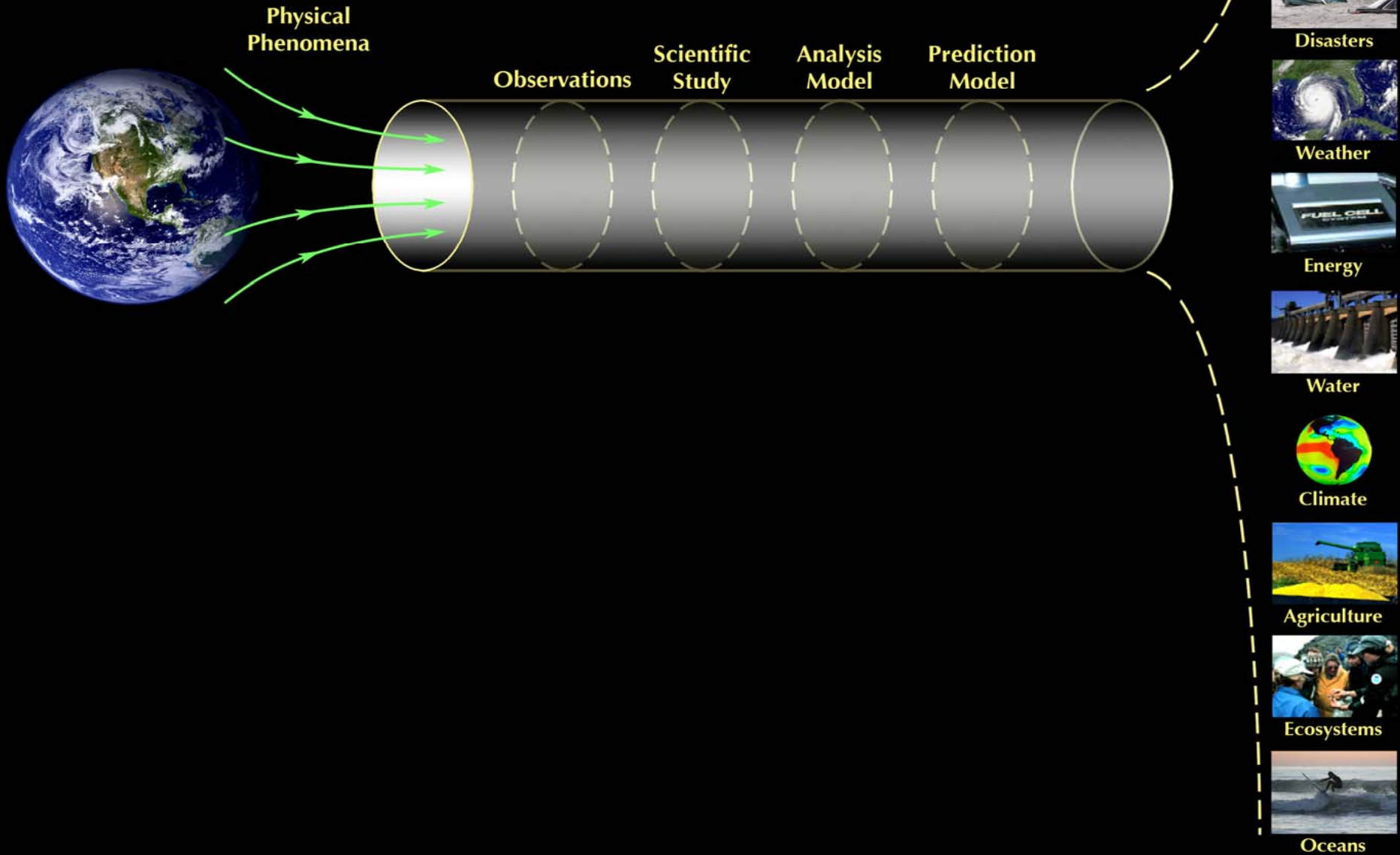
# NOAA Mission

- **To 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.

**Earth System Science: In order to understand any of it,  
we must understand how it ALL works together.**



# "End to End" Earth System Science



# “End to End” Earth System Science

## ESRL Strengths

Physical  
Phenomena

Observations

Scientific  
Study

Analysis  
Model

Prediction  
Model

Societal  
Benefits



Health



Disasters



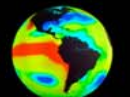
Weather



Energy



Water



Climate



Agriculture

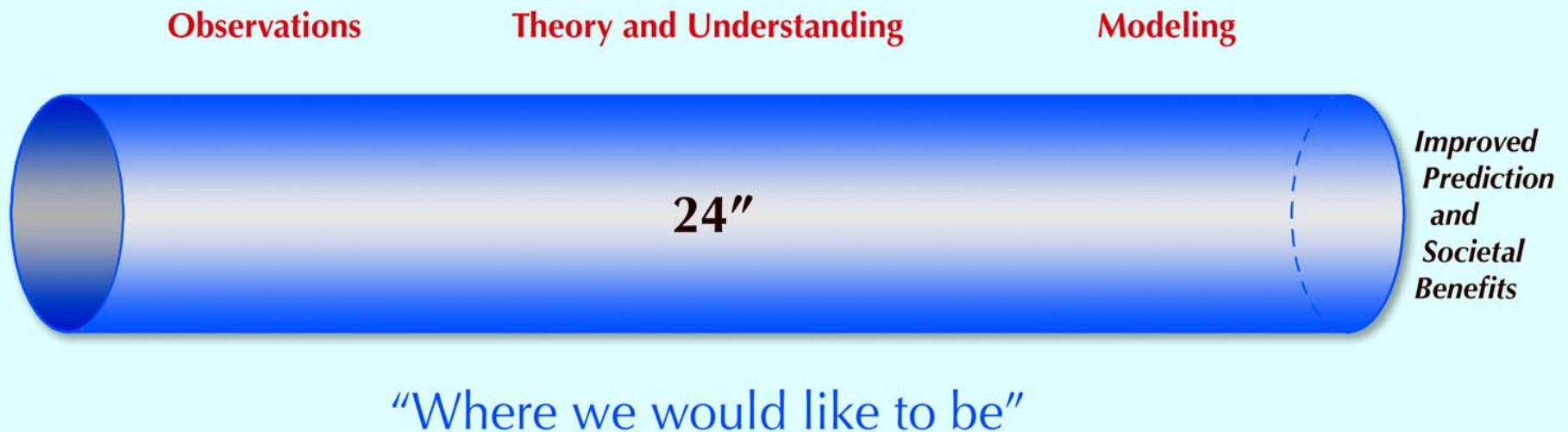
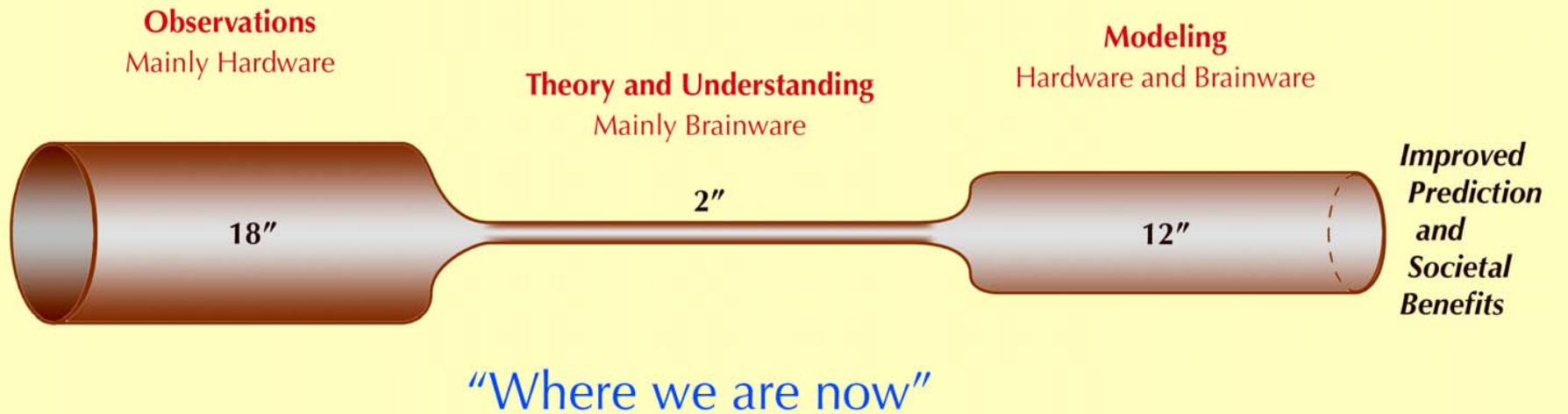


Ecosystems



Oceans

# Pipeline Theory of Improving Prediction





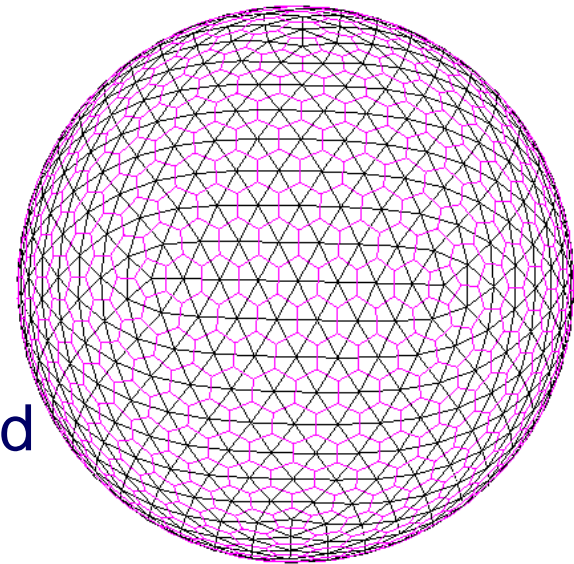
# Road Map of the high-end Earth System Modeling

*A plan by NOAA researchers to develop the worlds best model for weather and climate prediction.*

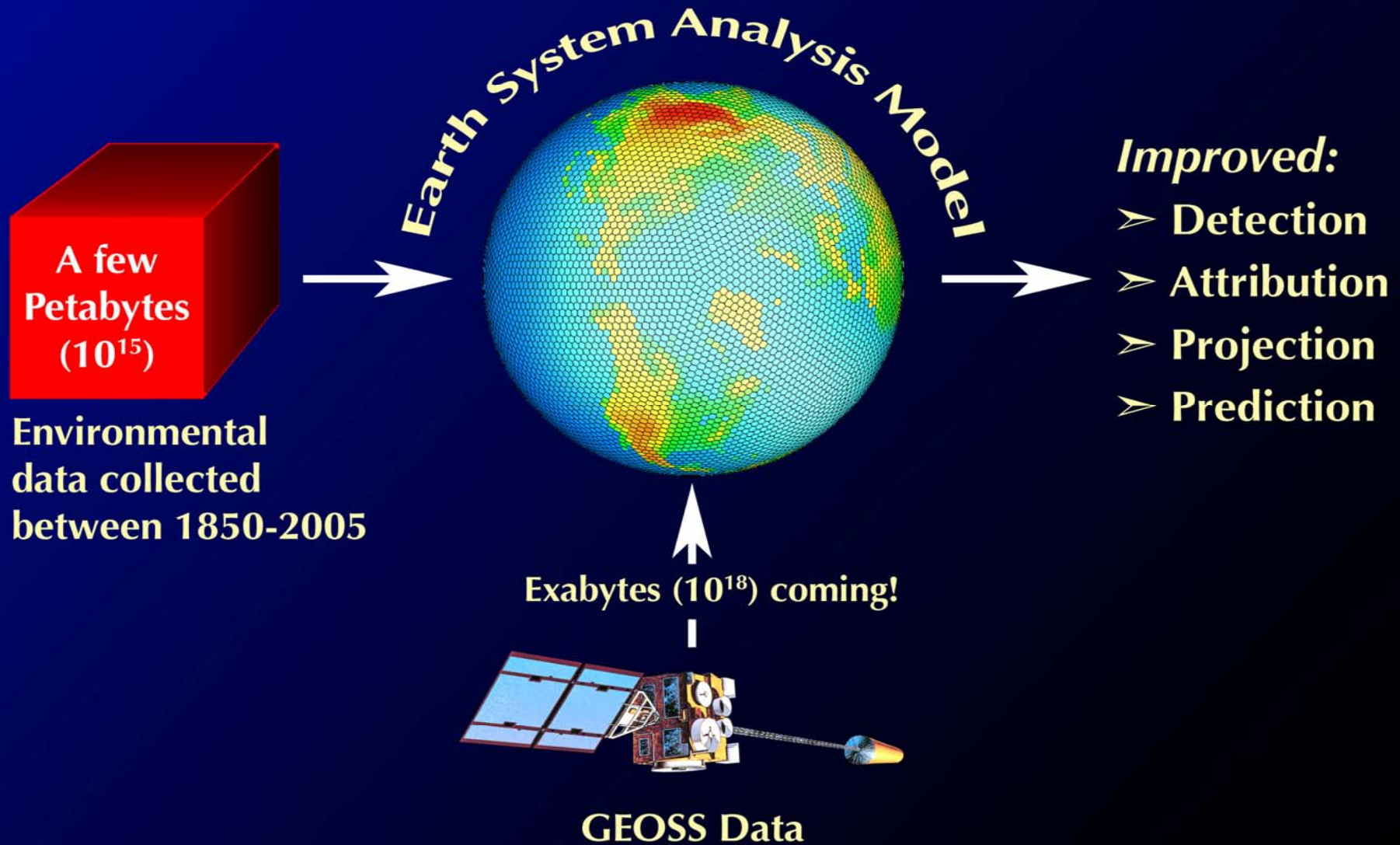
**2006-2013**: The “Geodesic Grid” Planet Simulator, 3rd generation *non-hydrostatic* finite-volume model with **1-4 km** or finer resolution.

## Primary model for:

- Medium Range Weather Prediction 0 to 2 weeks, including improve hurricane track and intensity.
- Seasonal to Inter-annual Prediction 2 weeks to 2 years
- Decadal to Centennial projection



# Predicting the Future Depends on Better understanding of the Past





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