Seamless Earth System Prediction / Representation of Scale Interactions

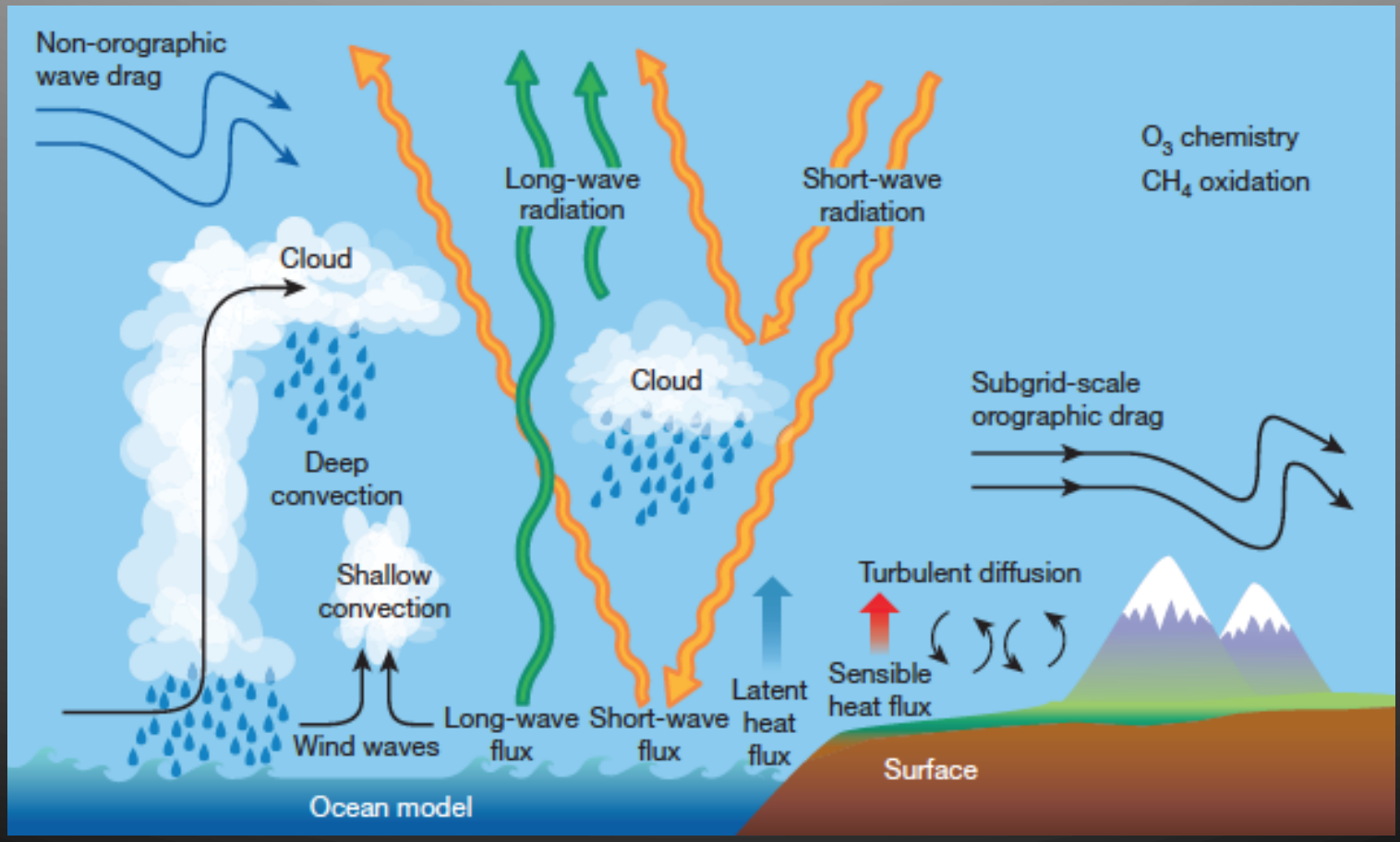
Breakout Group 1

How did we get here?

- Advances in our scientific understanding
- Improvements of modern computer architectures
- Increases in sophisticated observations

Scientific Understanding

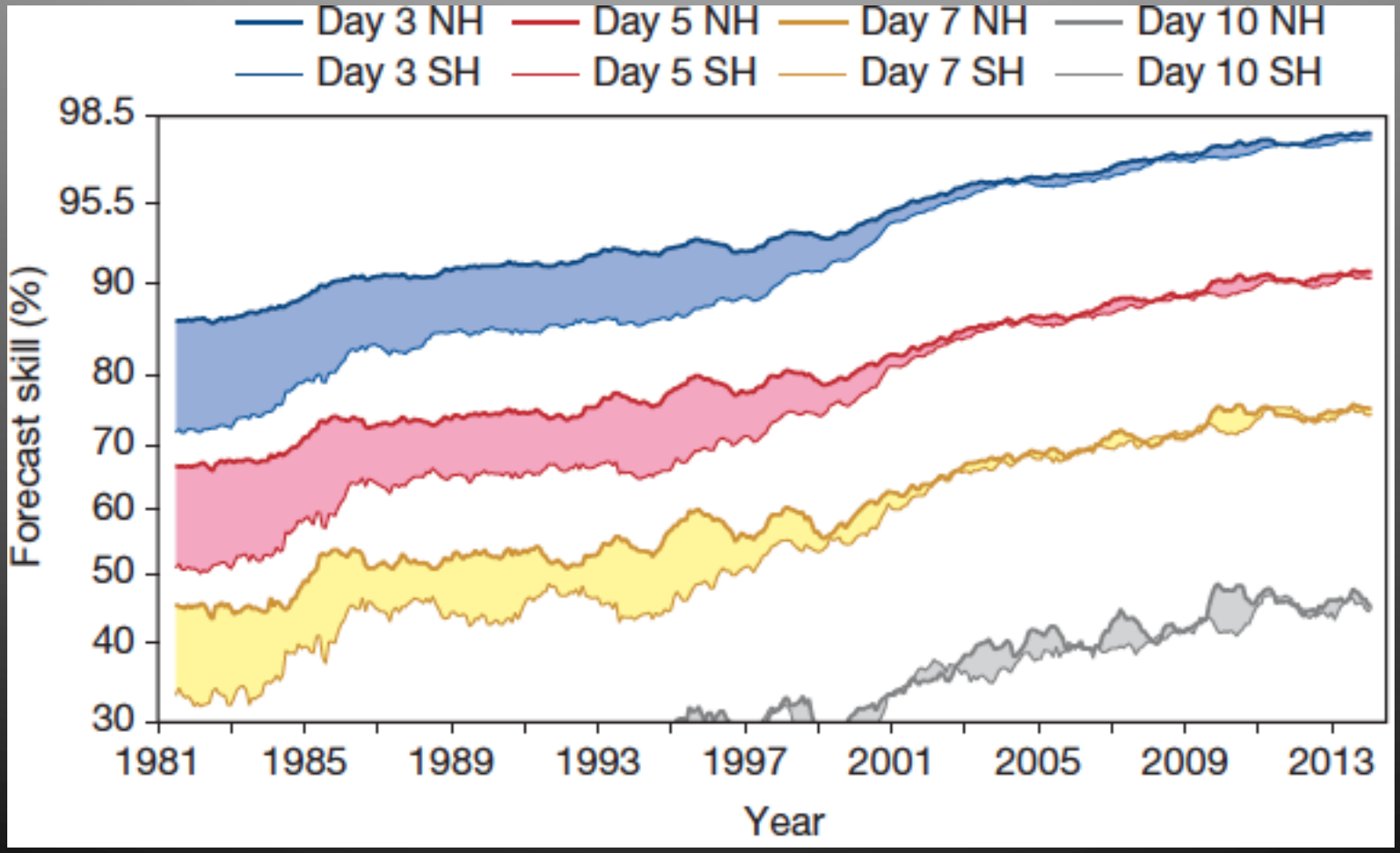
- Improvements in the representation of unresolved processes.



Bauer et al. [2015]

Scientific Understanding

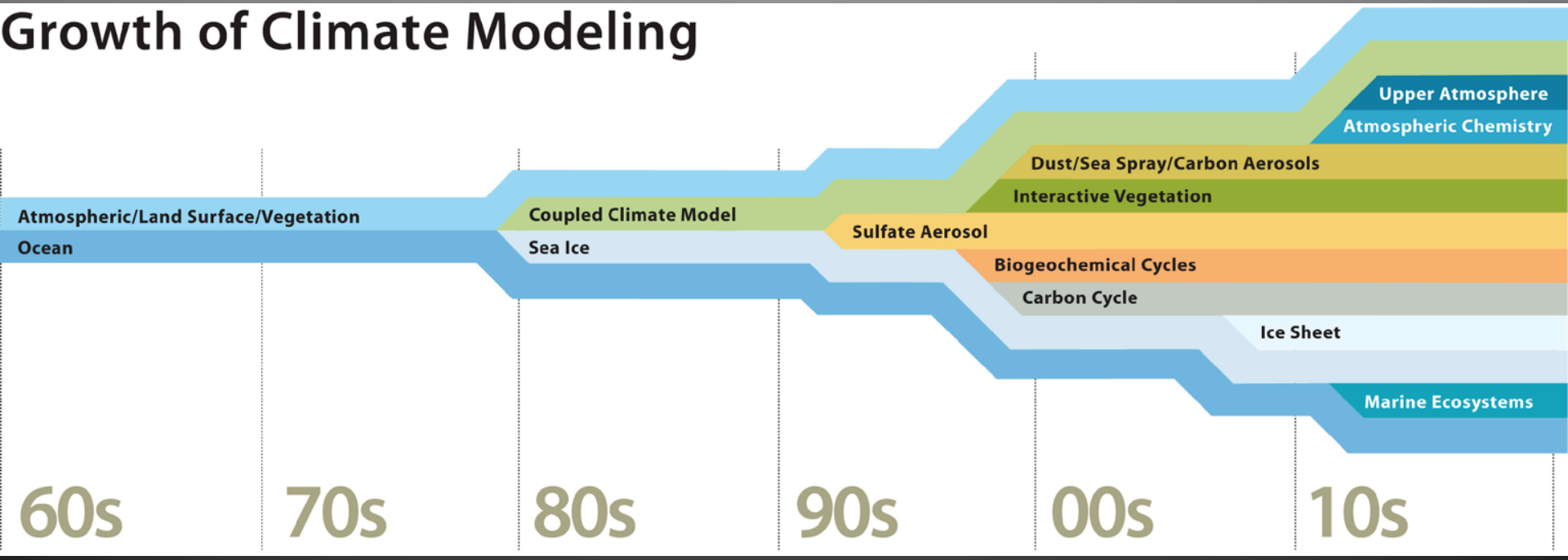
- Improvements in the representation of unresolved processes.



Bauer et al. [2015]

Scientific Understanding

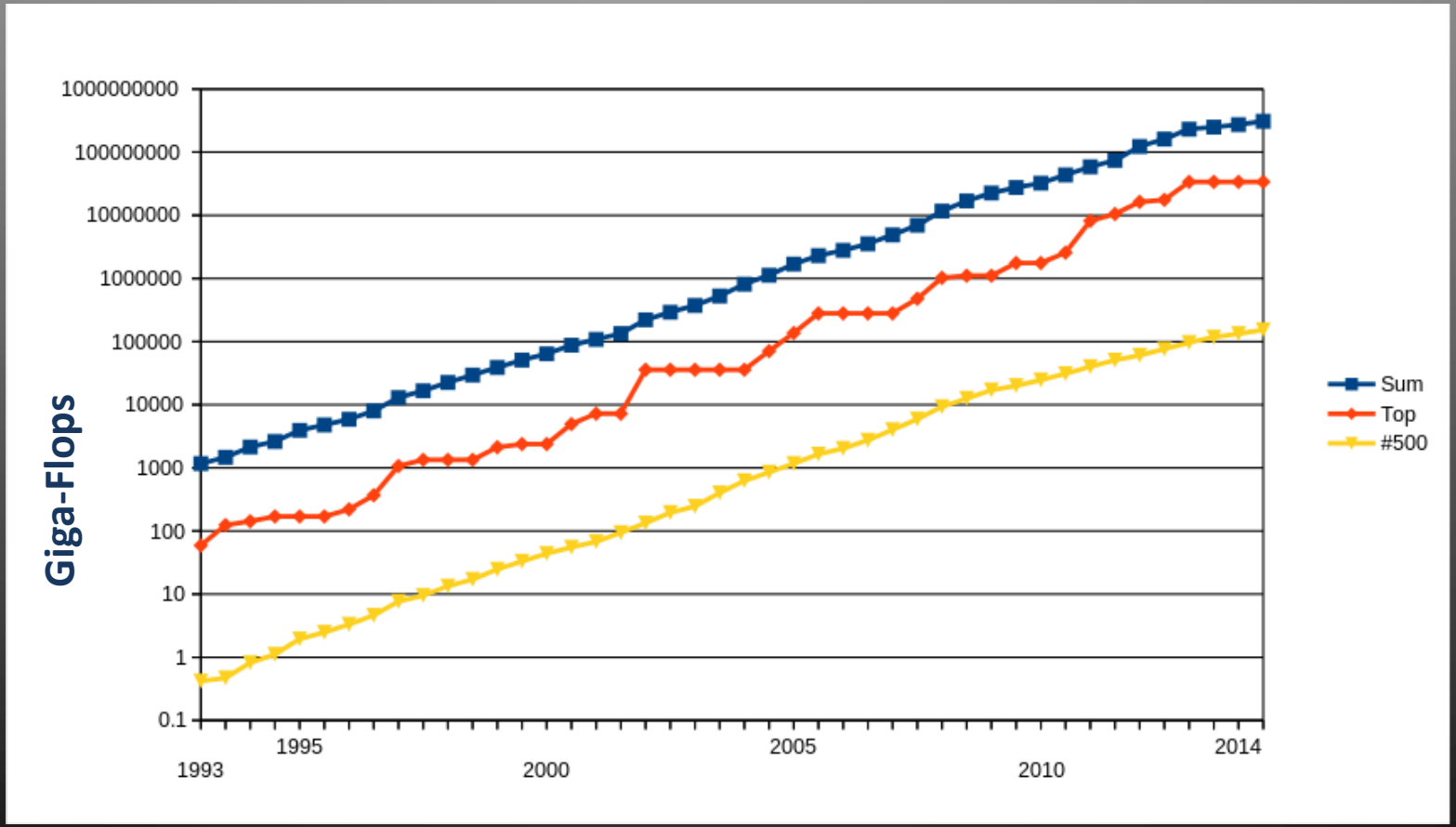
- Also, the inclusion of additional Earth system components.



https://www2.ucar.edu/climate/faq

Computational Advancements

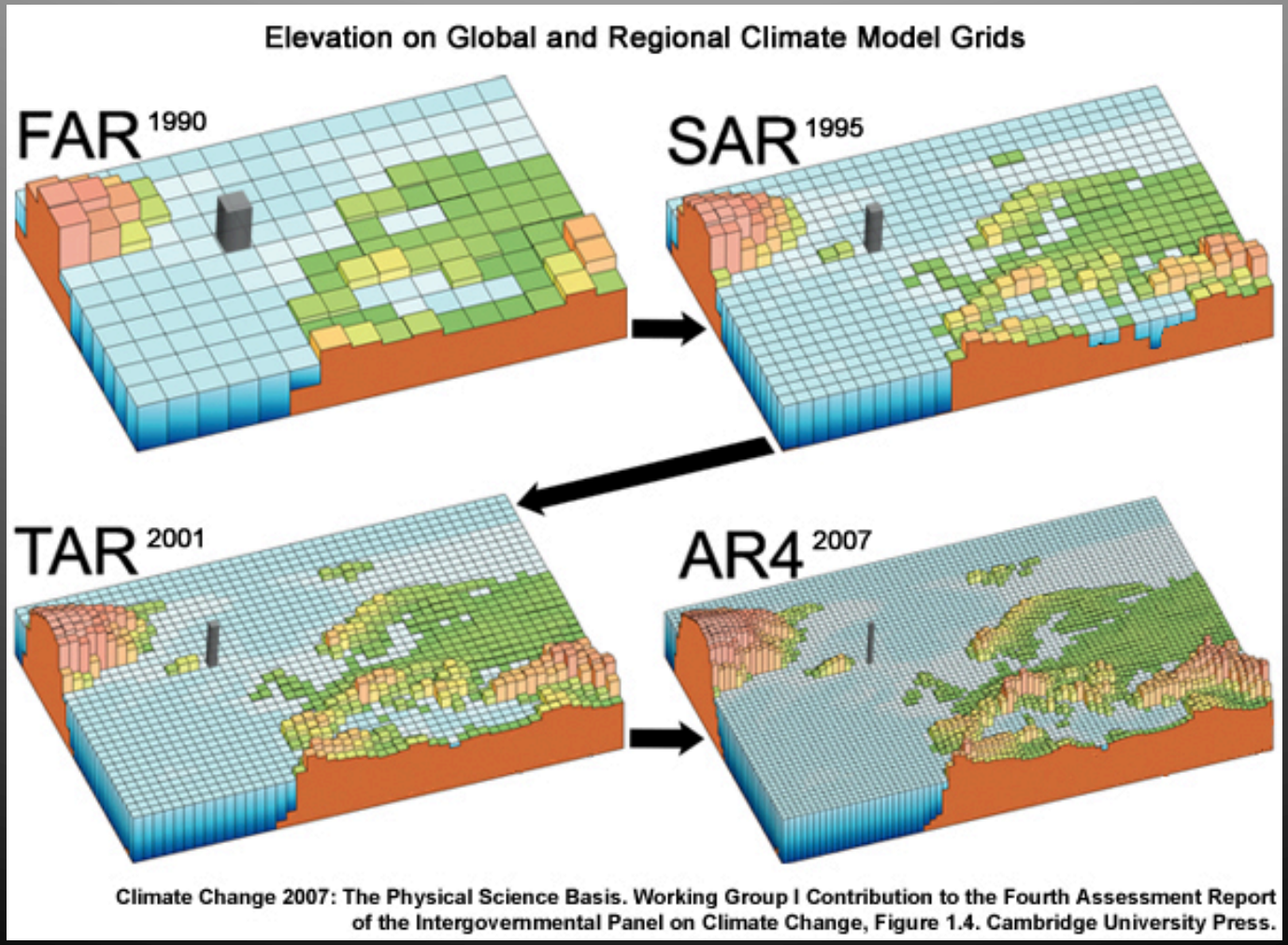
- Faster and faster computers.



https://en.wikipedia.org/wiki/TOP500

Computational Advancements

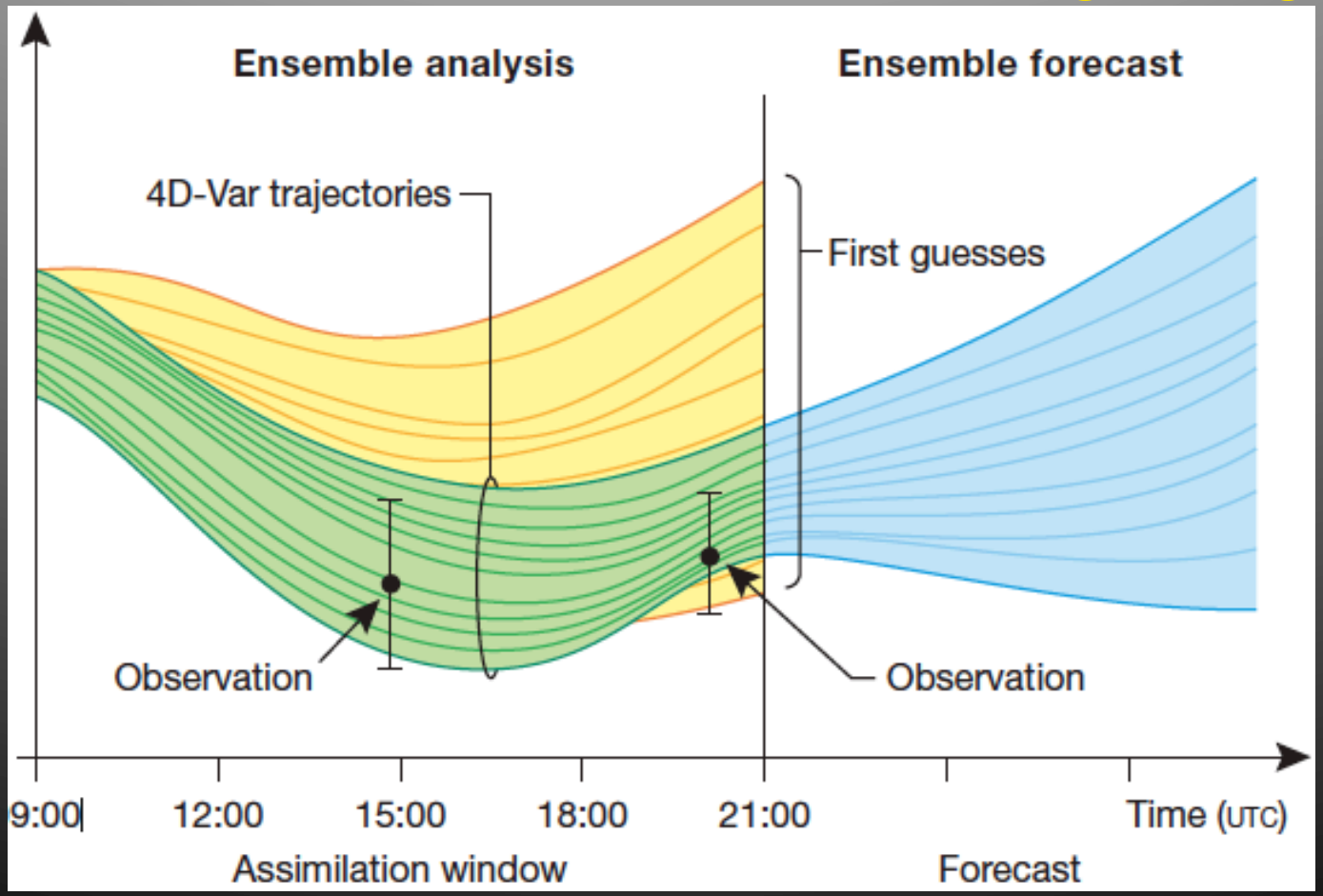
- Faster and faster computers – Allows for higher resolution



Climate Change 2007: The Physical Science Basis. Working Group I Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Figure 1.4. Cambridge University Press.

Computational Advancements

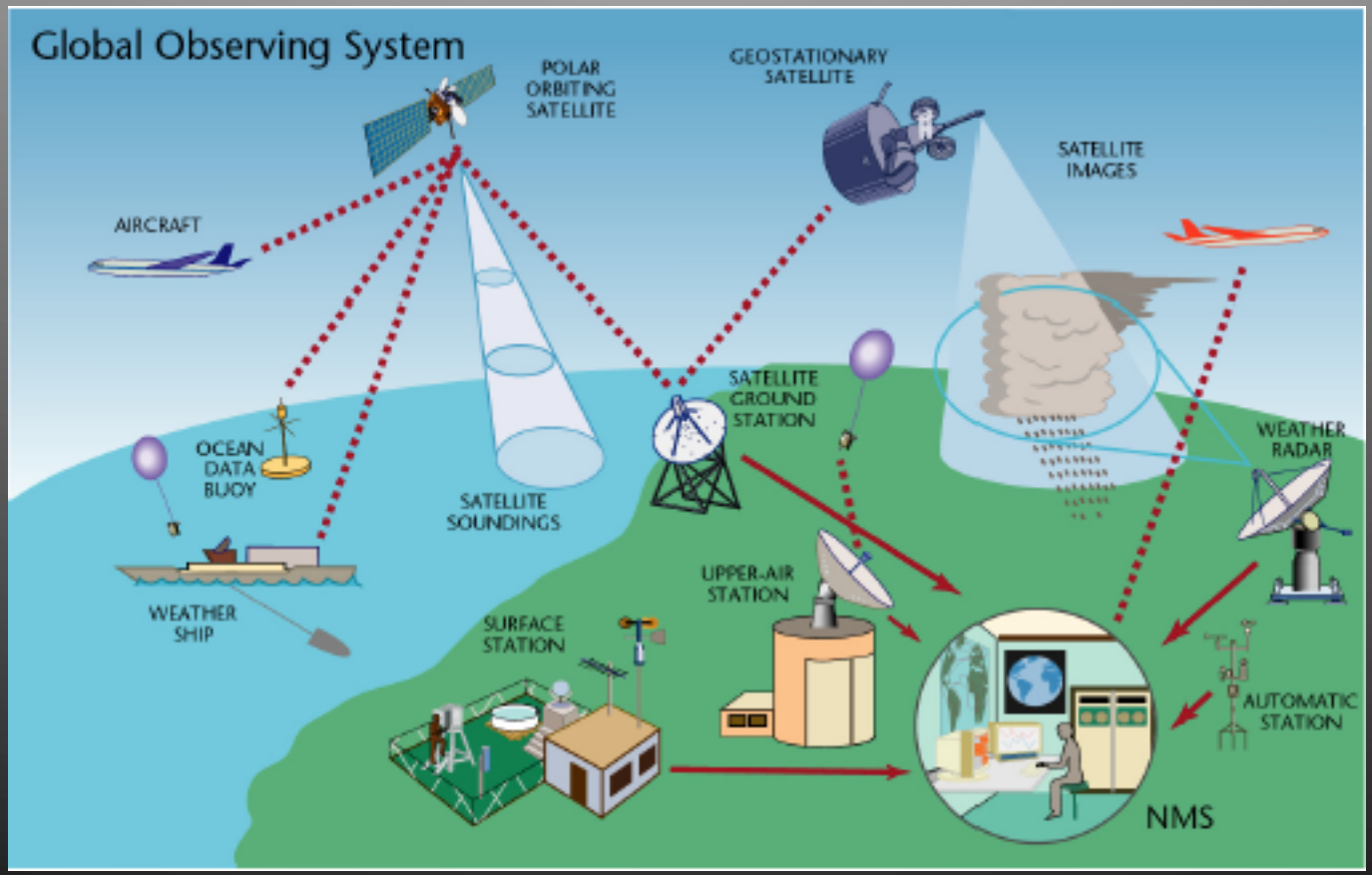
- More efficient scientific codes and software engineering.



Bauer et al. [2015]

Enhanced Observations

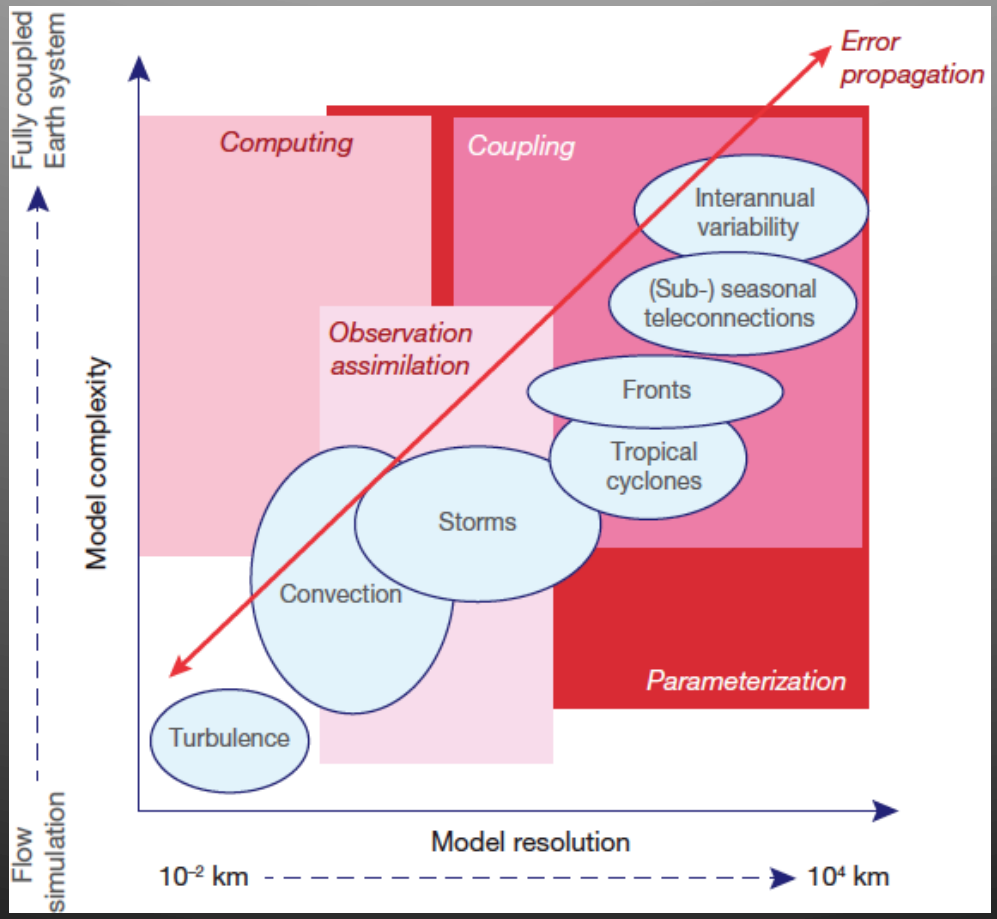
- More and improved observations



WMO - Seamless Prediction of the Earth System: from Minutes to Months

What does this mean?

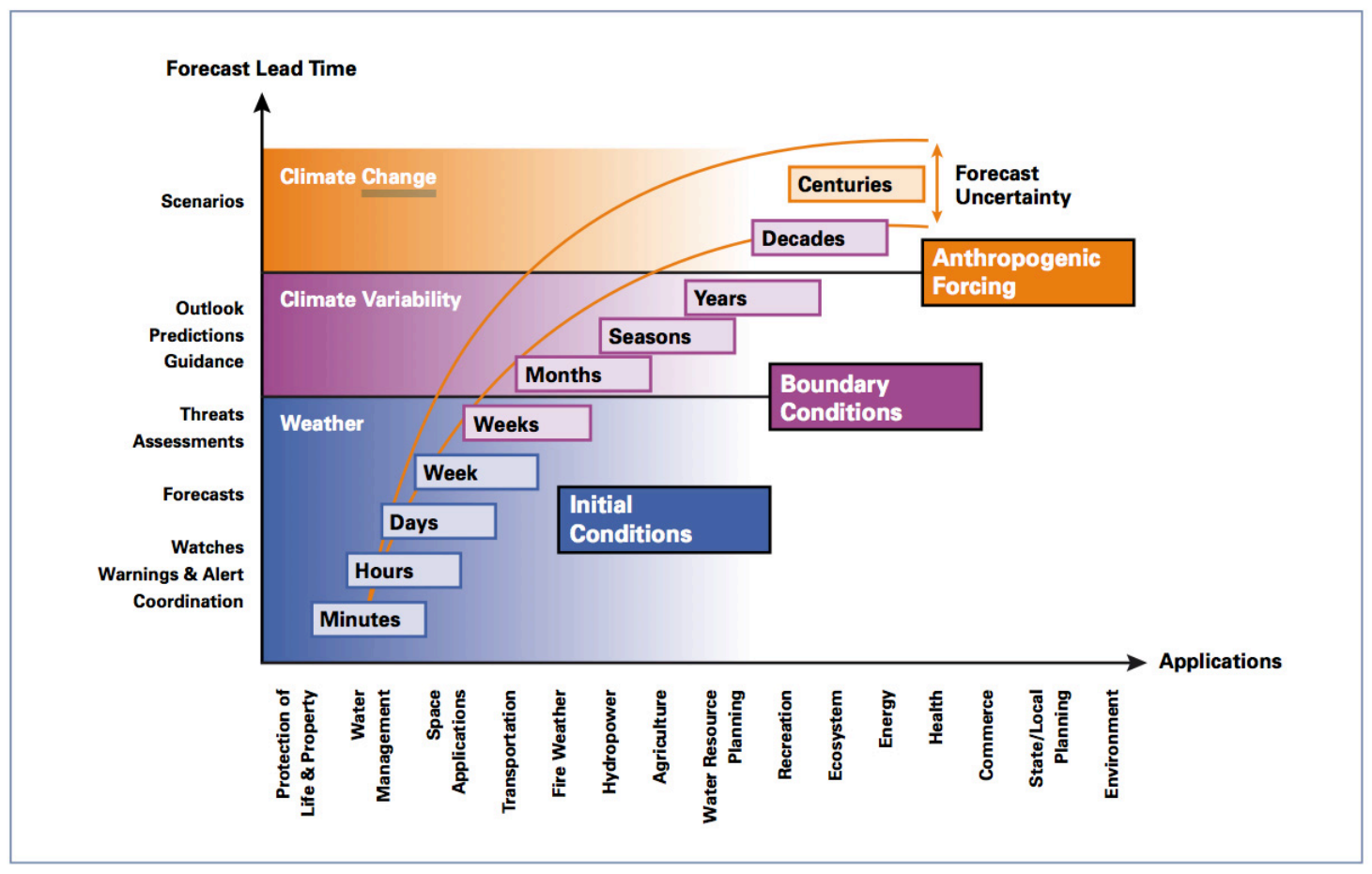
- Improved scale interactions



Bauer et al. [2015]

What does this mean?

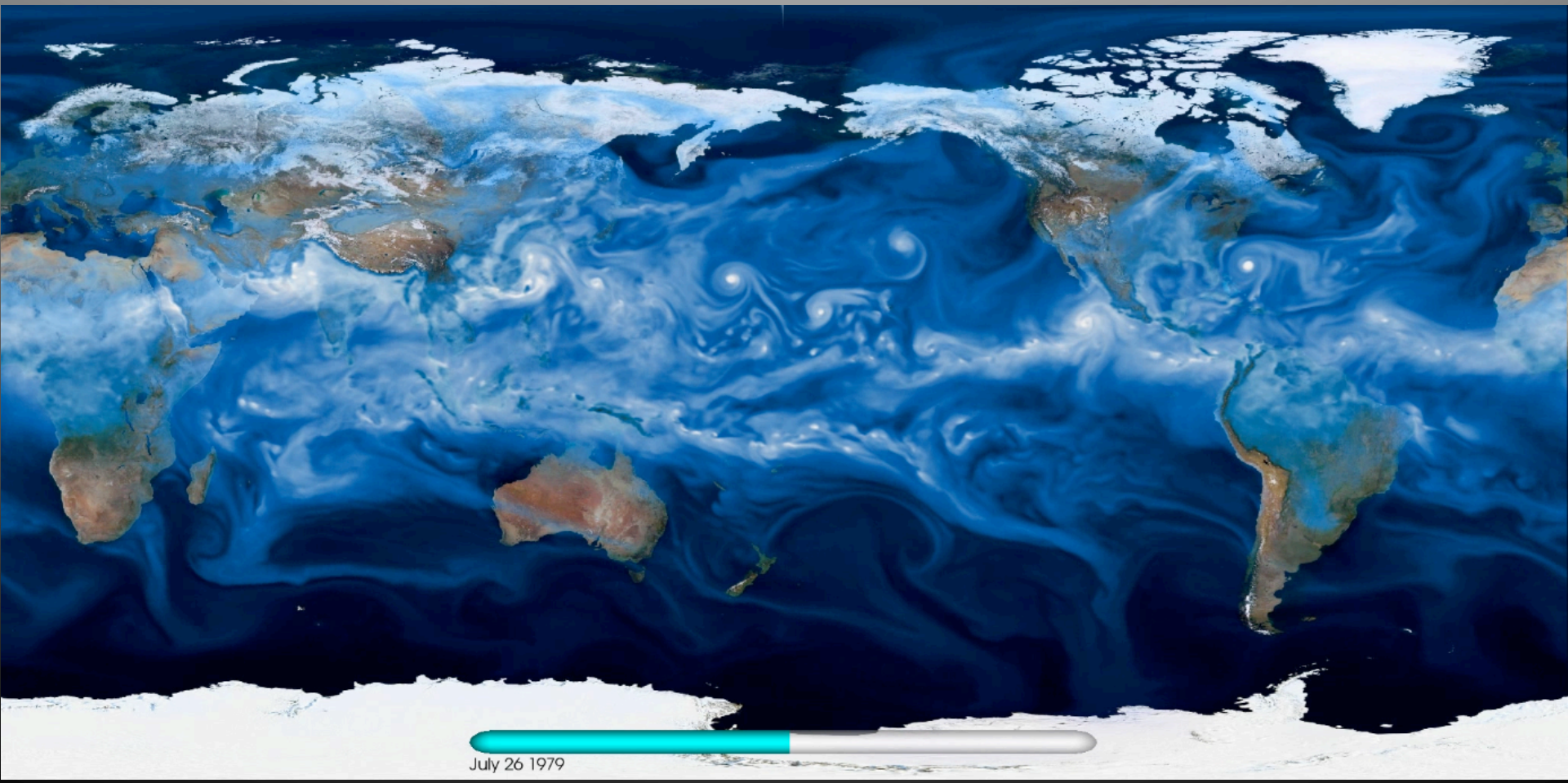
- Improved scale interactions



WMO

What does this mean?

- Improved scale interactions: https://www.youtube.com/watch?v=cNyftYdjt-Q



Wehner et al. [2014]

The future?

What are the main steps towards seamless environmental predictions?

What are the main process to be tackled?

What are requirements of obervational data?

How can developing countries contribute to seamless predictions?

…… …… ……..

Roadmap!

- Create roadmap towards seamless environmental predictions.
- Two future time steps:
  - 2020
  - 2030