

Report from The Advisory Committee on Environmental Research and Education (ERE)

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5 Topics covered on March 30-31

1. Gold Report White Paper
2. Sustainable Urban Systems
3. NSF 10 Big Ideas
4. Convergence
5. Resetting the Narrative

Gold Report White Paper

- Connect the ideas outlined in Gold report to scientific questions and actionable recommendations
 - Understanding the Challenges (improve our ability to forecast change)
 - Designing the Future and Changing the Forecast (resilient socio-environmental systems)
 - Enabling and Securing the Future (expand scientific capacity of the ERE community)



Resetting the Narrative

- Show more clearly how ERE interests are fundamental components of the national interest; e.g.,
 - links between environmental research and economic competitiveness
 - protect lives and property (e.g., improved forecasting extreme weather)
 - economic efficiency (e.g. weather forecasting to optimize shipping)
 - optimize management of natural resources (e.g. precision agriculture)
 - links with national security and social stability around the world.
- Big implications that require significant improvement in fundamental understanding of environmental systems

Sustainable Urban Systems

- Recognition that we are living in an urban planet, and urban systems are impacting human and planetary wellbeing at unprecedented levels
- Converging recommendations from the Gold Report with the 10 Big Ideas Initiative
- Charge: advance scientific understanding of *SUS* and inform actions in communities that advance human and planetary well-being

NSF 10 Big Ideas

Exploring potential interfaces with ERE, interested on implications on natural resources, focusing on:

- Rules of Life
- Harnessing Data
- Navigating the New Arctic
- Human Technology Frontier

The infographic is titled "Looking Ahead: Ten Big Ideas" and features the NSF logo in the top left. It is organized into two main sections: "RESEARCH IDEAS" and "PROCESS IDEAS".

RESEARCH IDEAS:

- Navigating the New Arctic:** A green-bordered card with an image of a polar bear in a snowy landscape.
- Harnessing Data for 21st Century Science and Engineering:** A blue-bordered card with the text "DATA SCIENCE" and "Harnessing Data for 21st Century Science and Engineering".
- Work at the Human-Technology Frontier: Shaping the Future:** A yellow-bordered card with an image of a hand reaching towards a digital interface.
- Understanding the Rules of Life: Predicting Phenotype:** A blue-bordered card with an image of colorful flowers.
- The Quantum Leap: Leading the Next Quantum Revolution:** An orange-bordered card with an image of a quantum circuit.
- Windows on the Universe: The Era of Multi-messenger Astrophysics:** A red-bordered card with an image of a space telescope.

PROCESS IDEAS:

- Growing Convergent Research at NSF:** A card with an image of colorful bokeh lights.
- NSF-Includes: Enhancing Science and Engineering through Diversity:** A card with an image of a map of the United States.
- Mid-scale Research Infrastructure:** A card with an image of a bridge over water.
- NSF 2050: Seeding Innovation:** A card with an image of a blue digital interface and the text "NSF 2050".

Convergence

- ERE can play a strong role in convergence *with intentionality*, because much of our research is driven by solving problems that require a deep interaction among disciplines that transcends many other interdisciplinary efforts.
- The Convergence Working Group asked ERE for help in providing additional examples they can use