



Outline

- **FY 2001 Budget**
- **USWRP and NSWP**
- **Announcement ITR for FY 2001**
- **Grand Challenges in Environmental Sciences**
- **Nano Science and Engineering**

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NSF Budget Request By Appropriation

Millions of Dollars

	FY 2000 Plan	FY 2001 Request	Percent Change
Research & Rel. Act.	\$2,958	\$3,541	19.7%
Educ. & Human Res.	\$691	\$729	5.5%
Major Rsrch. Equip.	\$94	\$139	48.2%
Salaries & Expenses	\$149	\$158	6.0%
Inspector General	\$5	\$6	15.2%
Total, NSF	\$3,897	\$4,572	17.3%

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STATUS NSF Budget for FY 2001

<u>NSF ACCT</u>	<u>C.P. FY99</u>	<u>C.P. FY00</u>	<u>REQ. FY01</u>	<u>HSE FY01</u>	<u>SEN FY01</u>
R&RA	\$2,809	\$2,958	\$3541	\$3136	\$3246
EHR	\$689	\$691	\$729	\$694	\$765
MRE	\$90	\$94	\$139	\$77	\$109
S&E	\$144	\$149	\$158	\$152	\$171
OIG	\$5	\$5	\$6	\$6	\$6
TOTAL	\$3,737	\$3,897	\$4572	\$4064	\$4297

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USWRP Research Priorities

- **Hurricanes**
- **Heavy Precipitation/Flooding**
- **Enabling Research (e.g. Predictability, Optimal Use of Data)**
- **Societal/Economic Impacts**

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Space Weather

refers to conditions on the sun and in the solar wind, magnetosphere, and ionosphere/thermosphere that can influence the performance and reliability of space-borne and ground-based technological systems, and endanger human life. Space weather storms can cause disruption of satellites, communications, navigation, and electric power distribution grids.

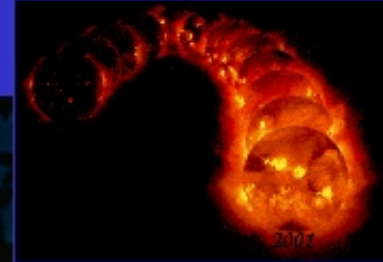


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Space Weather

- Society relies more and more on technological systems
- Most technological systems are becoming more vulnerable to space weather



- Space Architect study finds 13 clear S/W mission losses in last 16 years and others possibly S/W related.
- U.S. Aviation Underwriters puts satellite insurance claims from S/W at > \$500M in last four years. (More unclaimed)

- Currently > 600 satellites worth \$50 - \$100 B in orbit.
- Anticipate 1,550 payloads launched in next 10 years.

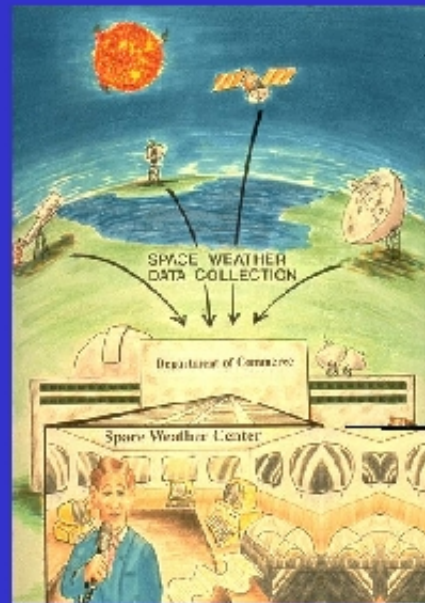
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National Space Weather Program VISION

An active, synergistic, interagency, “single-minded” system to achieve the goal of timely, accurate, and reliable space environment observations, specifications, and forecasts in the next 10 years



US Agencies: DOD, NASA, NOAA

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NSF 2001 Budget Request

- **Terascale Computer System**
 - \$45M proposed budget
 - Similar to last year, single site 5 TFLOP/s
- **Information Technology Research**
 - \$100M increase proposed for CISE, \$90M distributed across other NSF Directorates
 - Much expanded technically
 - Program announcement will be released very soon

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ITR 2001 Research Areas

- 1. System Design and Implementation**
- 2. People and Social Groups
Interacting with Computers and
Infrastructure**
- 3. Information Management**
- 4. Applications in Science and
Engineering**
- 5. Scalable Information Infrastructure
for Pervasive Computing and
Access**

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Geosciences Specific Topics

- Geosciences solicits proposals to develop or enhance:
 - computer codes representing complex geophysical systems that demonstrate accuracy, scalability, and efficiency
 - techniques for efficient and effective data assimilation into predictive and diagnostic models
 - knowledge discovery and data sharing in current and retrospective data sets (local and distributed), including the use of digital libraries and Collaboratories for education and research
 - easy-to-use visualization tools that will allow for the display of complex and disparate data sets
- Partnerships between the computer science, applied mathematicians and geoscientists
- Collaborations in the Geosciences community involving the existing Centers and Research Groups and the academic community.



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Anticipated ITR 2001 Modes of Funding

- **Three sizes of grants**
 - 40% for single-PI projects (<\$500K total)
 - 40% small groups (<\$1M/yr up to 5 years)
 - 20% large groups (>\$1M/yr up to 5 years)
- **May change, e.g. due to quality of proposals or final actual budget allocation!**

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Schedule Pre-proposals

- **Pre-proposal Deadlines:**
 - **Small projects: No pre-proposals are required.**
 - **Group projects: Pre-proposals are mandatory and are due by November 27-29, 2000.**
 - **Large projects: Pre-proposals are mandatory and are due by December 4-6, 2000.**
- **Pre-proposal review feedback is binding**
 - **Only accept invited pre-proposals**
 - **NSF will return feedback to Group pre-proposal PIs by the week of February 26, 2001, and to Large pre-proposal PIs by the week of March 5, 2001.**

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Schedule Full Proposals

- **Full Proposal Deadlines:**
 - Small projects: Full proposals are due by January 16-18, 2001.
 - Group projects: Full proposals are due by April 9-11, 2001.
 - Large projects: Full proposals are due by April 23-25, 2001.

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Grand Challenges in
Environmental Sciences
NRC Report
September 2000

- [Grand Challenges in Environmental Sciences \(2000\)](#)
[National Research Council](#)
- [For a short summary see the Publication Announcement for the report](#)

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NSF Requested Report

NSF asked the following question:

“Of the many scientific challenges related to the environment, which few offer the greatest potential for investment; that is , what are the ‘grand challenges’ in environmental science?”

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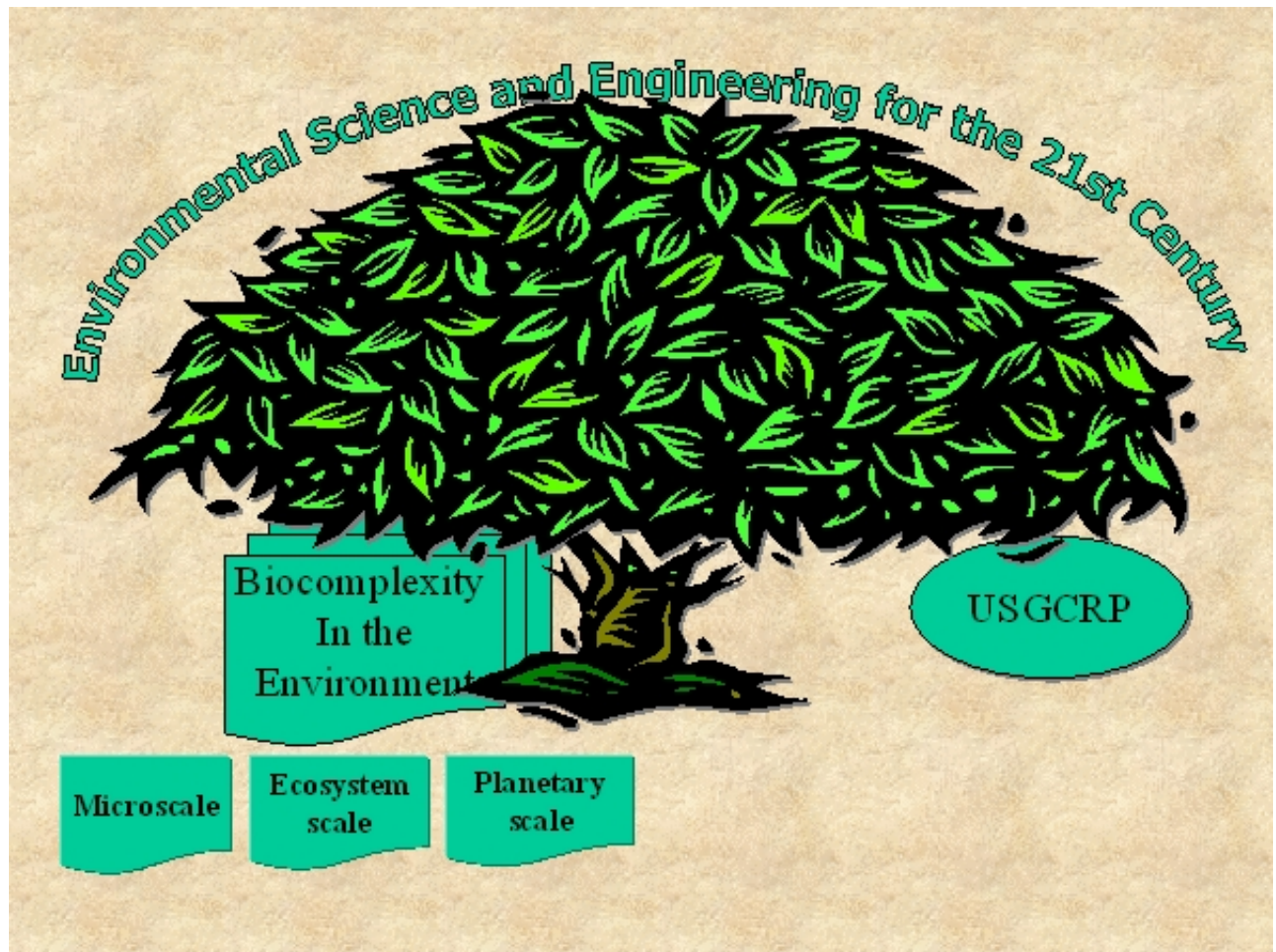
Attaining the needed environmental knowledge for the next generation will depend on the active pursuit of all eight grand challenges

- **Biogeochemical Cycles**
- **Biological Diversity and Ecosystem Functioning**
- **Climate Variability**
- **Hydrologic Forecasting**
- **Infectious Disease and the Environment**
- **Institutions and Resource Use**
- **Land-Use Dynamics**
- **Reinventing the Use of Materials**

Recommended for
Immediate Research
Investment

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Current Announcements for NNI FY 2001 (see nano.gov)

- **NSF: Nanoscale Science and Engineering (NSE)** for interdisciplinary team research, centers and exploratory research;
www.nsf.gov/nan
- **DOD: Defense University Research Initiatives on NanoTechnology (DURINT):**
for research projects and equipment
www.onr.navy.mil/sci_tech/special/durint/durint01baa.htm

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Nanoscale Science and Engineering

NSF areas of focus in FY 2001

- **Nano-Biotechnology**
- **New Phenomena and Structures, Quantum Control**
- **Integration at the Nanoscale: Systems and Architectures**
- **Interfaces in Environment at Nanoscale**
- **Nanoscale Theory, Modeling and Simulations**
- **Education and Society Implications**

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Questions or Comments

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