

# U.S. Global Change Research Program

## Renewable Natural Resources Foundation

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United States  
Global Change  
Research Program



# USGCRP Overview

- USGCRP began as a Presidential Initiative in 1989
- It was mandated by Congress in the Global Change Research Act (GCRA) of 1990 (P.L. 101 – 606)

**Vision:** A nation, globally engaged and guided by science, meeting the challenges of climate and global change

**Mission:** To build a knowledge base that informs human response to climate and global change through coordinated and integrated Federal programs of research, education, communication and decision support



# Three Pillars for USGCRP

GCRA	USGCRP Strategic Plan for 2012-2021	Administration Priorities (e.g. OMB/OSTP guidance, President's Climate Action Plan, EOs)
Understand	Advance Science	Increase understanding of climate change impacts
Predict	Advance Science	Forecasts and projections in areas like SLR, drought,
Assess	Conduct Sustained Assessments	Assess climate change impacts in the US (e.g. NCA, Health, Food Security)
Respond	Inform Decisions Communicate and Educate	Develop tools for climate-relevant decision making (e.g. Climate Data Initiative, Climate Resilience Tool Kit)



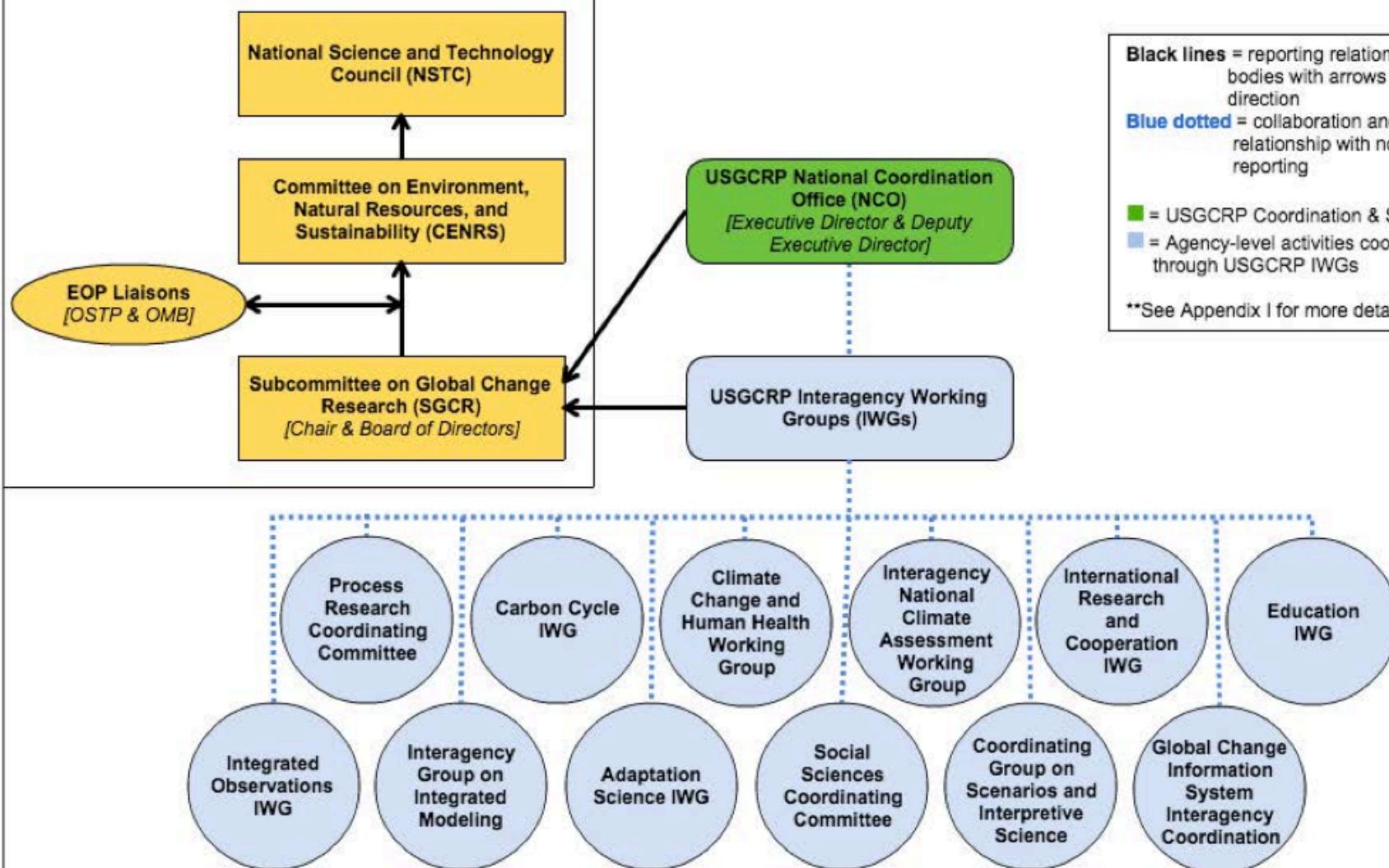
■ = Executive Branch Science & Technology Bodies

## Structure of the U.S. Global Change Research Program

**Black lines** = reporting relationship between bodies with arrows to note direction  
**Blue dotted** = collaboration and coordination relationship with no direct reporting

■ = USGCRP Coordination & Support  
 ■ = Agency-level activities coordinated through USGCRP IWGs

\*\*See Appendix I for more detail



# The Strategic Plan for 2012-2021

Advance Science	Inform Decisions	Conduct Sustained Assessment	Communicate & Educate
Earth System Understanding		Scientific Integration	Strengthen C & E Research
Science for Adaptation & Mitigation	Inform Adaptation Decisions Inform Mitigation Decisions	Inform Responses	Increase Engagement
Integrated Observations		Ongoing Assessment Capacity	Cultivate Scientific Workforce
Integrated Modeling		Evaluate Progress	
Info Management & Sharing	Enhance Global Change Information		Reach Diverse Audiences





# Agency Foundational Activities

- Individual and joint science solicitations
- Space based and in-situ observation systems
- Modeling—community climate models, integrated assessment models, Coupled Model Intercomparisons, NA Multi-model Ensembles
- Regional science capabilities
- Agency and EOP-agency information management including for decision makers
- Climate change education grants, professional development and resources for informal educators



# USGCRP Interagency Priorities

- Require a collective effort, not a single agency alone
- Depend on single agency foundational activities
- Tip of the iceberg that depends on the rest of the Program
- Build on prior efforts and pave the way for future efforts
- Tie to PCAP and the annual OMB/OSTP S & T Memo, which provides guidance to the member agencies



# USGCRP Interagency Priorities and some of their focal areas

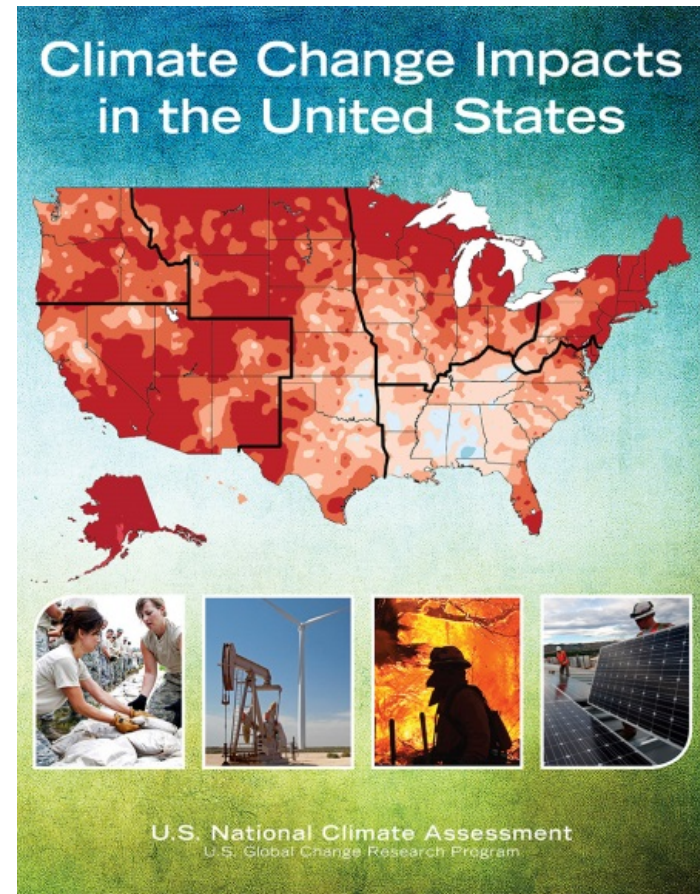
- Extremes, thresholds and tipping points
  - Drought, Arctic
- Coupled Earth and Human Systems
  - Intra-seasonal to centennial predictability, including physical-biological and human system interactions
- Actionable Science for Informed Policy Making and Management
  - Science for agency adaptation planning, adaptation resource
- Reaching Decision Makers
  - NCA, Global Change Information System, Indicators, Citizen Science and Next Generation Science Standards





# Outline for Third NCA Report

- Climate Change and the American People
- Overview and Report Findings
- Our Changing Climate
- Sectors
- Regions
- Response Strategies
- Appendices



Read online or download at:

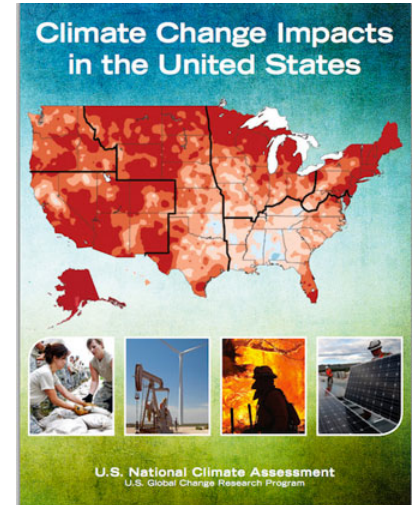
<http://nca2014.globalchange.gov>



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# The 3<sup>rd</sup> National Climate Assessment

- Broad & deep science foundation
  - 300 scientists, > 25 technical input reports, 10 sets of regional climate & SLR scenarios (publicly available)
- Accessible and credible
  - Searchable, sortable NCA 3 website; social media; high level findings linked to science foundation by GCIS
- Widely cited
  - 1000's of national & regional print/online, tv/video, radio/audio articles, 443K Web hits (week one); 3.3 GB downloaded PDFs; 40,000 Facebook views of NCA-posts & 100,000 climate-related tweets on roll-out day
- Special assessment: Climate Change and Human Health
- Products using NCA materials
  - Teaching Resources, Adaptation Resources, FEMA Regional Climate Change Readiness and Resilience Exercises, Risky Business Climate Risk Assessment for the US used NCA scenarios



**Professional  
Societies**

**Faith**

**Issue-Based  
NGOs  
(Enviro,  
Health, etc.)**

**Business &  
Industry**

**NCAnet: 150+**

**Academia &  
Education**

**State & Local  
Government**

**Tribal**



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# Global Climate Change, Food Security and the U.S. Food System

## Report Scope

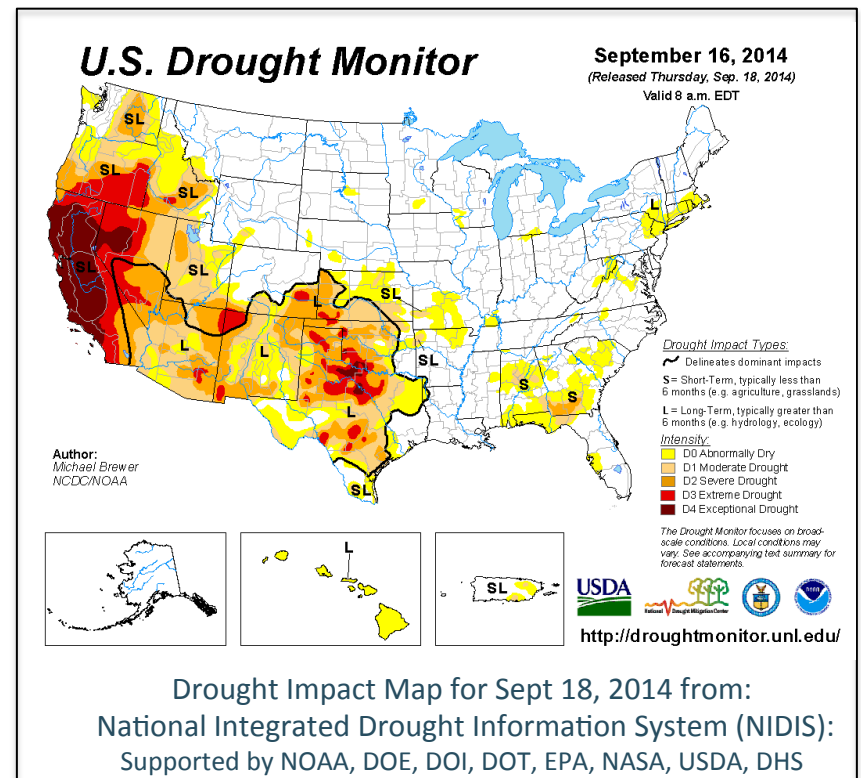
- Effects of climate change on the global food system and global food security.
- Historical and future relationships identify likely changes to global food security through mid-century and 2100.
- Effects on the U.S. are considered based on its role as a major food importer, exporter, and source of food aid.
- Not a regional treatment; not about U.S. food insecurity.
- This assessment has been produced by suggestion of the National Climate Assessment.

Agency technical review and peer review of draft document finishing now, public comment period anticipated in the spring



## Water Cycle Extremes: Drought,

- Multi-agency support for US GEWEX (Global Energy & Water Exchanges) & US CLIVAR (Climate Ocean Variability) provides strong research framework
- New observations in 2014 (e.g. GPM) and planned for 2015 (e.g. ACAPEX, SMAP, CATS) provide important new data or data continuity
- Draws on improvements in near-term modeling (e.g. NMME)
- Agencies and their regional science and coordination networks are cooperating on tool development (e.g. indicators for use on NIDIS, Drought Risk Atlas)



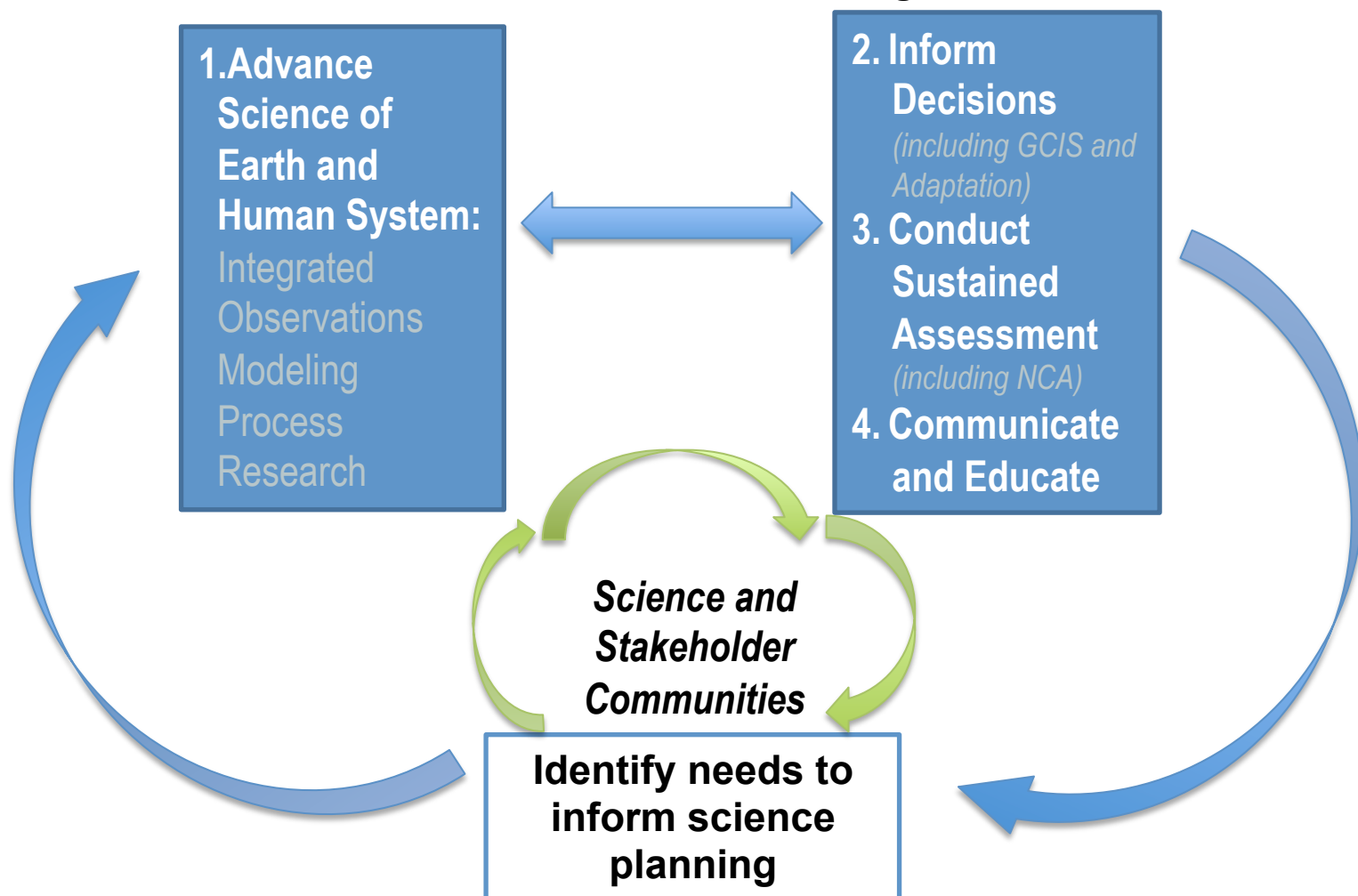
*GPM: Global Precipitation Measurement*  
*ACAPEX: ARM Cloud Aerosol Precipitation Experiment*  
*SMAP: Soil Moisture Active Passive*  
*CATS: Cloud-Aerosol Transport System*



# USGCRP Research Enterprise

Create new knowledge

Translate, provide and assess  
knowledge for societal use





# Resources and Links

NCA: <http://NCA2014.globalchange.gov>

NCA Net: <http://ncanet.usgcrp.gov/partners>

Regional Climate Scenarios: <http://scenarios.globalchange.gov/scenarios/climate>

Global Change Information System: [data.globalchange.gov](http://data.globalchange.gov)

Adaptation Resources:

<http://www.globalchange.gov/browse/federal-adaptation-resources>

Our Changing Planet:

<http://www.globalchange.gov/browse/reports/our-changing-planet-FY-2015>

Climate Resilience Tool Kit: [toolkit.climate.gov](http://toolkit.climate.gov)

Climate Data Initiative:

<http://www.whitehouse.gov/sites/default/files/microsites/ostp/cdi>

Climate Education, Literacy and Training Initiative:

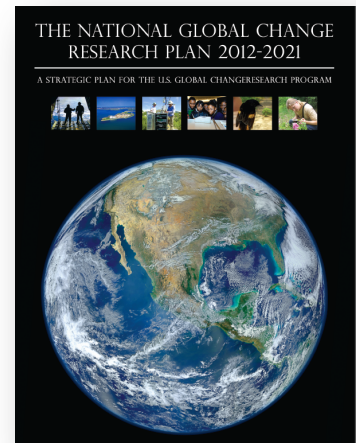
<http://www.whitehouse.gov/sites/default/files/microsites/ostp/climateed-dec-3-2014.pdf>



# USGCRP Decadal Strategic Plan

**Overview:** <http://globalchange.gov/what-we-do/strategic-planning>

**Document:** <http://library.globalchange.gov/u-s-global-change-research-program-strategic-plan-2012-2021>



## 2012-2021 Strategic Plan Goals

- **Goal 1 - Advance Science:** Advance scientific knowledge of the integrated natural and human components of the Earth system.
- **Goal 2 - Inform Decisions:** Provide the scientific basis to inform and enable timely decisions on adaptation and mitigation.
- **Goal 3 - Conduct Sustained Assessments:** Build sustained assessment capacity that improves the Nation's ability to understand, anticipate, and respond to global change impacts and vulnerabilities.
- **Goal 4 - Communicate & Educate:** Advance communications and education to broaden public understanding of global change and develop the scientific workforce of the future.



# Program Elements for Interagency Cooperation from *Our Changing Planet 2014*

Program Elements:	Participating Agencies*:
Integrated Earth Observations	DOC, DOE, EPA, HHS, NASA, NSF, SI, USDA
Multidisciplinary Scientific Understanding of Earth Systems	DOC, DOE, DOI, DOT, EPA, HHS, NASA, NSF, SI, USDA
Integrated Earth System Modeling	DOC, DOE, NSF, USDA
Adaptation Science	DOC, DOI, EPA, HHS, NSF, USAID, USDA
Global Change Information	DOC, HHS, NASA, USDA
Conduct Sustained Assessments	DOC, DOI, EPA, HHS, USDA
Communicate and Educate	DOC, DOE, HHS, NSF, SI, USDA

\*DOS contributes directly to IPCC outside of the budget crosscut



# USGCRP Working Groups

- **Observations** Interagency Working Group (Obs IWG)
- Interagency Group on Integrated **Modeling** (IGIM)
- **Process Research** Coordinating Committee (PRCC)
  - PRCC Clusters: Ecosystems & Biodiversity; Biogeochemical Cycles & Nitrogen Processes; Clouds, Chemistry, & Aerosol Processes; Terrestrial Water Processes
- **Adaptation Science** Interagency Working Group (ASIWG)
- Climate Change and **Human Health** Group (CCHHG)
- Interagency **National Climate Assessment** (INCA)
- **Communication & Education** Interagency Working Group (CEIWG)
- **Carbon Cycle** Interagency Working Group (CCIWG)
- **Implementation Planning** Team (IPT)
- **International** Research & Cooperation (International)
- **Global Change Information** System (GCIS)
- **Social Sciences** Task Force (SSTF)
- **Scenarios** Working Group (Scenarios)



# Subcommittee on Global Change Research

## SGCR Leadership

Thomas Karl, Chair  
Chair of SGCR  
National Oceanic and Atmospheric Administration

Thomas Armstrong, Executive Director  
Executive Director  
U.S. Global Change Research Program  
Office of Science and Technology Policy

## Executive Office and Other Liaisons

Tamara Dickinson  
Office of Science and Technology Policy

Kimberly Miller  
Office of Management and Budget

Richard Duke  
Council on Environmental Quality

Samantha Brooks, Executive Secretary  
SGCR Executive Secretariat  
U.S. Global Change Research Program  
Subcommittee on Global Change Research

## Principals

John Balbus  
Department of Health and Human Services

William Hohenstein  
Department of Agriculture

Jack Kaye  
National Aeronautics and Space Administration

Arthur Rypinski (Acting)  
Department of Transportation

Leonard Hirsh  
Smithsonian Institution

Michael Kuperberg  
Department of Energy

Trigg Talley  
Department of State

Craig Robinson  
National Science Foundation

Andy Miller  
Environmental Protection Agency

Joel Clement  
Department of the Interior

Scott Harper (Acting)  
Office of Naval Research

Wayne Higgins  
National Oceanic and Atmospheric Administration

