U.S. Global Change Research Program

Renewable Natural Resources **Foundation**

December 10, 2014

Julie Morris, Associate Director





























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)

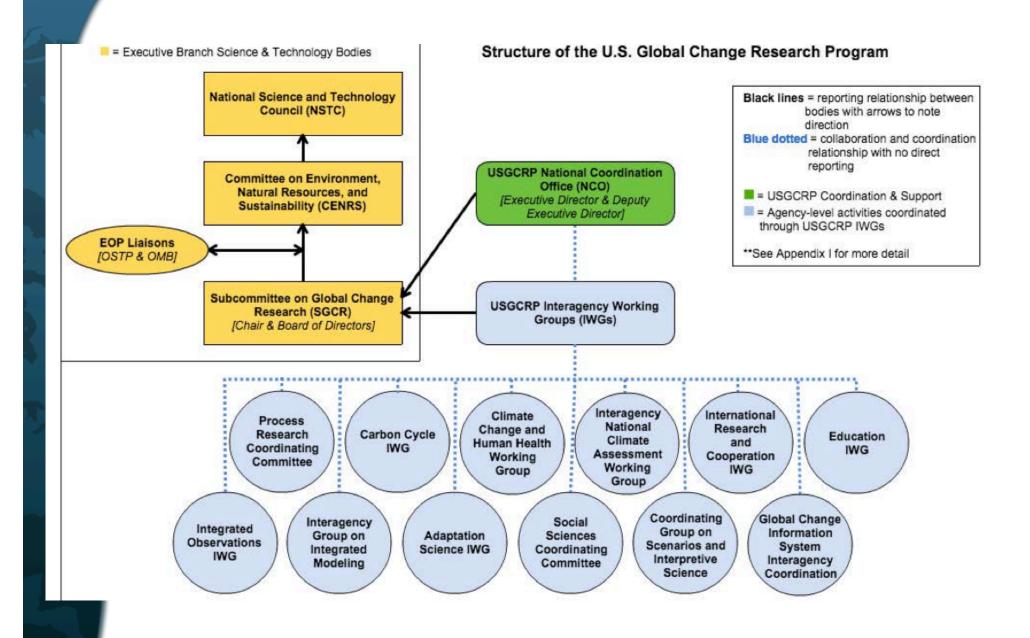
Vision: A nation, globally engaged and guided by science, meeting the challenges of climate and global change Mission: To build a knowledge base that informs human response to climate and global change through coordinated and integrated Federal programs of research, education, communication and decision 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





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



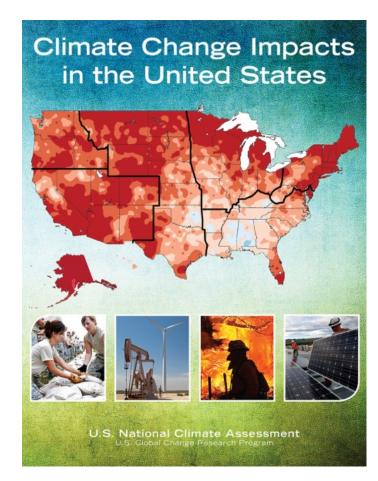
USGCRP Interagency Priorities and some of their focal areas

- Extremes, thresholds and tipping points
 - Drought, Arctic
- Coupled Earth and Human Systems
 - Intra-seasonal to centennial predictability, including physicalbiological 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



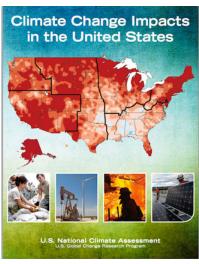
The 3rd National Climate Assessment

- Broad & deep science foundation
 - 300 scientists, > 25 technical input reports, 10 sets of regional climate & SLR scenarios (publicly available)



- 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





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Acclimatise | Adaptation International | Alaska Ocean Observing System | Alliance for Climate Education | American College and University Presidents'
Climate Commitment | American Geosciences Institute | American Geo
Policy Program | American Planning Association | American Public Health Association | American Society of Adaptation Professionals | American
                                                ers | American Statistical Association | American Water Works Association | Association for the Tree of Life | Association of
                                                           ssociation of Fish & Wildlife Agendes | Association of Metropolitan Water Agencies | Association of Natural Resource
Climate Change Officers
Extension Professionals | Association of Public Health Laboratories | Association of State and Territorial Health Officials | Association of Zoos and Aquariums | BCC Planning | Boar Path Acres Animal Education Center Professional and BlueGreen Alliance | Broward County (Florida) |
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 Califor a Ocear Faith ce Trust Carnegie Mellon University
(CISA) Carpe Diem West | Conter for Clean Air Policy (CCAP) | Center for Climate and Engrey Solutions | Center for Research on Environmental
Decision Columbia University | Center for Sustainable Cities, Iniversity of Southern Carfornia | Chamber of Eco Commerce | Chicago Zoological
Society | Chizens Climate cobby | City of Cambridge Community evelopment Department | Climate Access | Climate Assessment for the Southwest
(CLIMAS) | Climate Change & Society Master's Program North carolina State University | Climate Communication | Climate Data
Solutions, LLC | Climate Impacts Group University of Washington | Climate Literacy and Energy Awareness Network (CLEAN) | Climate Literacy
Partnership in the Southeas (CliPSE) | Clima Nexus | Climate Resolve | Collaboratory for Adaptation to almate Change
Institute | Consortium of Universities for the Adamoement of Hydrologic Science, Inc. | Consortium for Ocean Leadership | Consortium of Universities for the Adamoement of Hydrologic Science, Inc. | Consortium of Ocean Leadership | Consortium of Universities for the Adamoement of Hydrologic Science, Inc. | Consortium of Ocean Leadership | Consortium of Universities for the Adamoement of Hydrologic Science, Inc. | Consortium of Ocean Leadership | Consortium of Universities for the Adamoement of Hydrologic Science, Inc. | Consortium of Ocean Leadership | Consortium of Universities for the Adamoement of Hydrologic Science, Inc. | Consortium of Ocean Leadership | Consortium of Universities for the Adamoement of Hydrologic Science, Inc. | Consortium of Ocean Leadership | Consortium of Universities | Consortium of Universit
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Geological Society of Imerical earther Washingto Interfaith FN @An etht 1504Lakes Integrated Sciences and Assessments (GLISA) | Great
Plains Institute | GUND Institute for Ecological Economics | Habitat Seven | IAPMO | ICLEI - Local Go Irrnments for Sustainability
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Caribbean Studies | Institute for Coastal Science and Policy, East Carolina University | Inter-American Development Bank | In
 Network | IOOS Association | 'sland Press' | Reinschmidt Associates | Labor Network for Sustainability | Ivan yland and P
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Education Assessment and Research (MADE CLEAR) | Manzanita Tribe | Massachusetts Climate Action Network | Metcalf Institute for Marine &
Environmental Reporting | Mississippi-Alabama Sea Grant Consortium | National Academy of Engineering Center for Engineering, Ethics, and Society |
National Association of County and City Health Officials | National Center for Science Education | National Council for Science and the Environment |
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                      New York City Department of Invironmental Protection | Next Generation | Nor Carolina Department of Health and Human Services |
 North Central Climate Science Cente / Pacific Islands Regional Climate Assessment (PIR A) | Pacific Northwest Thal Climate Change Network | Pacific
 Regional Integrated Sciences and A sessments (Pacific RISA) | Playa Lakes Joint Ventur
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 Center for Climate Change Communication | Public Health Institute | Resource Media
Club | Sierra Club - Michigan Chapter | Soil <u>Science Soci</u>ety of Anterica | South Centra
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Global Climate Change, Food Security and the U.S. Food System

Report Scope

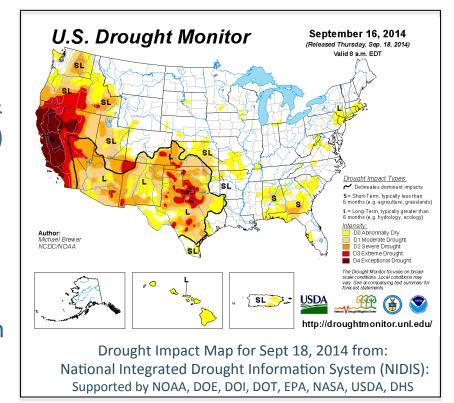
- Effects of climate change on the global food system and global food security.
- Historical and future relationships identify likely changes to global food security through mid-century and 2100.
- Effects on the U.S. are considered based on its role as a major food importer, exporter, and source of food aid.
- Not aregional 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

1.Advance
Science of
Earth and
Human System:

Integrated

Observations

Modeling

Process

Research

2. Inform Decisions

(including GCIS and Adaptation)

3. Conduct
Sustained
Assessment
(including NCA)

4. Communicate and Educate

Science and Stakeholder Communities

Identify needs to inform science planning



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

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

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-

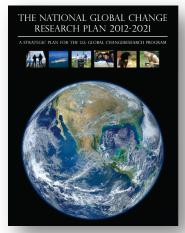
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USGCRP Decadal Strategic Plan

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
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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

