USGCRP’s role at the boundary of science advancement and application: Potential Interactions with CMS

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GSFC – Jan 21, 2016
Goals

Ensure CMS investigators are current on USGCRP activities relevant to CMS

Explore pathways to future interactions with CMS & its PIs
Global Change Research Act (1990):

“To provide for development and coordination of a comprehensive and integrated United States research program which will assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change.”

More information at http://www.globalchange.gov
US Global Change Research Program

Strategic Plan Goals

**Advance Science: Study Climate and Global Change**
- Advance scientific knowledge of the integrated natural and human components of the Earth system

**Conduct Sustained Assessments: Assess the US Climate**
- Build sustained assessment capacity that improves the Nation’s ability to understand, anticipate, & respond to global change impacts & vulnerabilities

**Inform Decisions: Prepare the Nation for Change**
- Provide the scientific basis to inform & enable timely decisions on adaptation & mitigation

**Communicate & Educate: Make Our Science Accessible**
- Advance communications & education to broaden public understanding of global change & develop the scientific workforce of the future
The Federal Space

- Climate Action Plan & Executive Orders
  - linked to quadrennial NCA’s,
  - climate information both U.S. & global,
  - consistency & training

- Climate Data and Tools (CDAT)

- NCA3 -> Sustained Assessment

GlobalChange.gov
U.S. Global Change Research Program
Third National Climate Assessment portal

nca2014.globalchange.gov
Sustained Assessment

Foundational reports:
Scenario development • Indicators • Valuation

Improved use-based science:
CMIP 5+ • Decision support tools

Other assessment efforts:

Special topics reports:
Food security • Health • Drought

Technical Information:
Regional analyses • Literature reviews • Data & model results

Connecting to and building networks:

Quadrennial National Climate Assessment Reports

NCAnet: Partners in Assessment

DOI Climate Science Centers
Regional Integrated Sciences & Assessments
U.S. Scenario Planning

1) Climate Scenarios & nesting/boundary issues
   ✷ Ensembles
   ✷ Downscaling – statistical, dynamical, hybrid
   ✷ Uncertainties
   ✷ Regional climate & sea level rise scenarios

2) Human Dimensions
   ✷ LULCC & Population/migration (e.g. ICLUS)
   ✷ Regional economics (e.g. CIRA)

3) Risk-based framing and contextual basis
NCA4 Process

• Timeline:
  - Scoping, Authors, Writing, Several reviews, release mid-2018
  - Chapters still uncertain - Mitigation chapter in NCA3

• Reports:
  - Technical
  - Regional Climate
  - State Fact Sheets

• Special Reports
  - Climate Change & Human Health
  - Climate Change, Global Food Security, & the U.S. Food System
  - Climate Science
  - SOCCR2
  - Others??
2nd State of the Carbon Cycle Report (SOCCR-2)

• Follow-up to the 1st SOCCR (2007)
• Led by CCIWG
• Highly Influential Scientific Assessment
• US and North American carbon stocks and fluxes in managed and unmanaged systems
• Including relevant carbon management science perspectives and tools for supporting and informing decisions addressed in/related to

  White House Climate Action Plan (2013),
  US Carbon Cycle Science Plan (2011),
  National Climate Assessment, and

USGCRP 2012-2021 Strategic Plan (formally called the National Global Change Research Plan 2012-2021)
SOCCR-2 broad assessment framework

1) Carbon Cycle at Scales (Global Perspective, North American Perspective, US Perspective, Regional Perspective)

2) Role of carbon in systems (Soils; Water, Oceans, Vegetation; Terrestrial-Aquatic Interfaces)

3) Interactions/Disturbance/Impacts from/on the carbon cycle

4) **Carbon Management Science Perspective and Decision Support** (measurements, observations and monitoring for research and policy relevant decision-support etc.)
Next Steps, Public Engagement

• Several opportunities for Public Engagement
• FRN release soon
• Request for individual input on draft Prospectus, Notional Table of Contents/Themes, contributor nominations
• Public Forum in DC area on February 2, 2016
• To register & details on the event, detailed instructions on CarbonCycleScience.us/news

• Expected release by mid-2017
• For now, see www.CarbonCycleScience.us
Communications & Dissemination: Federal Collaborations

Climate Action Plan

Interagency Council on Climate Preparedness and Resilience

Climate Data And Tools (CDAT)

Climate Data Initiative

Climate Resilience Toolkit

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CDI & CRT: two sides of a coin

CDI
- Technological Bridge
  - Finding & using data
    - Data / products curated directories, organized and linked with controlled vocabularies
    - Well documented with standard metadata
    - Open Data & APIs with machine accessible standard formats for interoperable discovery, access, manipulation & analysis
    - Linked Scientific Basis with Provenance and Trust
    - Technical help and forums for developers & users

CRT
- Cognitive Bridge
  - Users' decision objectives
    - Directories of decision-support tools and reports & resources
    - Training & tutorials (learning progressions)
    - Value-added tools for analysis & decision-making
    - Search tool for faceted search & retrieval
    - Narratives & factual content to contextualize & build awareness & understanding
    - Engagement forums

Dovetailed
- Each links to and guides and informs development of the other
Collaboration Opportunities

• Case studies/technical reports
  – Urban carbon
  – Biogeographical with IAM & valuation

• EO13677 on international aid – mitigation & tools

• CRT – case studies, mitigation tools

• Others??
More Information

http://www.globalchange.gov

http://nca2014.globalchange.gov

http://toolkit.climate.gov