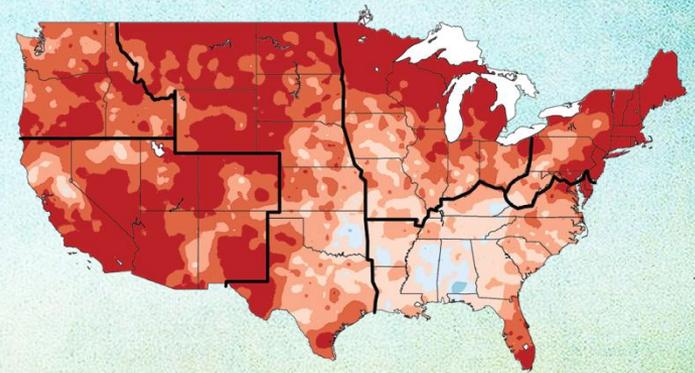


Coordinating national/subnational scale scenarios in the U.S.



Dr. Fred Lipschultz
U.S. Global Change Research Program
July 31, 2014

Motivations

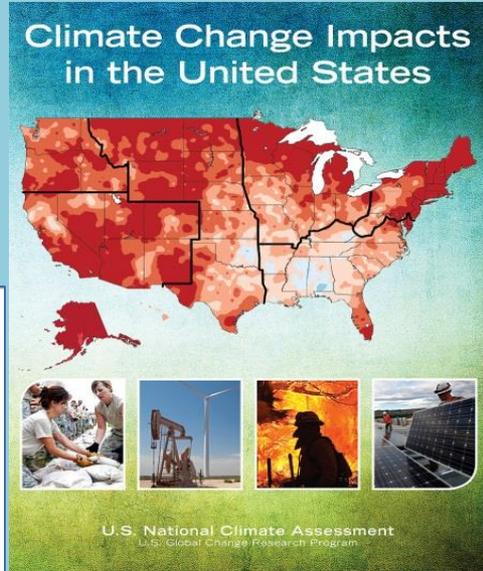
- Facilitates Assessments & Planning:
 - Agencies want consistency and high-level clearance
 - NCA4
- Federal Adaptation plans for Executive Order 13653: Preparing the U.S. for the Impacts of Climate Change
- States & other governmental bodies
- Consistent outlooks across scales
 - With international (RCP, SSP)
 - U.S. Regions
 - States on down to local
 - Temporal



13 Federal Departments & Agencies +
Executive Office of the President



3rd NCA



U.S. National Climate Assessment
U.S. Global Change Research Program

Regional Climate Trends and Scenarios: The Northeast U.S.

The Assessment provides a brief overview of the observed changes in the climate of the Northeast United States as well as possible future climate conditions as modeled by climate models, based on two scenarios of future greenhouse gas emissions. It summarizes the most recent detailed findings presented as one of nine regional and national climate descriptions created by the National Oceanic and Atmospheric Administration (NOAA) in support of the National Climate Assessment (NCA), The 3rd National Climate Trends and Scenarios report available at <http://www.climateglobalchange.gov>, and listed below.

Reid, K.E., L.E. Stevens, S.E. Stevens, E. Sea, E. Jansen, D. Wuebbles, J. Renwick, A. DeGroot, and F.G. Dethlefsen, 2012. Regional Climate Trends and Scenarios for the U.S. National Climate Assessment: Part 1. Climate of the Northeast U.S., NOAA Technical Report NCEP/14-1, 19 pp.

Observed Regional Climate Trends

The section summarizes the observed climate trends of the Northeast U.S., primarily focusing on temperature and precipitation, as well as additional climate factors, including heat waves, extreme precipitation, and sea level rise. These historical data are primarily from the National Weather Service's Cooperative Observer Network (COOP), which has been in operation since 1880.

Temperature

- Temperatures across the Northeast have generally increased above the 1981-2010 average over the last 30 years. Warming has been most pronounced during the winter and spring seasons. Trends are mixed and statistically significant (at the 95% confidence level) for each season, as well as for the year as a whole.
- Since the mid-1970s there has been a general increase in heat waves throughout the region. The last occurrence of 10°F or higher has been happening earlier and the last occurrence of 10°F or higher has been happening later.

Precipitation

- Average annual precipitation shows a clear shift towards greater amounts and more variability over 1970-2010. Precipitation trends in the Northeast are increasing and trends are statistically significant for 10 of 19 years and for the year as a whole. However, there is no overall trend for winter.

Extremes

- The number of cold waves in the Northeast was high early in the 20th century. However, since 1980, the frequency of cold spells has been below the long-term average. There is an overall trend in heat waves, although there have been a remarkably high number of heat spells in recent years.
- There has been substantial decadal-to-decade variability in the number of extreme precipitation events since about 1950. However, since 1980 the number of extreme events has been high.

Additional Climate Features

- Climate warming is being evidenced by later dates when an average three consecutive lakes in the region, as well as by increases in lake surface water temperature and decreases in average snow depth.
- The rise in sea level along the Northeast coast has accelerated during the 20th century, rising by 1.2 inches per decade on average.

1. Haines, New Orleans, Vietnam, Southeast Asia, World Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, and West Virginia.

Global Sea Level Rise Scenarios for the United States National Climate Assessment

December 6, 2012

NOAA Technical Report OAR CPO-1

Logos for NOAA, USGS, SERDP, and US Army Corps of Engineers.

- Based on SRES A2 & B1
 - 8 regional reports for observational climatologies & model projections to 2100
 - Consistent methodology
 - Basis of numerous maps
- Datasets available
 - Metadata, methods, underlying datasets
 - Improved availability soon for IAV & decision-support.
 - Scope?

- Sea Level Rise
- Integrated Climate & Land Use Scenarios (ICLUS)
- <http://scenarios.globalchange.gov>

Global Change Information System (GCIS)

Search

GCIS

Search

CCID lookup

Advanced search

SPARQL query

nca3 report

rep

cha

figi

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rep

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Global Change Information System Report : nca3

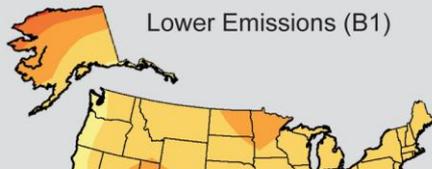
Climate Change Impacts in the United States: The Third National Climate Assessment

2014 assessment

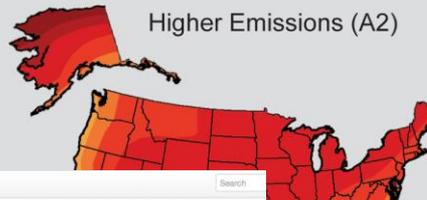
National Climate Assessment and Development Advisory Committee

Jerry Melillo, Terese (T.C.) Rich
The National Climate Assessment is a 60-member Federal Advisory Committee of the National Academy of Sciences.

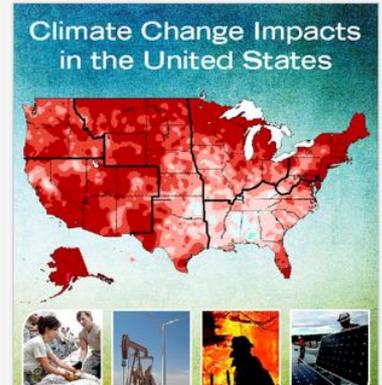
This report has 43 chapters, 21 figures, 10 tables, 10 appendices, and 10 annexes.
<http://nca2014.globalchange.gov>



Lower Emissions (B1)



Higher Emissions (A2)



- Search
- CCID lookup
- Advanced search
- SPARQL query
- nca3 report
- report : nca3
- chapters
- figures
- tables
- findings
- references
- publications
- report : nca3
- reports
- figures
- images
- books
- journals
- articles
- web pages
- datasets
- contributors
- people
- organizations

activity : e8d9fc4f-nca3-cmp3-r201205-process

f-421b-48c1-a355-e493d8e8f83

e8d9fc4f-nca3-cmp3-r201205-process

Multi-model mean CMIP3 (higher emissions scenario) temperature projections were plotted for the United States, for 2071-2099 relative to 1970-1999.

1. For each model at each grid point, the mean annual temperature under the higher emissions scenario (A2) was calculated.
2. For each model, these data were re-gridded to a common grid.
3. For each model at each grid point, the mean temperature under the higher emissions scenario (A2) was calculated for two periods: 1970-1999 and 2071-2099.
4. At each grid point, the mean temperature for the two periods was computed by averaging the following models: CCSM3, CGCM3.1 (T47), CNRM-CM3, CSIRO-Mk3.0, ECHAM5-MPI-OM, ECHO-G, GFDL-CM2.0, GFDL-CM2.1, INM-CM3.0, IPSL-CM4, MIROC3.2 (medres), MRI-CGCM2.3.2, PCM, UKMO-HadCM3, and UKMO-HadGem1
5. At each grid point, the difference in projected temperature was calculated for 2071-2099 minus 1970-1999.
6. Data were plotted for grid points in the United States.

The duration of this activity was 100 hours.

Output artifacts generated by this activity :

- tos_ares2_1970-1999_2071-2099_change.nc
- temp_scenarios_annual1.eps
- temp_scenarios_annual_new_colors_darker.eps
- temp_scenarios_annual_new_colors_darker.png
- temp_scenarios_HI_annual1.eps
- temp_scenarios_HI_annual_new_colors_darker.eps
- temp_scenarios_HI_annual_new_colors_darker.png
- config.py
- plot_annual_temp_maps.py
- 2-8.9.png
- CS_projected_temperature_change_sres_V7.png

This activity resulted in the following :

image e8d9fc4f-421b-48c1-a355-e493d8e8f83 was derived from dataset nca3-cmp3-r201205

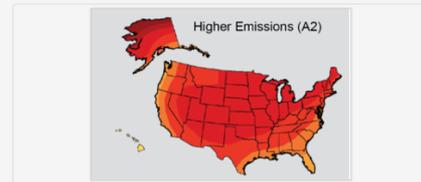
Computing environment : Linux (Red Hat Enterprise Linux Server release 6.4)

Software used : Python (v2.7.8)

Visualization software used : Python (v2.7.8), Matplotlib (v1.3.1), Basemap (v1.0.7)

Notes : Python

Higher Emissions (A2)



205-process.

age/e8d9fc4f-421b-48c1-a355-e493d8e8f83 in [HTML](#)

[Turtle](#) [N-Triples](#) [JSON Triples](#) [RDF+XML](#) [RDF+JSON](#) [Graphviz](#) [SVG](#)

You are viewing /activity/e8d9fc4f-nca3-cmp3-r201205-process in [HTML](#)
Alternatives : [JSON](#) [YAML](#) [text](#) [Turtle](#) [N-Triples](#) [JSON Triples](#) [RDF+XML](#) [RDF+JSON](#) [Graphviz](#) [SVG](#)

U.S. Scenario Planning

USGCRP Scenarios and Interpretive Science Working Group

Building foundations for a coordinated U.S. scenario science enterprise responding to shared agency information needs for quantitative and qualitative scenario-related products aligned around regions, sectors, systems, and topics over spatial and temporal scales of interest

- Advancing collaborative science on critical gaps
- Enhancing methodologies for use-inspired scenario development, risk framing, and contextual interpretation
- Developing the next generation scenario work products for model inter-comparisons, assessments, and analyses
- Improving interagency communications, coordination, and accessibility to knowledge, work products, and technical resources

Near-Term Focus Areas

- 1) Human Dimensions (strong push)
LULCC & Population/migration (June workshops) & later - Regional economics
- 2) Climate/environmental systems (coordination)
Regional climate outlooks (NOAA/NCDC) & Regional sea level rise scenarios (DOD)
- 3) Scenarios for CMIP 6 and nesting/boundary issues for U.S. scenarios activities
RCPs and Shared Socioeconomic Pathways
- 4) Fundamental methodologies, interpretation, risk-based framing and contextual basis

Workshops - July 2014

- Towards Scenarios of U.S. Demographic Change
Goal: Assess key factors involved in the production of long - term scenarios of U.S. demographic change for use in interdisciplinary analysis of social and environmental issues.
- U.S. Land Use/Land Cover Change Scenarios and Projections
Goal: Catalyze and launch an interagency process to identify critical uncertainties in projecting long-term (i.e., out to 2100) changes in U.S. land use and land cover change (LULC); observational, data, and modeling capabilities to produce such long-term projections; and appropriate interpretive methods for the development of descriptive quantitative and qualitative scenarios of LULC change that are, to the degree practical/possible, consistent with global-scale scenarios.

Key Points

- Ongoing & fostered activities ‘harvested’ every 4 yrs rather than culminating in a report
- Embedding in Federal agency activities
- Currently planning for climate projections & scenarios
 - Active consideration of user needs
 - Coordinating efforts of agencies
 - RCP/SSP development for U.S.
 - Downscaling issues (uncertainties, best practices, scale.....)
 - Variables, timing, hosting

Questions

The National Climate Assessment

<http://nca2014.globalchange.gov>

<http://www.globalchange.gov>

<http://scenarios.globalchange.gov>



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@usgcrp
#NCA2014



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