



Climate Program Office Climate Monitoring Program Update

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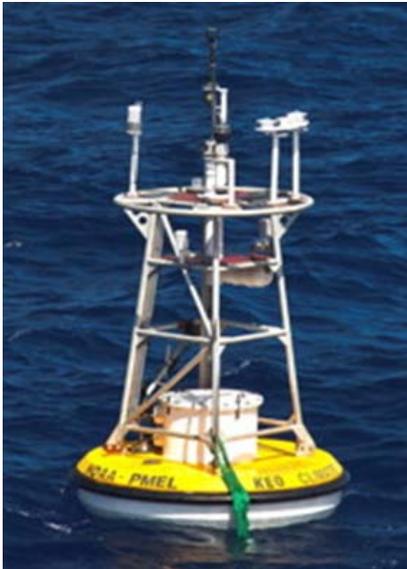




Climate Monitoring Program Update

A competitive research program that leverages and enhances observation and data collection efforts to supportive innovative monitoring strategies, indicators, and data product development

Key Activities



Data set development from key observing systems

-uncertainties, coverage, bias

Tools and Methods for climate reanalysis and diagnostics

- Indicators research
- Paleoclimate development

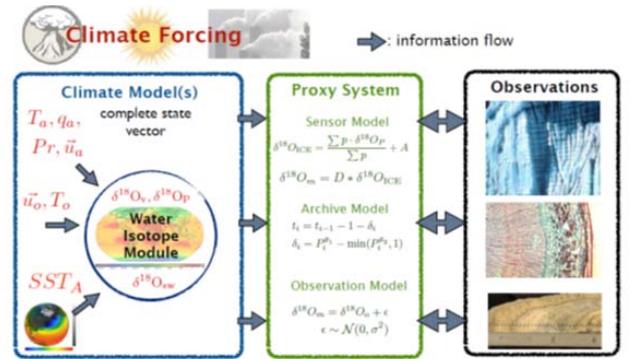
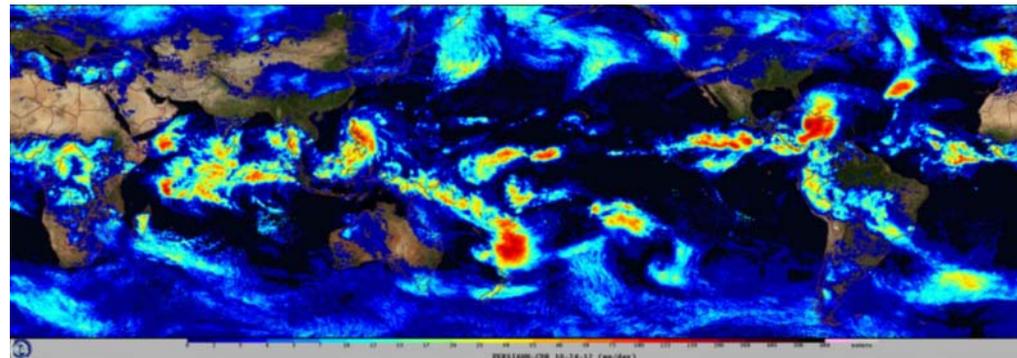


Figure 2: Conceptual Framework for Paleoclimate Data/Model fusion.

Contributions to monitoring efforts and climate assessments



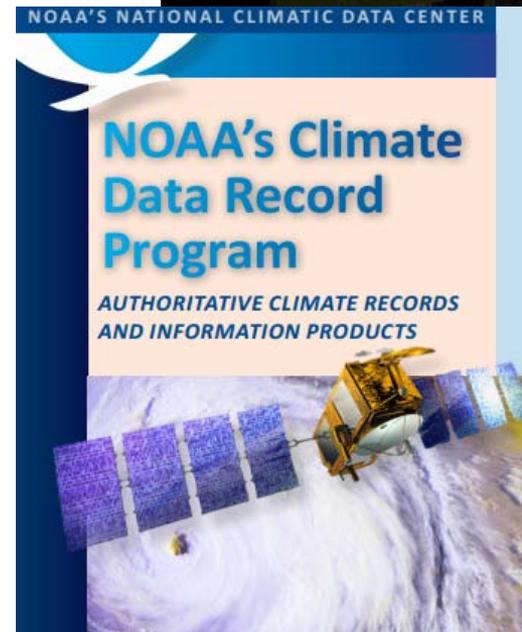
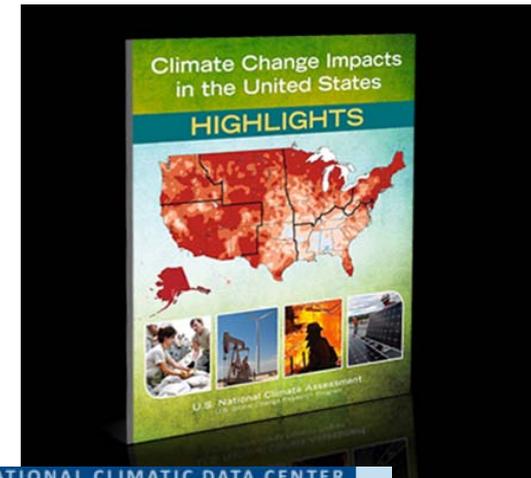
- NCDC's Climate Data Records
- IPCC and National Climate Assessments

PERSIANN Precipitation CDR – added 2014



Climate Monitoring Program Overview Highlights

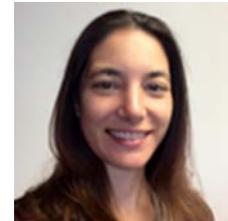
- Ongoing research projects funded in FY10 and FY11 are making contributions to national and international databases and assessments
- FY14 FFO
 - Extremes, Ocean Climate Indicators, Paleoclimate
 - \$2.2M new funding for 13 multi-year projects
 - Competitions likely every few years
- Program Management Transition





Bill Murray

Climate Monitoring Program Transition



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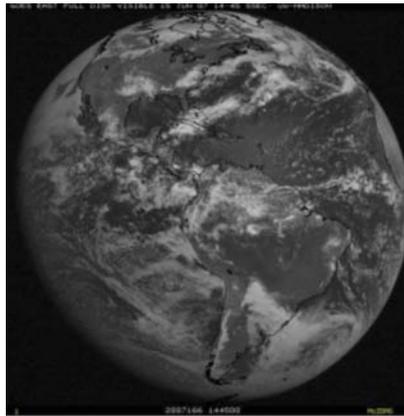
GSA, AGU, AMS



Climate Monitoring

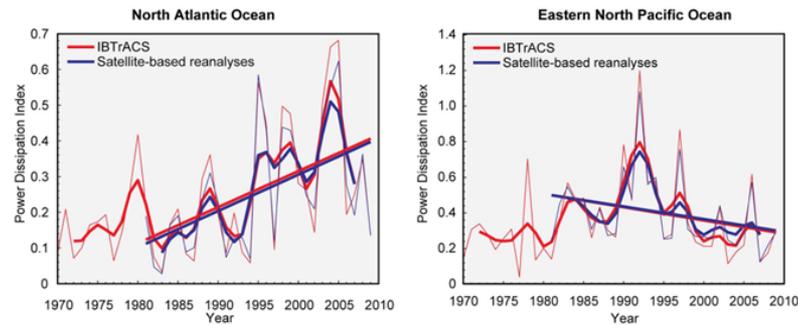
Highlight of Program Supported Research

- Funded Scientists have contributed research and essential data sets to national and international climate monitoring efforts and assessments
- Targeted toward key aspects of change and variability, addressing fundamental science questions and uncertainties



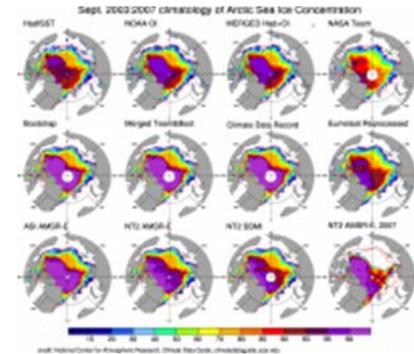
Global Cloud Datasets
-international efforts ISSCP and PATMOS-x
-major uncertainty in AR4
-new corrected datasets provided to NCAR Research Archive

Observed Trends in Hurricane Power Dissipation



Tropical Cyclone Databases

- HURDAT and EPAC TCs
- changes submitted to International Best Track Team at NCDC
- cited in NCA



Arctic Sea Ice

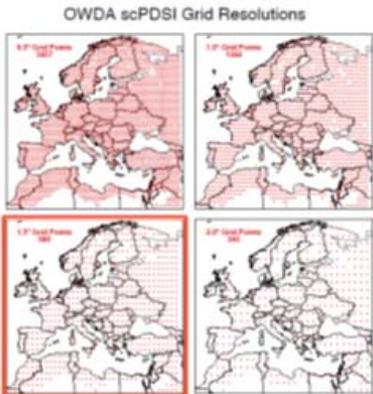
- new database with expert commentary in NCAR Climate Data Guide
- Cited in IPCC AR5



Climate Monitoring

Highlight of Program Supported Research

- Paleoclimate research to produce essential climate change tools that inform current research and understanding
 - Database products and analyses focused on extremes
 - New proxy methods
 - Novel approaches, analyses and tools to extend climate reconstructions



“Old World Drought Analysis” (Cook, 2014)

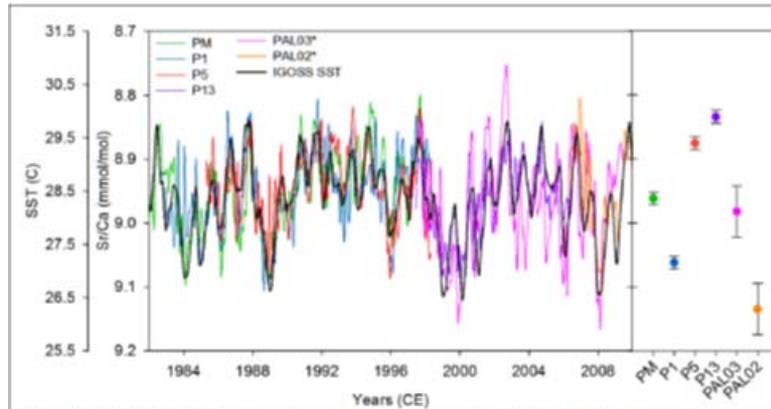


Figure 1. Plot of six Palmyra modern coral Sr/Ca records plotted with Palmyra SST.

paleo-SST and paleo-hydrology from tropical coral records (Cobb and Smerdon, 2014)

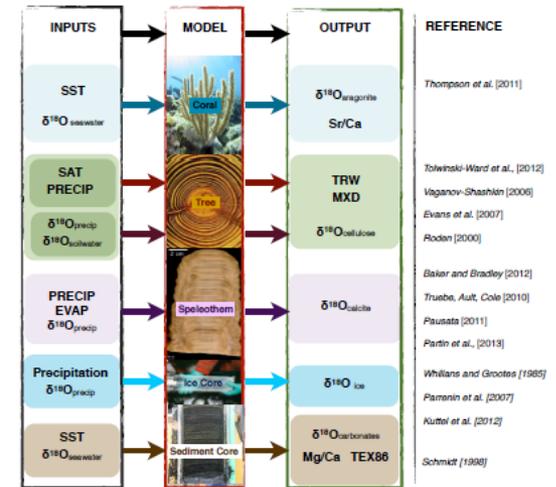


Figure 1: A Modular Framework for Proxy System Modeling.

Approaches for integrated forward climate-proxy modeling (Emile-Geay et al., 2014)



Climate Monitoring

Highlight of Program Supported Activities: ARC

- In addition to research supporting development of new products, *maintaining* and *transitioning* these products is a goal
- *Leveraging, maximizing, and ensuring the long-term* benefits of important data sets

Applied Research Center (ARC) for Data Set Development

The program manager of CM and the Director of NCDC jointly manage the ARC.

NCDC is the focal point for coordination



Objective: to produce high quality up-to-date data sets for use in answering the pressing climate and global change questions, and to ensure routine data set production with appropriate scientific oversight.

- Reanalysis and transition of environmental data records to Climate Data Records (CDR)
- Production of high quality data sets in support of assessments and other projects



Climate Monitoring Scope of Research Funded in FY14

- Data sets and Indicators

Extreme Events



Image Credit: Public Domain

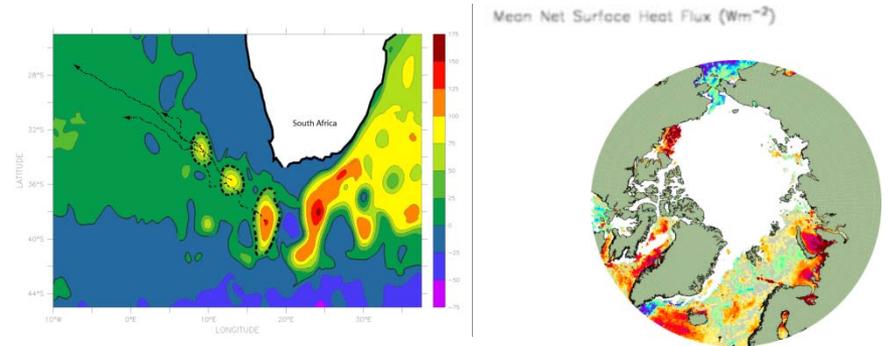
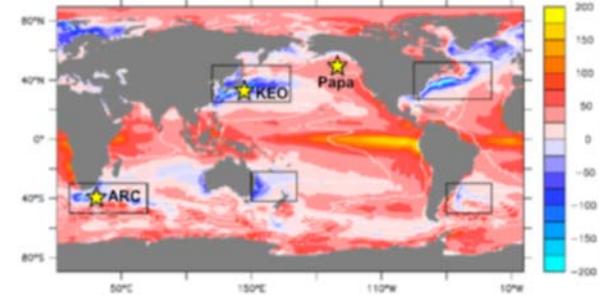


Image Credit: T.J. Casadevall. U.S. Geological Survey



- Heat Waves
- Hurricanes
- Snow Ablation events
- Sudden Stratospheric Warmings
- Global Droughts and Floods

Ocean Climate Indicators



- Air-sea interactions in the Pacific
- Heat Budget in the Tropical Atlantic
- Satellite-based estimates of heat and moisture in Arctic/Subarctic
- Upper Ocean Indicators for the Tropical Indo-Pacific
- WBC transport indices

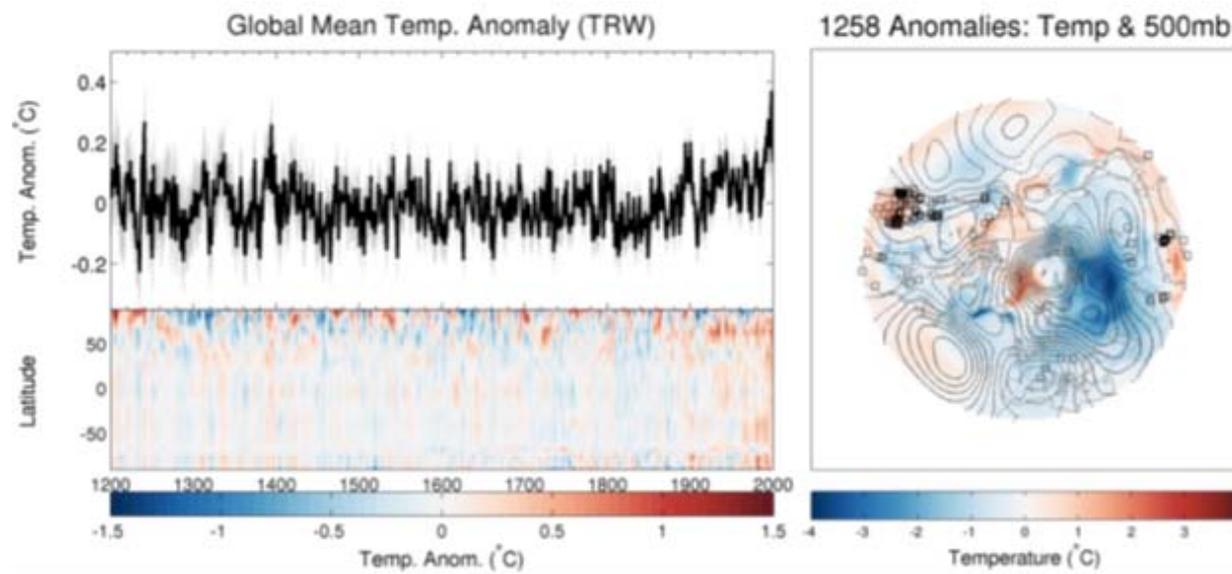


Climate Monitoring

Scope of Research Funded in FY14

- Paleoclimate

Last Millennium Climate Reanalysis Project

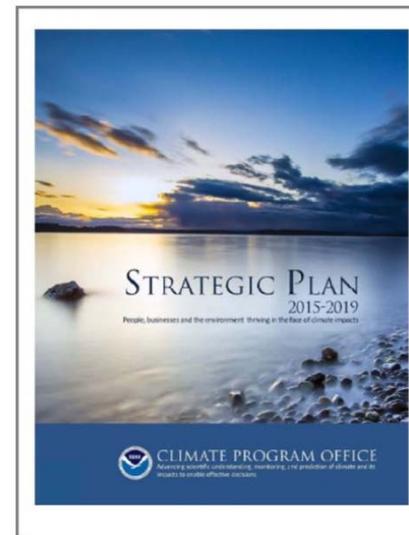
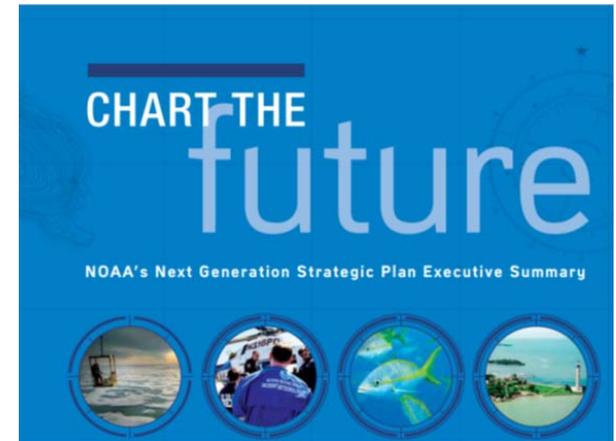


- uses novel data assimilation approaches similar to those used for reanalysis of observations during the instrumental record
- Fusion of proxy data and climate simulations
- a reconstruction of the global mean surface temperature, spatial distribution and uncertainty in the temperature field, and potentially many others fields as well extended to the last 1000 years.



Climate Monitoring Looking Ahead

- Looking forward to working with you
- Mechanisms for sharing accomplishments, raising the profile
- Emphasizing critical role of monitoring and enhancing available climate information
 - NOAA and beyond
 - Partnerships
- Building a community





THANK YOU

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