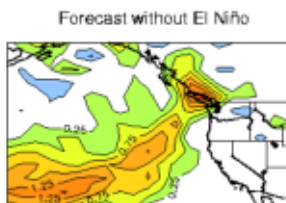
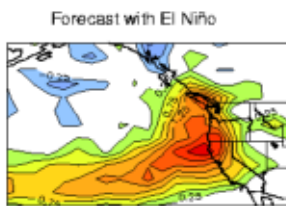
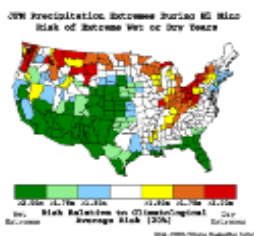


Experimental forecasts of tropical Pacific sea surface temperatures



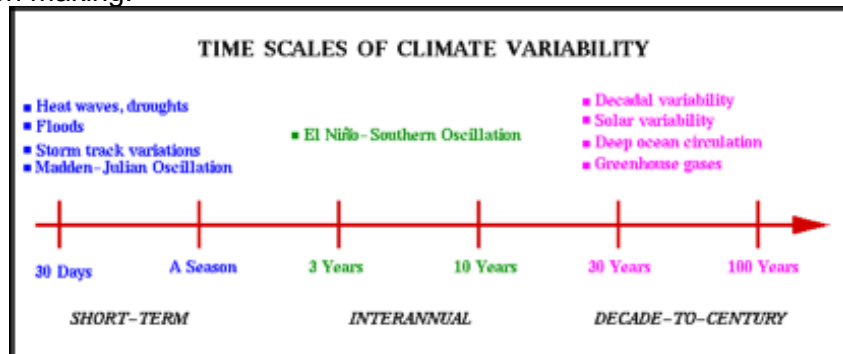
Impact of El Niño on forecasting flooding rains in California



Effects of El Niño on risks of winter precipitation extremes

## What does the Climate Diagnostics Center do for the nation?

The Climate Diagnostics Center (CDC) develops national capabilities to analyze, interpret, and forecast important climate variations on time scales ranging from a few weeks to centuries. Short-term climate variations of interest include major droughts and floods over the continental U.S. and the global anomalies associated with El Niño-Southern Oscillation (ENSO). These events attract great public interest and often have enormous social and economic consequences. On longer time scales, basic research goals include identifying the causes of decadal to centennial climate variations and separating natural variability from human-induced climate changes to provide an improved scientific basis for planning and decision making.



## Key CDC scientific goals include:

- Identifying key processes that contribute to extreme, short-term climate events, such as major droughts and floods.
- Improving understanding and predictions of important climate phenomena such as ENSO and their links to high-impact weather events.
- Improving monitoring and analyses of climate variability through surface and satellite observations and the incorporation of such observations into climate models.

Identifying major patterns of climate variability on decadal and longer time scales, including natural variations and human-induced changes.

Developing new climate information to benefit society and mitigate potential adverse impacts, such as the effects of climate variability on water resources in the interior western United States.

## Recent Accomplishments:

- Research leading to advances in seasonal-to-interannual forecast capabilities. **Payoffs: Improved NOAA seasonal climate forecasts, and the development of prototypes for new climate forecast products, which have been further developed and disseminated by NOAA on a routine basis. Improvements in the skill and applications of seasonal climate forecasts have provided a strong impetus for expanded NOAA climate services.**

- Identifying links between short-term weather variations and El Niño. **Payoffs: Improvement in climate predictions on time scales from a few weeks to a season. Such predictions may result, for example, in steps taken to mitigate the effects of major floods over the west coast of the United States, or variations in tropical cyclone activity over the eastern Pacific and Gulf of Mexico.**
- Applying advanced web technologies to better organize and make available NOAA climate products that better serve the research community, resource managers, and the general public. **Payoffs: Increased efficiency and simplicity in obtaining access to climate information products. The increased accessibility also enables a broader range of customers to easily use data developed and supported by federal research. The creation of extensive, web-based tools has helped NOAA to develop expanded, near real-time climate diagnostic capabilities. It has also significantly facilitated climate research and the use of NOAA climate observational and model data in numerous studies.**

### What's Next for CDC?

Science Challenges in the next five to 10 years:

- Advancing NOAA intraseasonal to interannual forecast capabilities.
- Improving understanding of the links between short-term climate variations and long-term trends.
- Increasing understanding of the causes of regional climate changes.
- Accelerating the expansion of NOAA climate services by developing, evaluating, and disseminating a broad range of experimental climate products.
- Determining the role of climate information in helping to address critical regional issues, such as water management in the western United States.

### Research Partnerships:

CDC works extensively with the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado, Boulder. CIRES is a NOAA joint/cooperative institute and supplies support to facilitate collaborations among scientists at the University of Colorado, NOAA, and other institutions. CDC also works closely with the International Research Institute for Climate Prediction, the Scripps Institution for Oceanography, and other federal agencies, including the Bureau of Reclamation.

### Budget and Staff

The FY 2003 enacted budget for the Climate Diagnostics Center budget lines totaled \$2.5M, and its request for FY 2004 totaled \$2.7M. CDC has 56 employees, including 14 federal employees and 42 Joint Institute employees.



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