



U.S. DEPARTMENT OF  
**ENERGY**

# Science for Energy

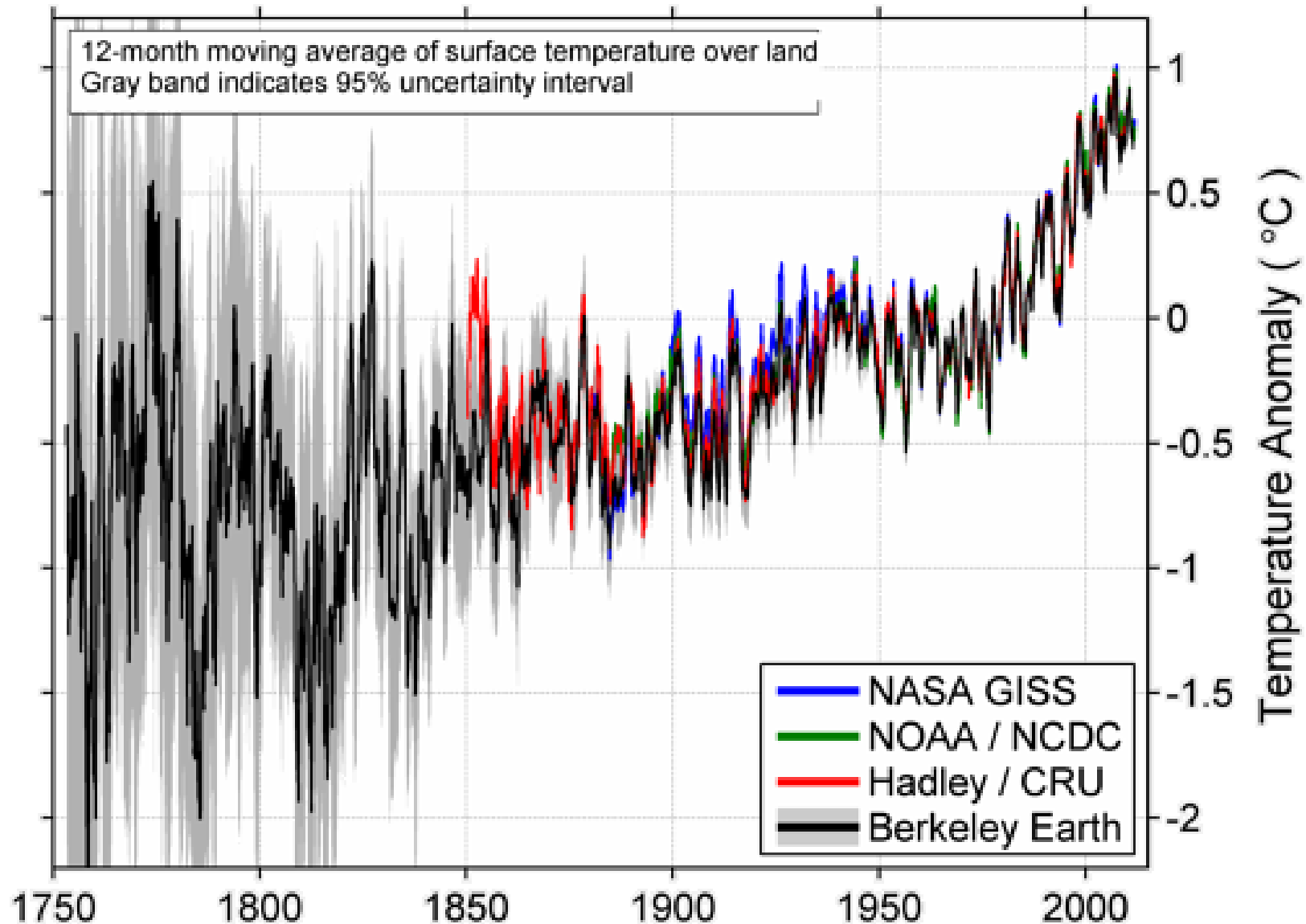
**SC Graduate Fellowship Meeting**

**July 31, 2012**

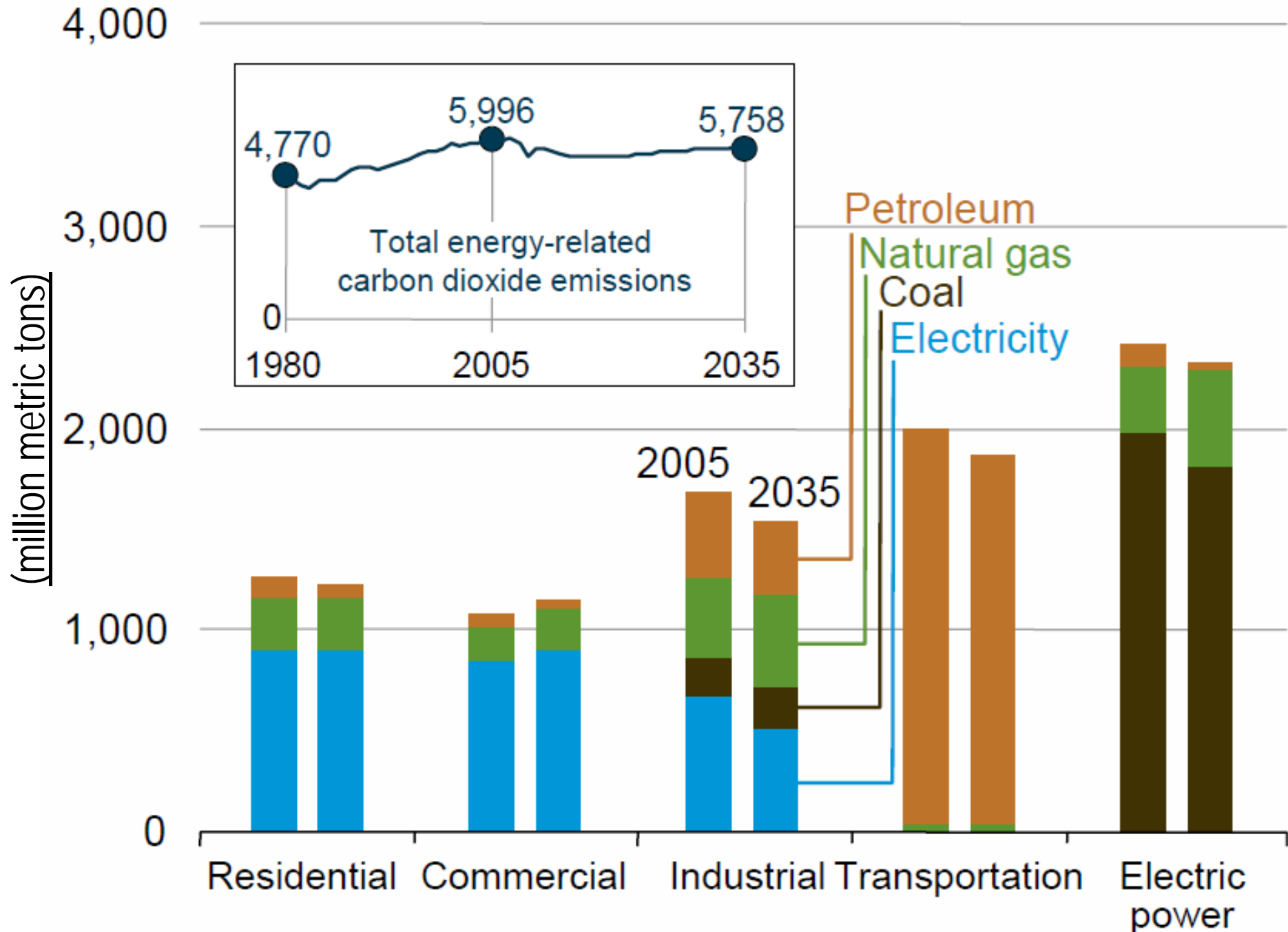
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**Director, Office of Science**  
**US Department of Energy**

# Global Average Temperature Increases with CO<sub>2</sub>

## Annual Land-Surface Average Temperature



# US energy-related CO<sub>2</sub> emissions by sector and fuel, 2005 and 2035



# Tesla – 300 miles per charge car



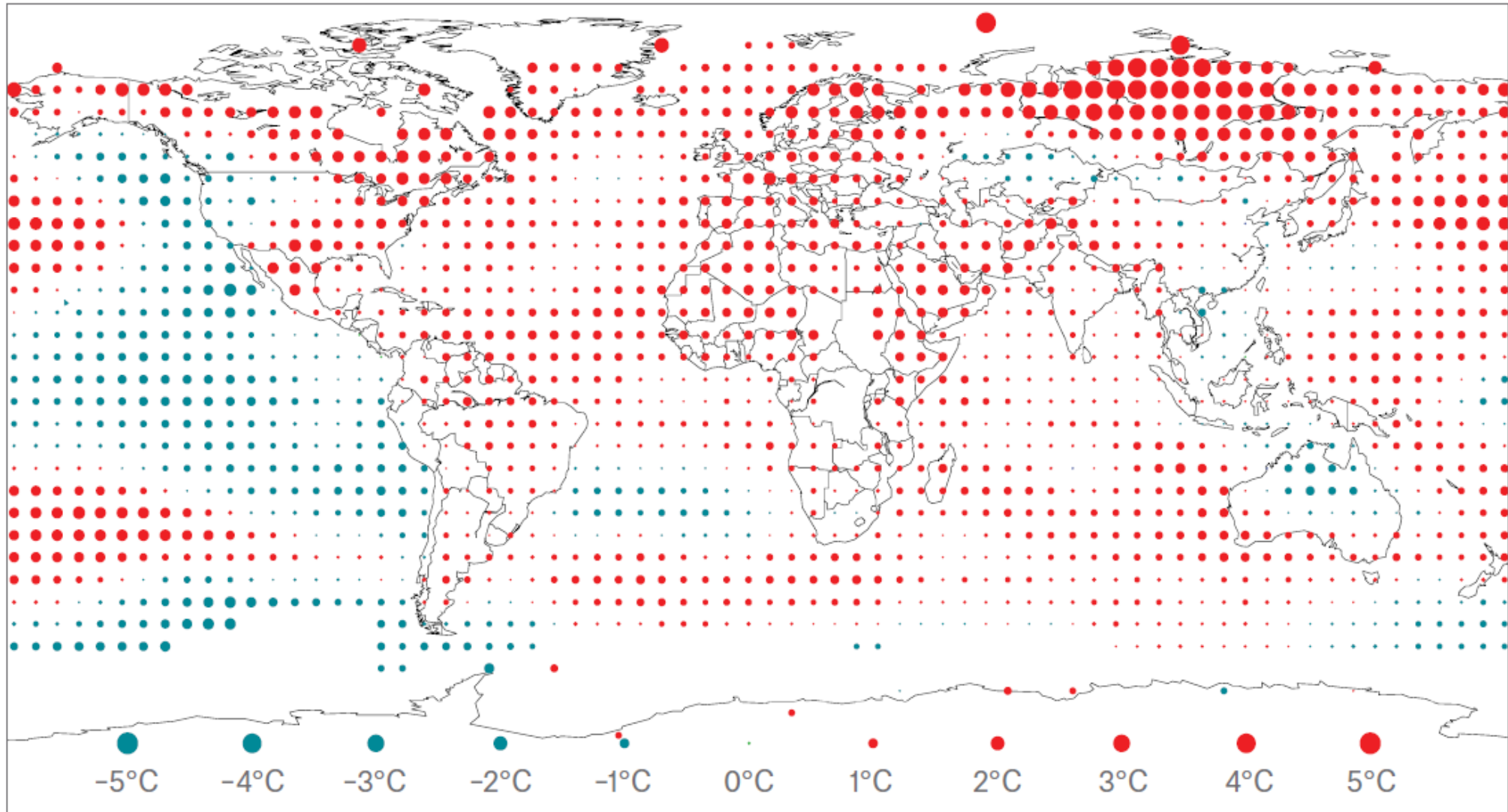
# The Tesla Is One Hot Car

Four models

40 kWh	60 kWh	85kWh	85 kWh	
			performance	
160mi	230 mi	300 mi	300 mi	
6.5 sec	5.9 sec	5.6 sec	4.4sec	zero to sixty
110 mph	120mph	125mph	130mph	

Recharges at 62 miles per hour-has a supercharger

## Regional mean annual temperature anomalies for 2011 with respect to a 1971-2000 base period



## Drought-hit areas in the USA

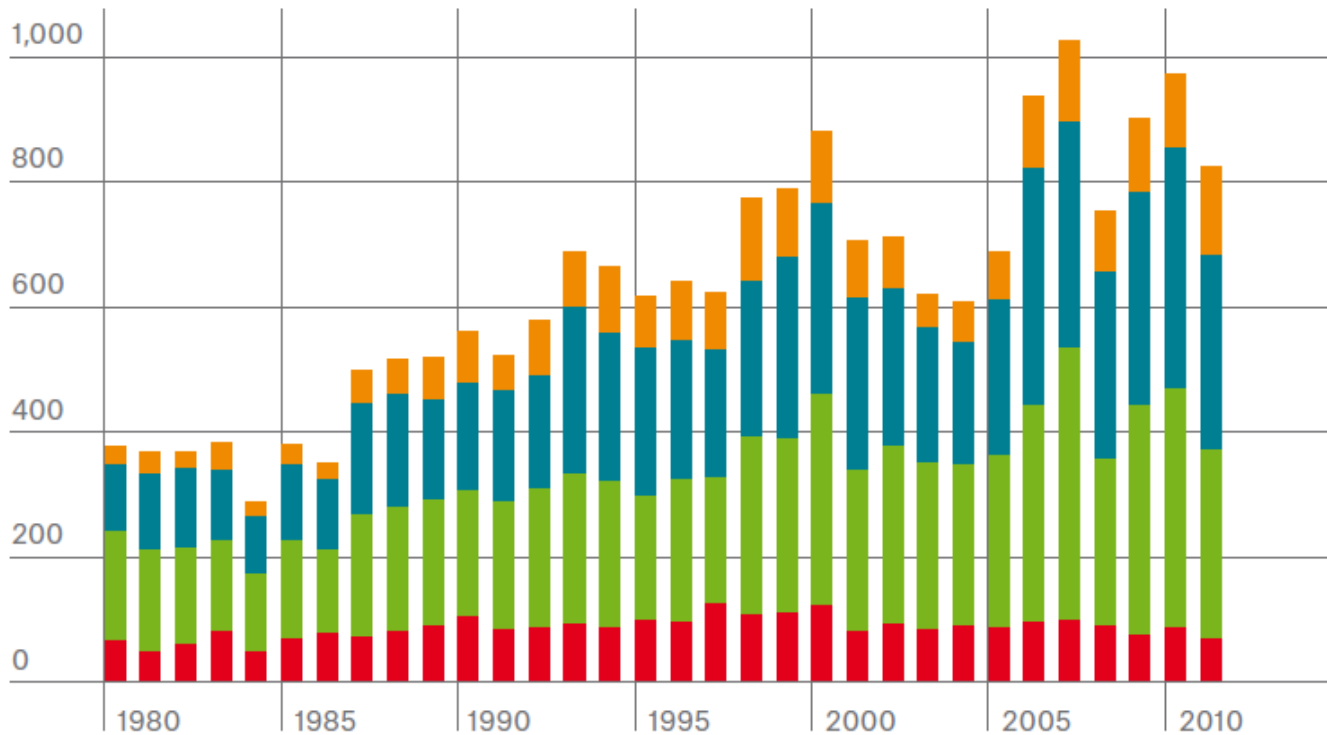


In particular, New Mexico, Texas, Oklahoma, Louisiana and Georgia in the USA and northern Mexico suffered from a lack of rainfall. The map shows the situation in July 2011.

- Abnormally dry
- Moderate drought
- Severe drought
- Extreme drought
- Exceptional drought

Source: NOAA

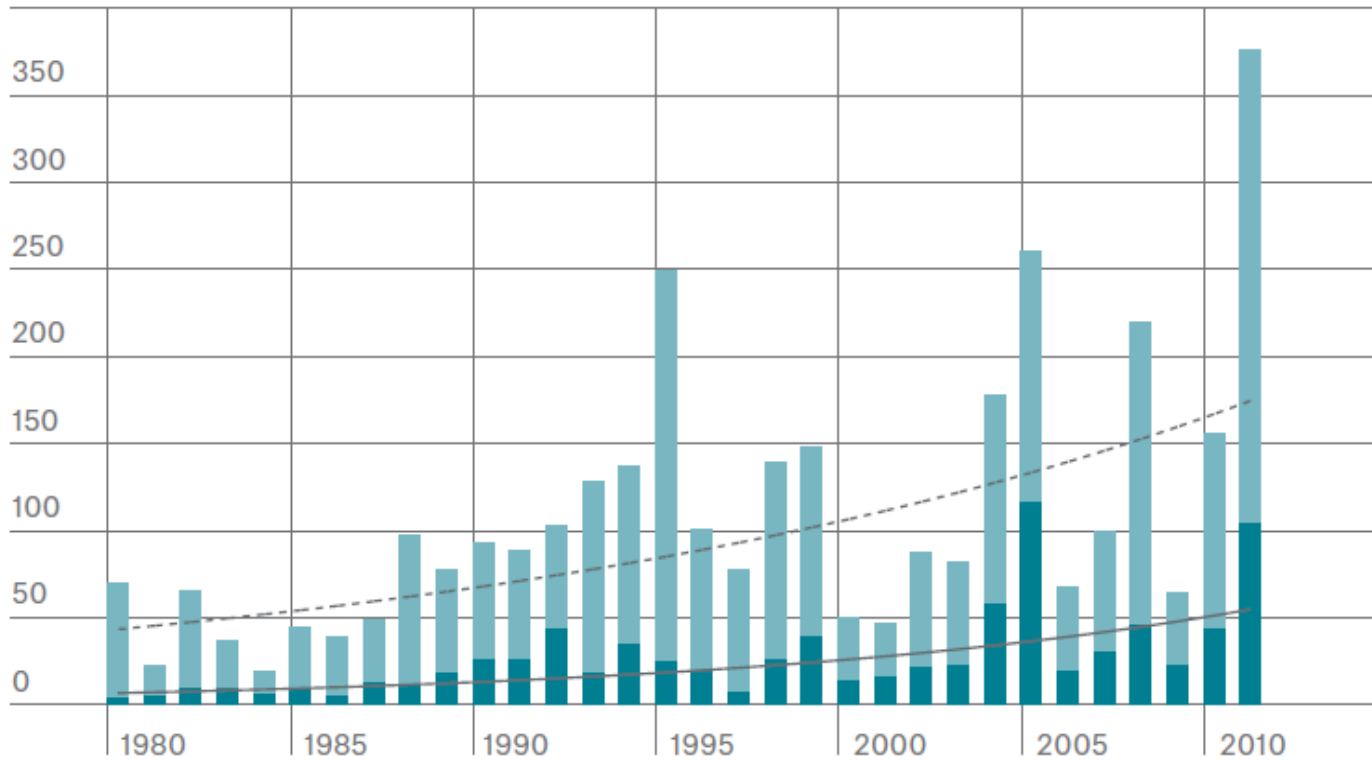
## Number of natural catastrophes 1980-2011



- Geophysical events: Earthquake, volcanic eruption
- Meteorological events: Tropical storm, winter storm, severe weather, hail, tornado, local storm
- Hydrological events: Storm surge, river flood, flash flood, mass movement (landslide)
- Climatological events: Heat-wave, cold wave, wildfire, drought



## Overall losses and insured losses 1980-2011 (US\$ bn)



- Overall losses (in 2011 values)
- Of which insured losses (in 2011 values)
- Trend: overall losses
- Trend: insured losses