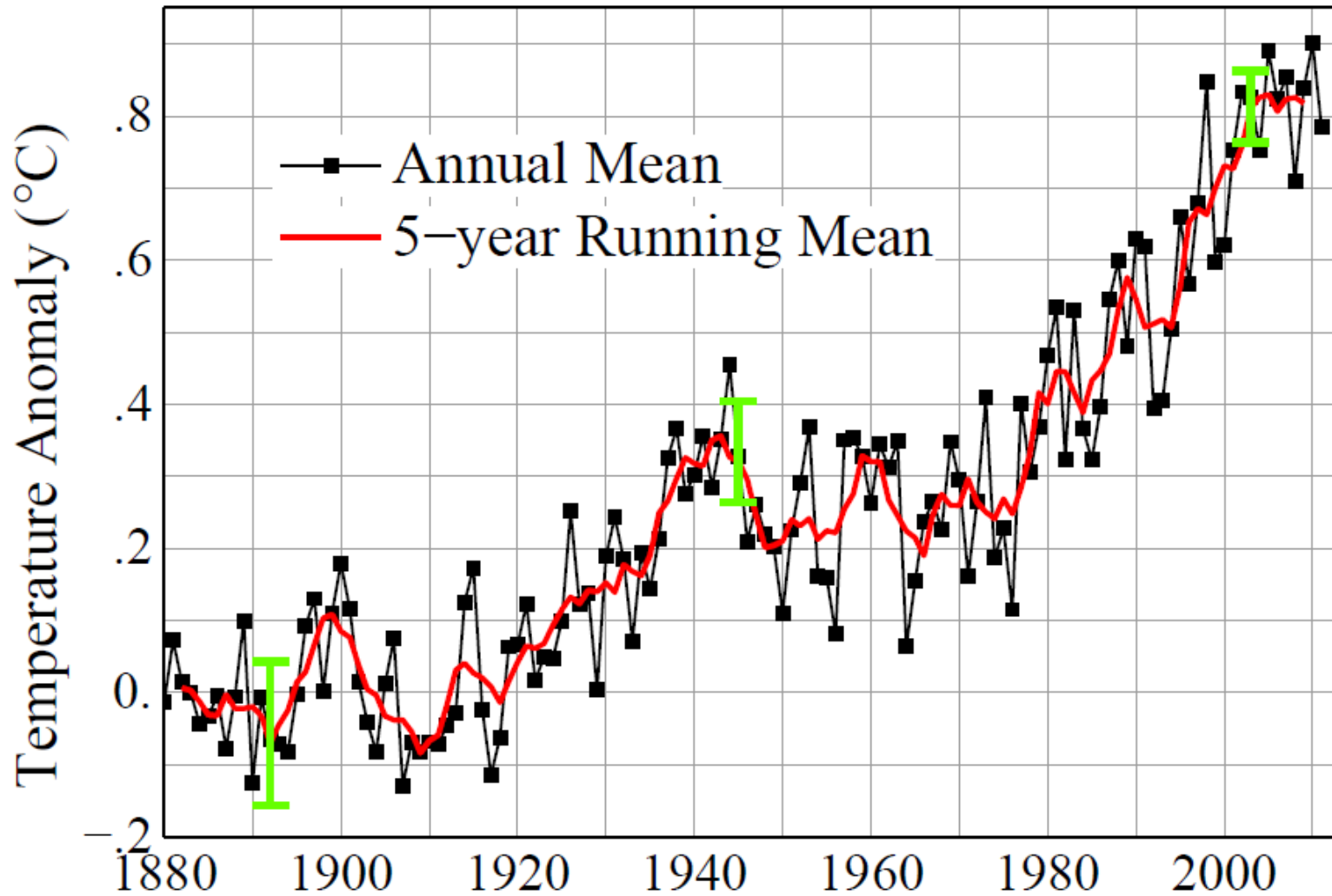
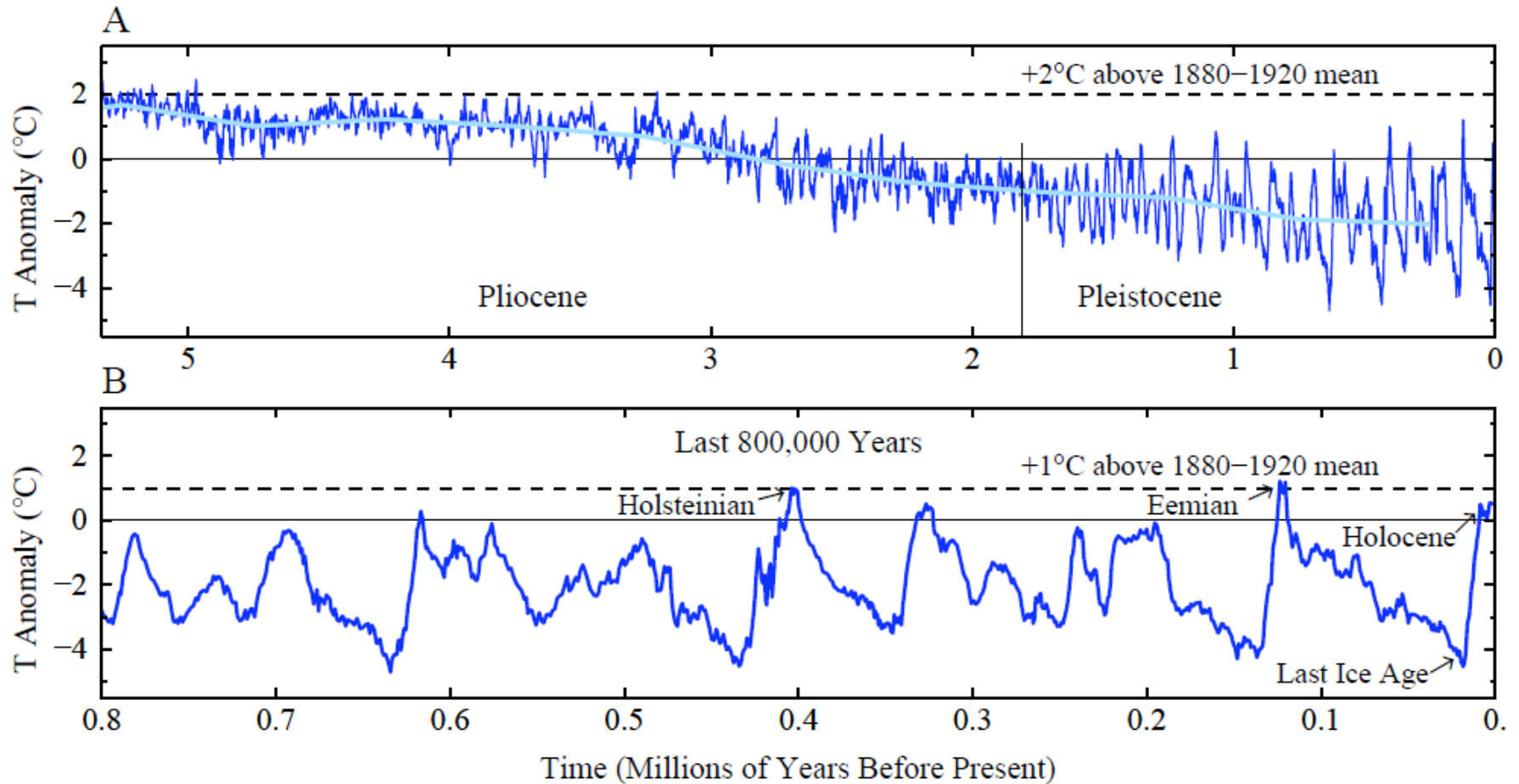


# Global Surface Temperature

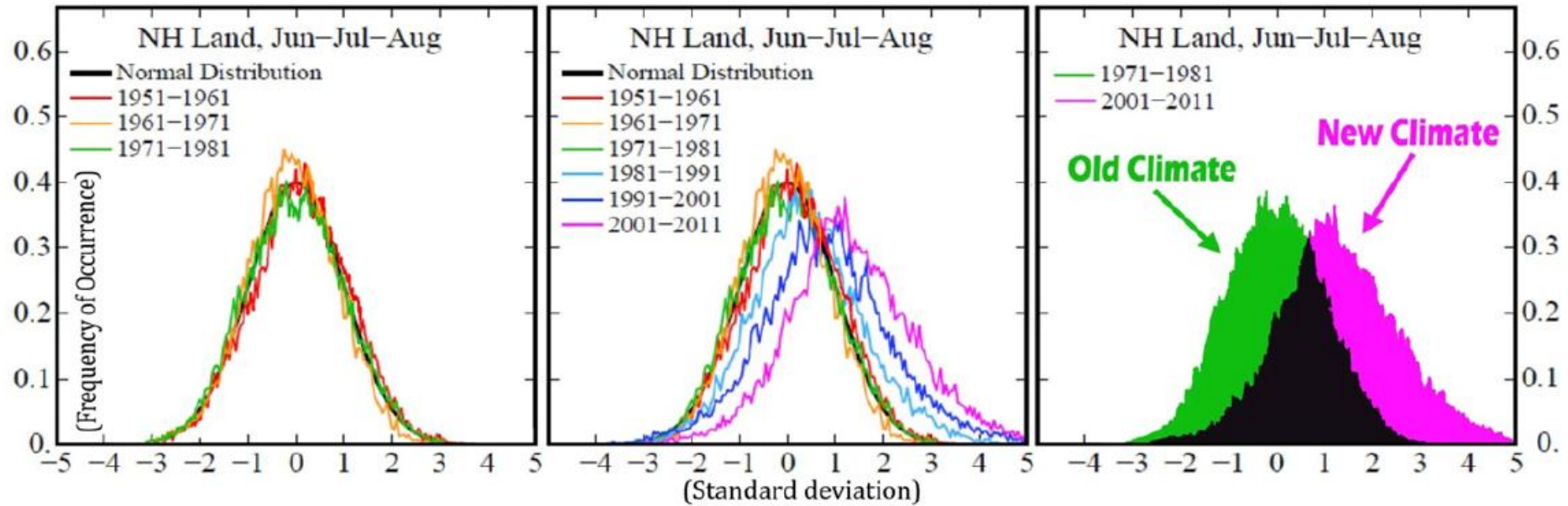


**Fig. 1.** Global surface temperature anomalies relative to 1880-1920 mean. Green bars are 95% confidence intervals. (Hansen, J., Ruedy, R., Sato, M., and Lo, K., 2010: Global Surface Temperature Change. *Rev Geophys*, **48**, RG4004.)



**Fig. 2.** Global temperature relative to 1880-1920 in (A) past 5,300,000 years and (B) past 800,000 years. (Hansen, J.E. and Sato, in M., Berger, A., Mesinger, F., and Sijacki, D., 2012: *Paleoclimate implications for human-made climate change*. Springer, ~350 pp.)

## Change in Temperature Extremes

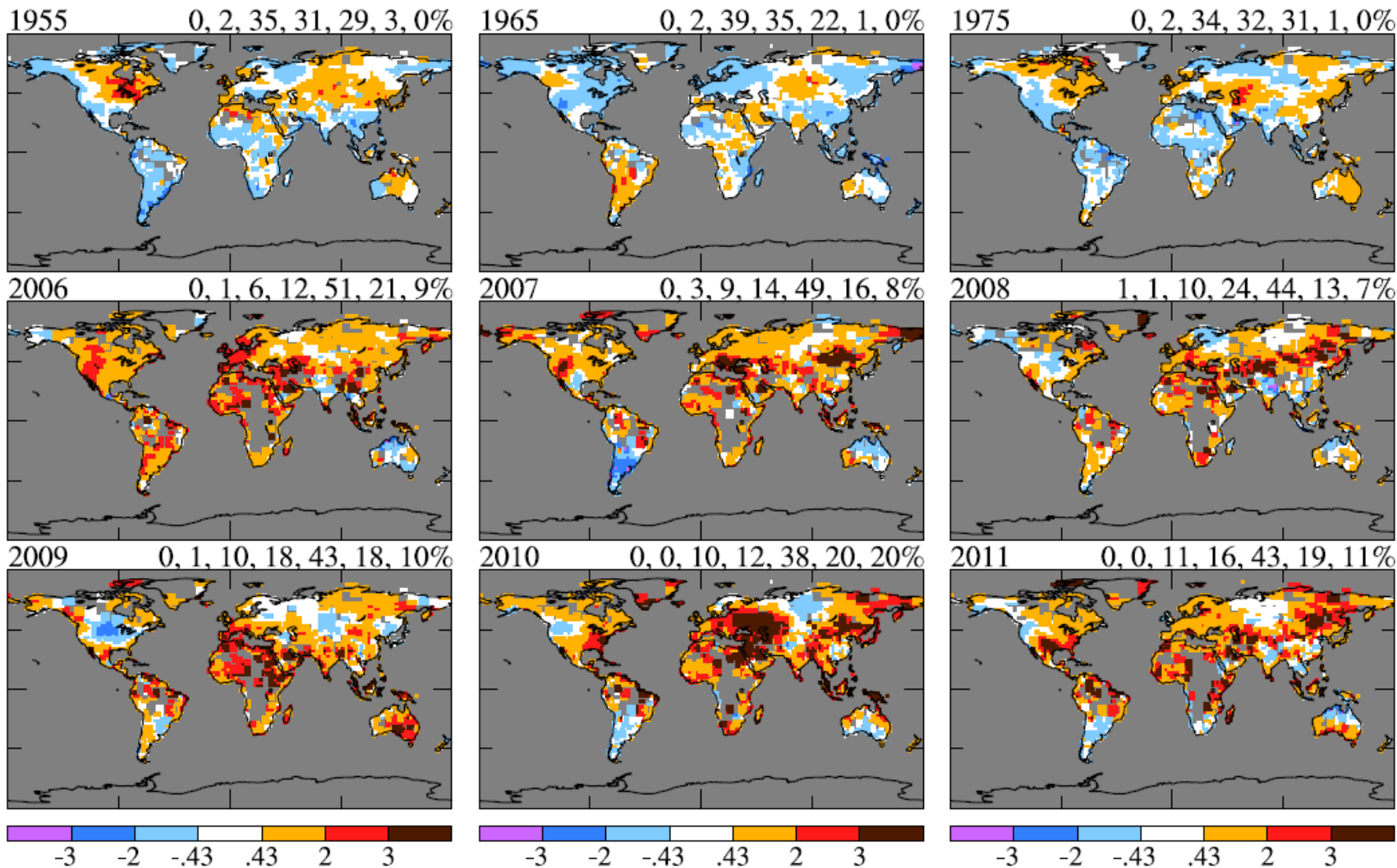


Frequency of occurrence of local temperature anomalies (relative to 1951-1980 mean) in units of local standard deviation.

Global warming in the past few decades has shifted the distribution to the right.

*Source: Public perception of climate change and the new climate dice, J. Hansen, M. Sato, R. Ruedy, submitted to PNAS, preprint in arXiv; color plot on right is adaptation by Bruce Melton.*

### Jun-Jul-Aug Hot & Cold Areas over Land Only



**Fig. 6.** Jun-Jul-Aug surface temperature anomalies over land in 1955, 1965, 1975 and 2006-2011 relative to 1951-1980 mean temperature in units of the local 1951-1980 standard deviation of temperature. Numbers above each map are the percent of surface area covered by each category in the color bar.

**HOT AND DRY**

**CURRENT DROUGHT**



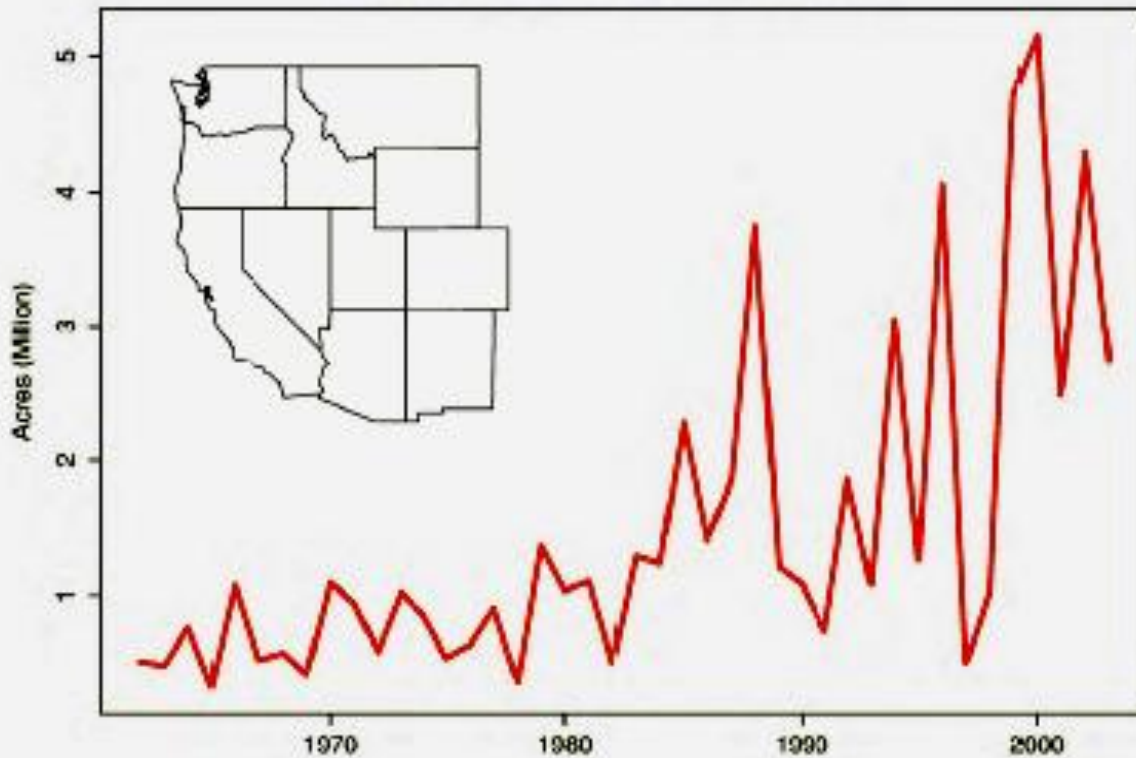
**Current U.S. Drought Monitor**

June 2011: Record 7.6% of U.S. in 'Exceptional' drought category, simultaneous with record flooding on Mississippi River.

# Fires Are Increasing World-Wide

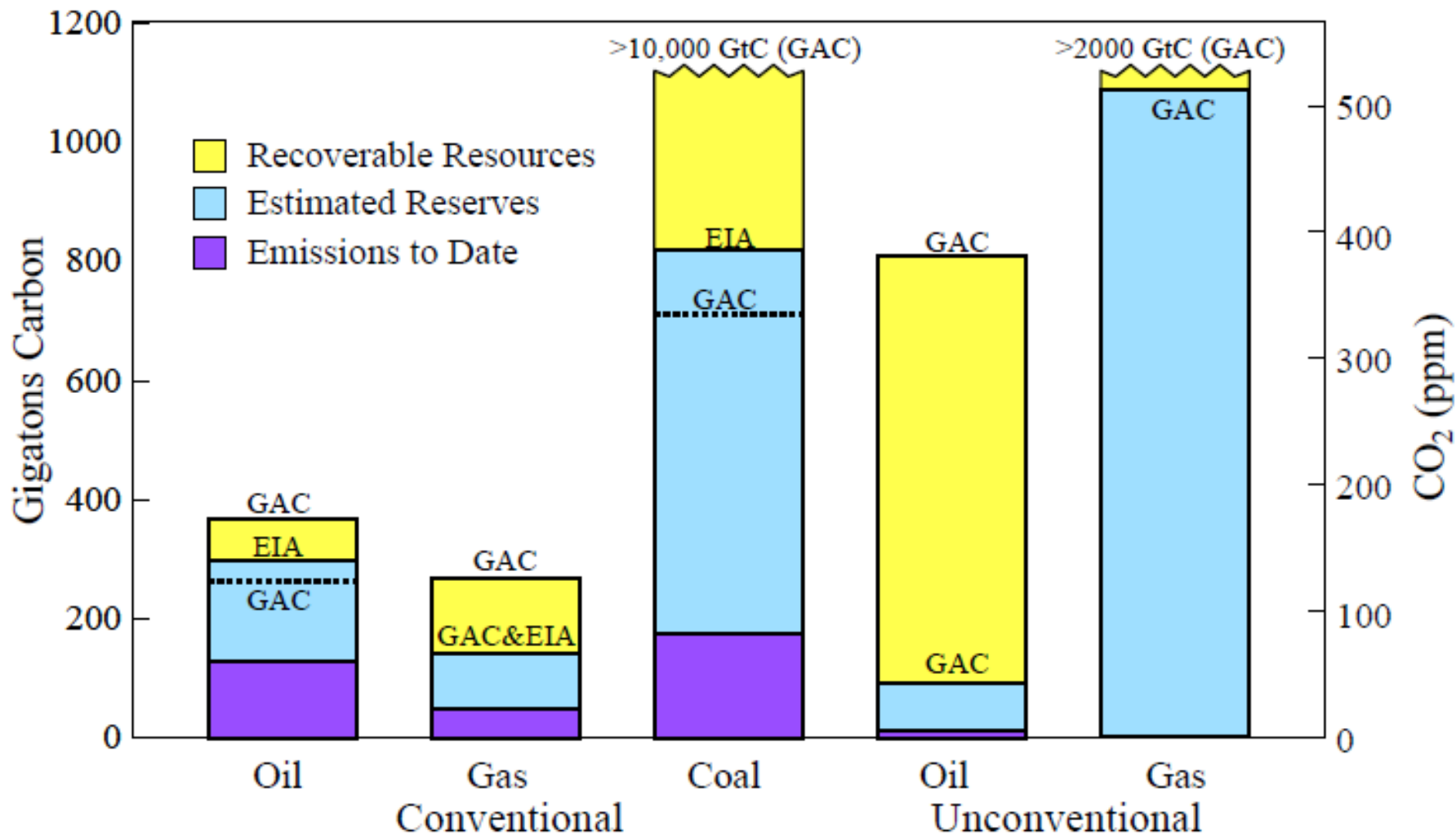
Wildfires in Western US have increased 4-fold in 30 years.

## Western US area burned



Source: Westerling et al. 2006

## Fossil Fuel Emissions



**Fig. P1.** CO<sub>2</sub> emissions by fossil fuels (1 ppm CO<sub>2</sub> ~ 2.12 GtC). Estimated reserves and potentially recoverable resources are from EIA (Energy Information Administration) and GAC (German Advisory Council on Global Change).

# Web Sites

My papers will be made available as completed on this web site:

[www.columbia.edu/~jeh1](http://www.columbia.edu/~jeh1)

[www.CitizensClimateLobby.org](http://www.CitizensClimateLobby.org)