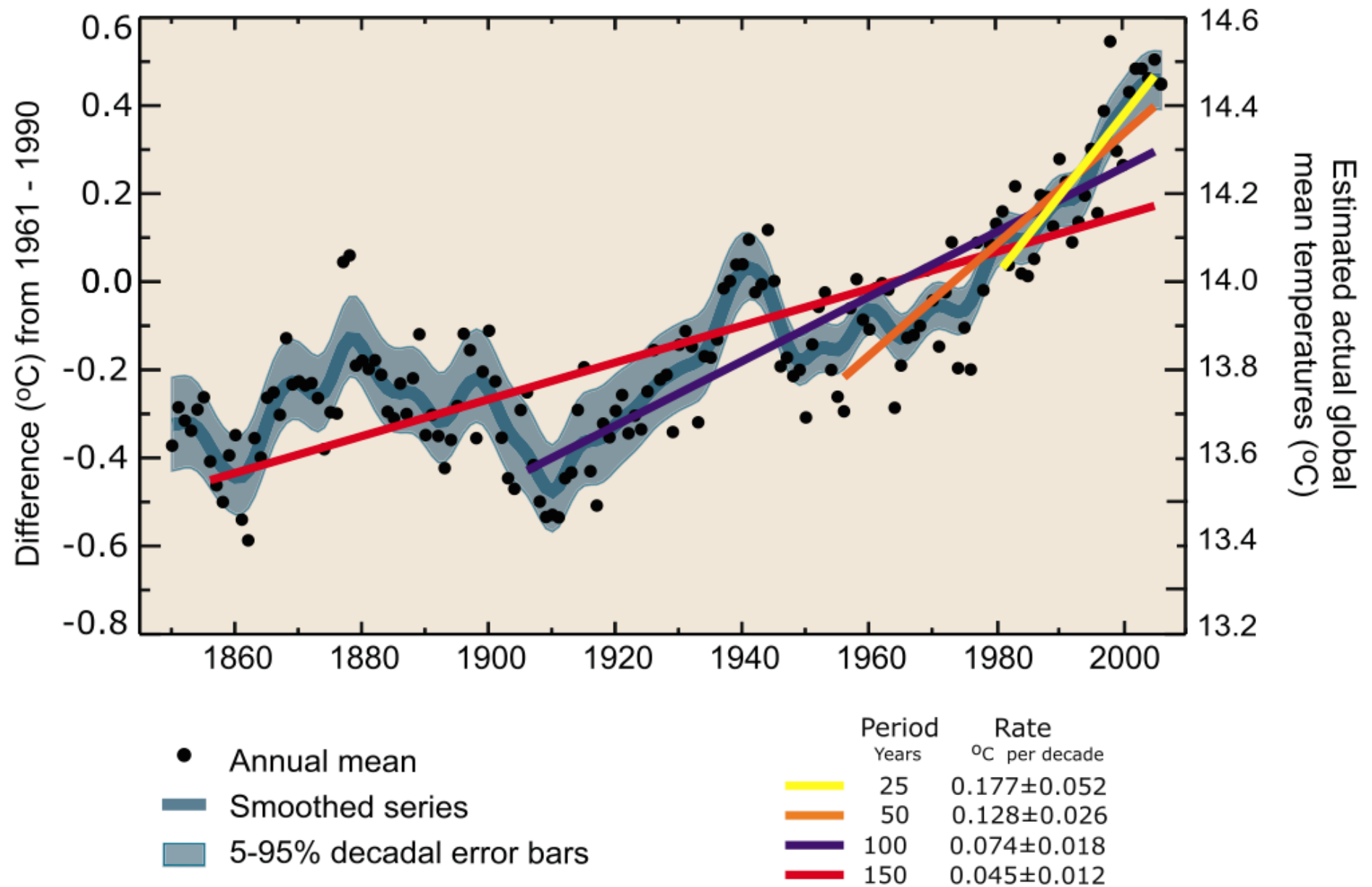


Raising Awareness of Environmental Issues in a Statistics Course

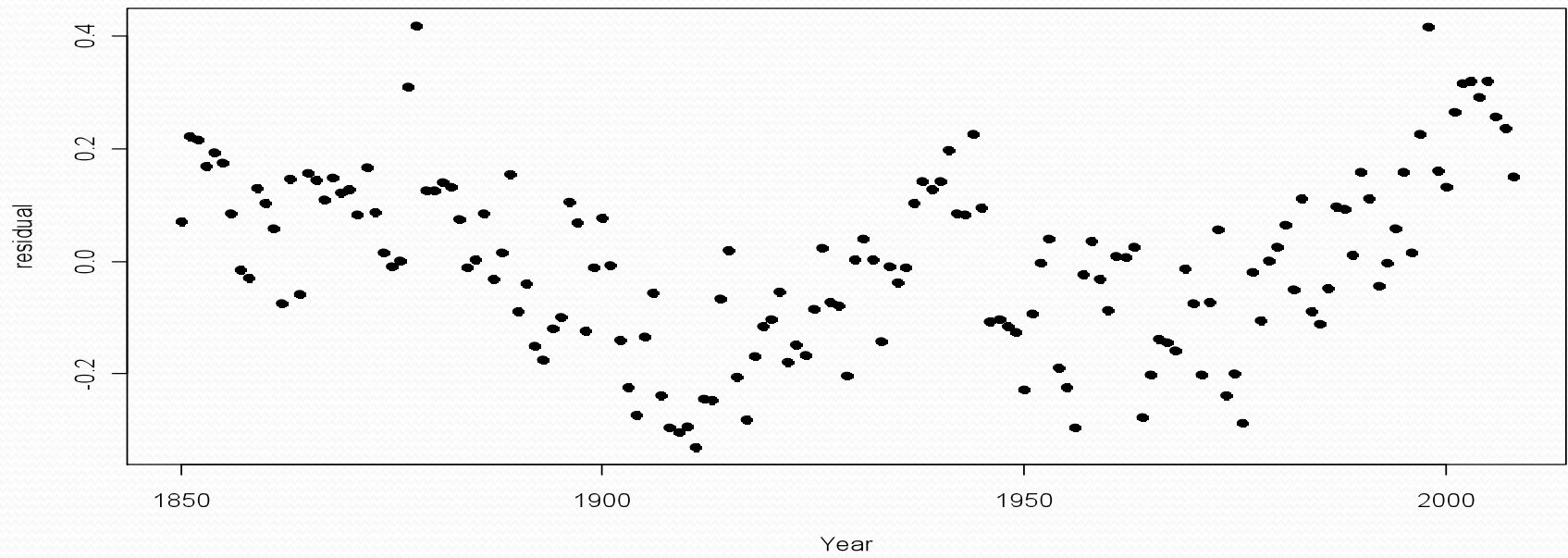
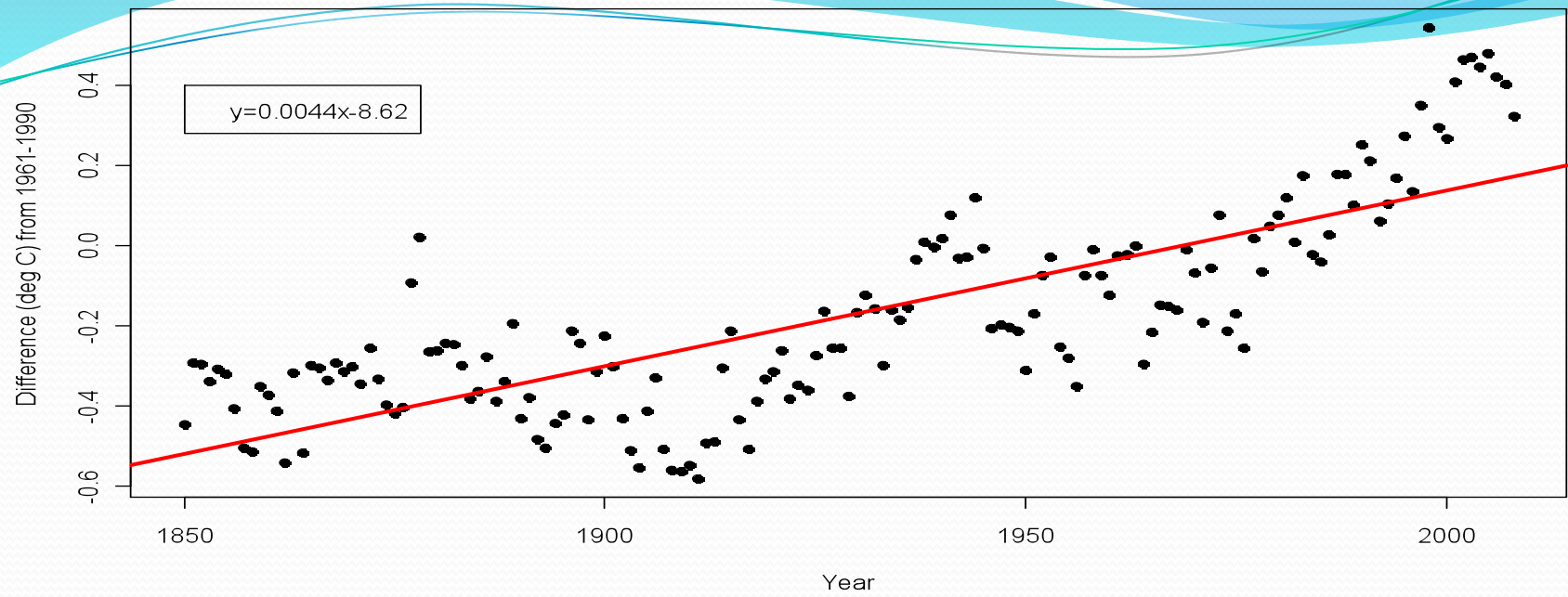
Thomas J. Pfaff
Ithaca College

Global Mean Temperature

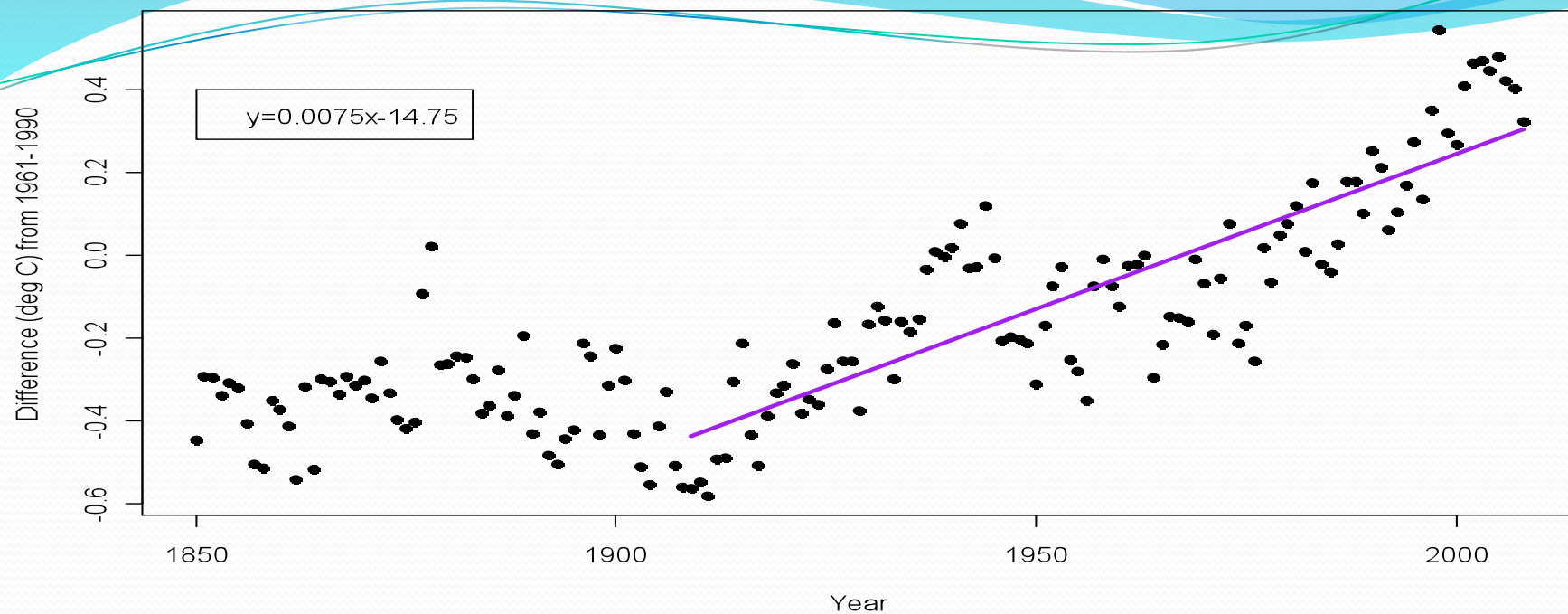


http://ipcc-wg1.ucar.edu/wg1/FAQ/wg1_faq-3.1.html

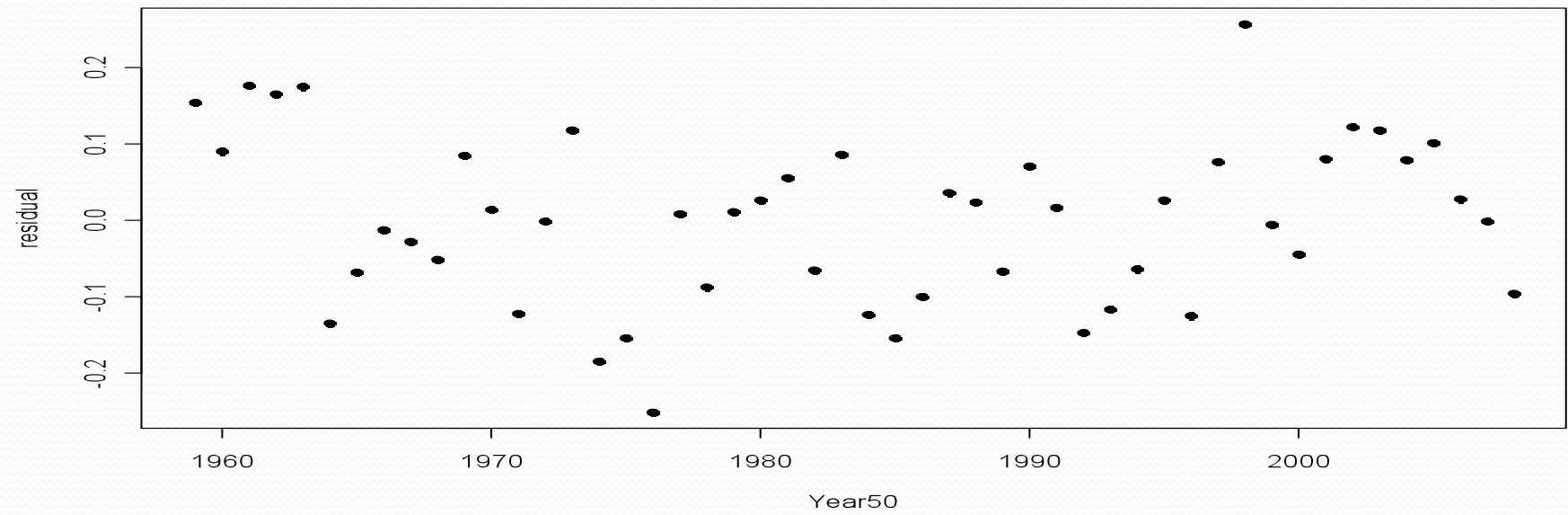
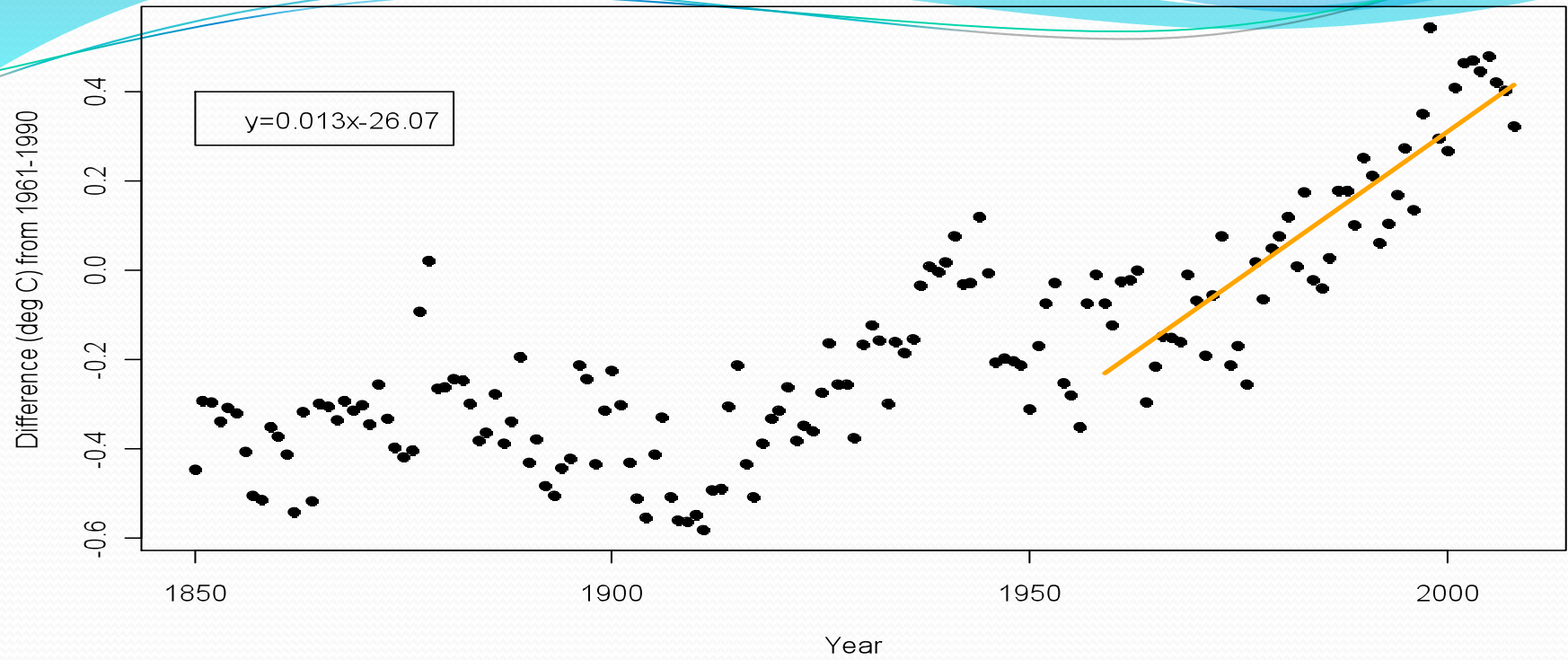
Global Mean Temperature



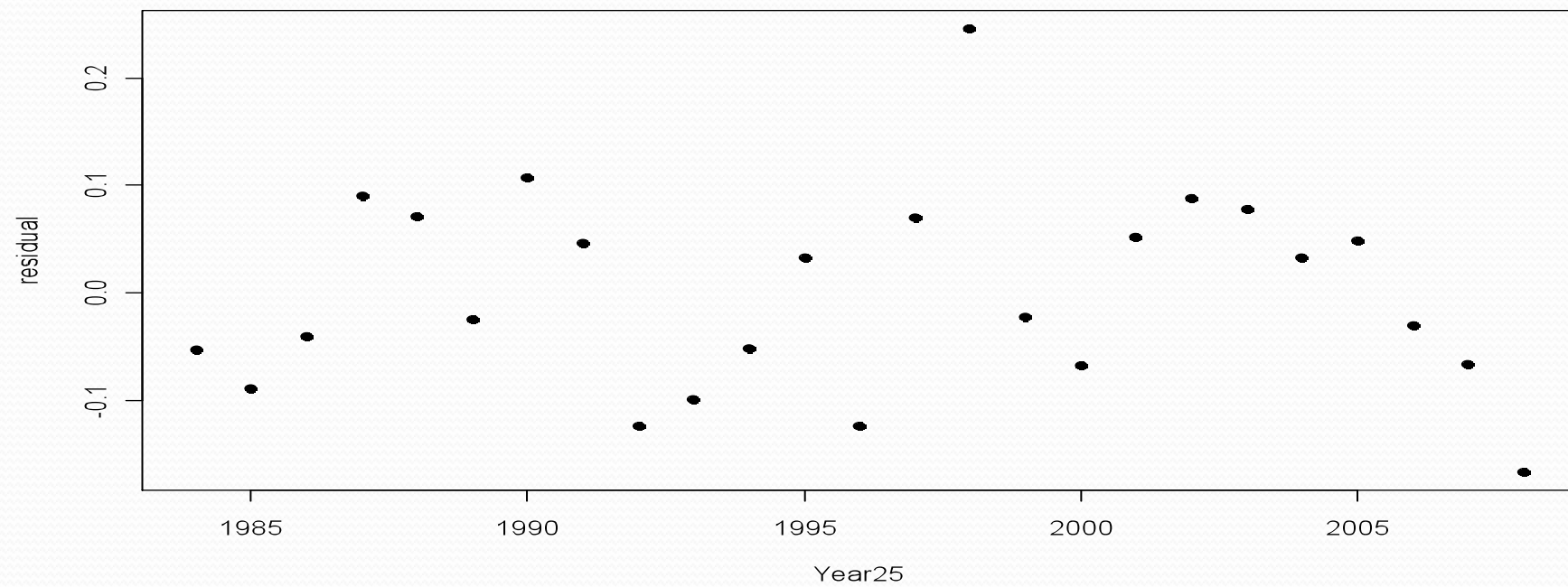
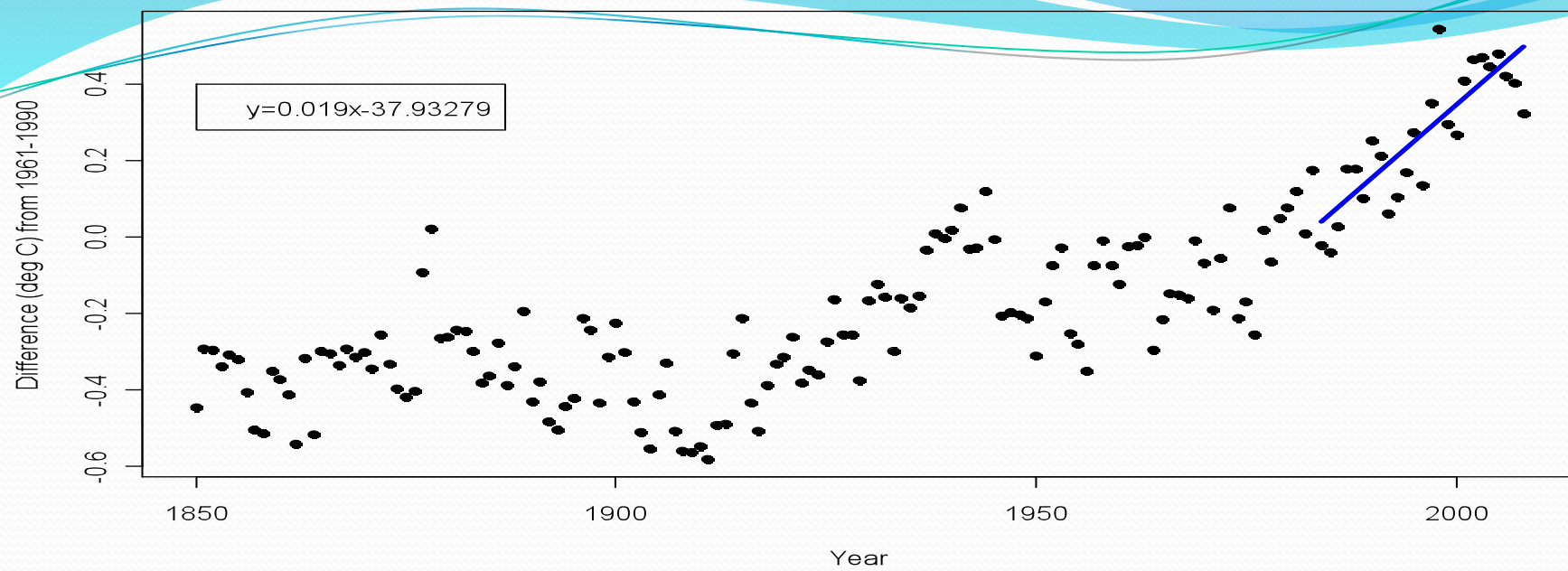
Global Mean Temperature



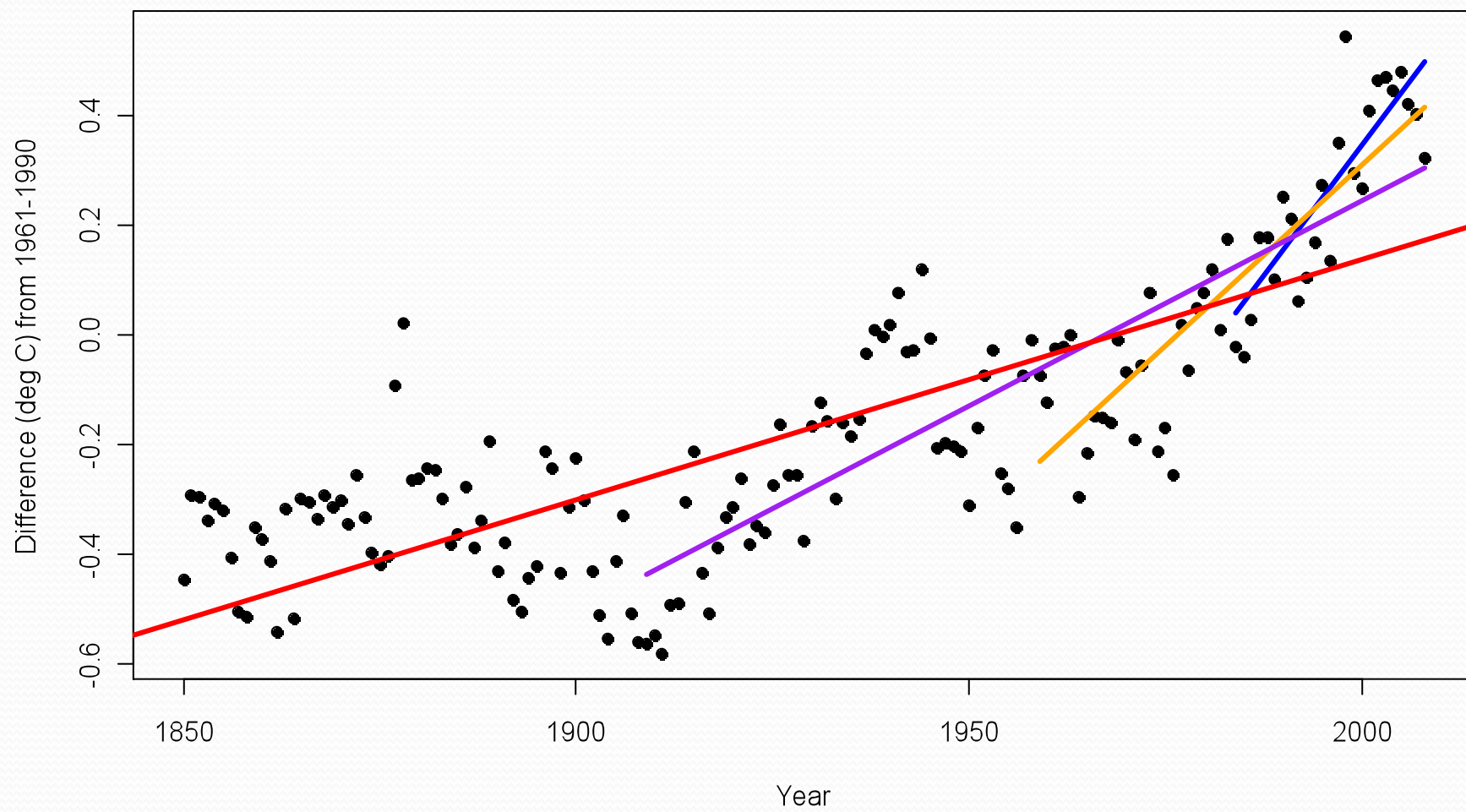
Global Mean Temperature



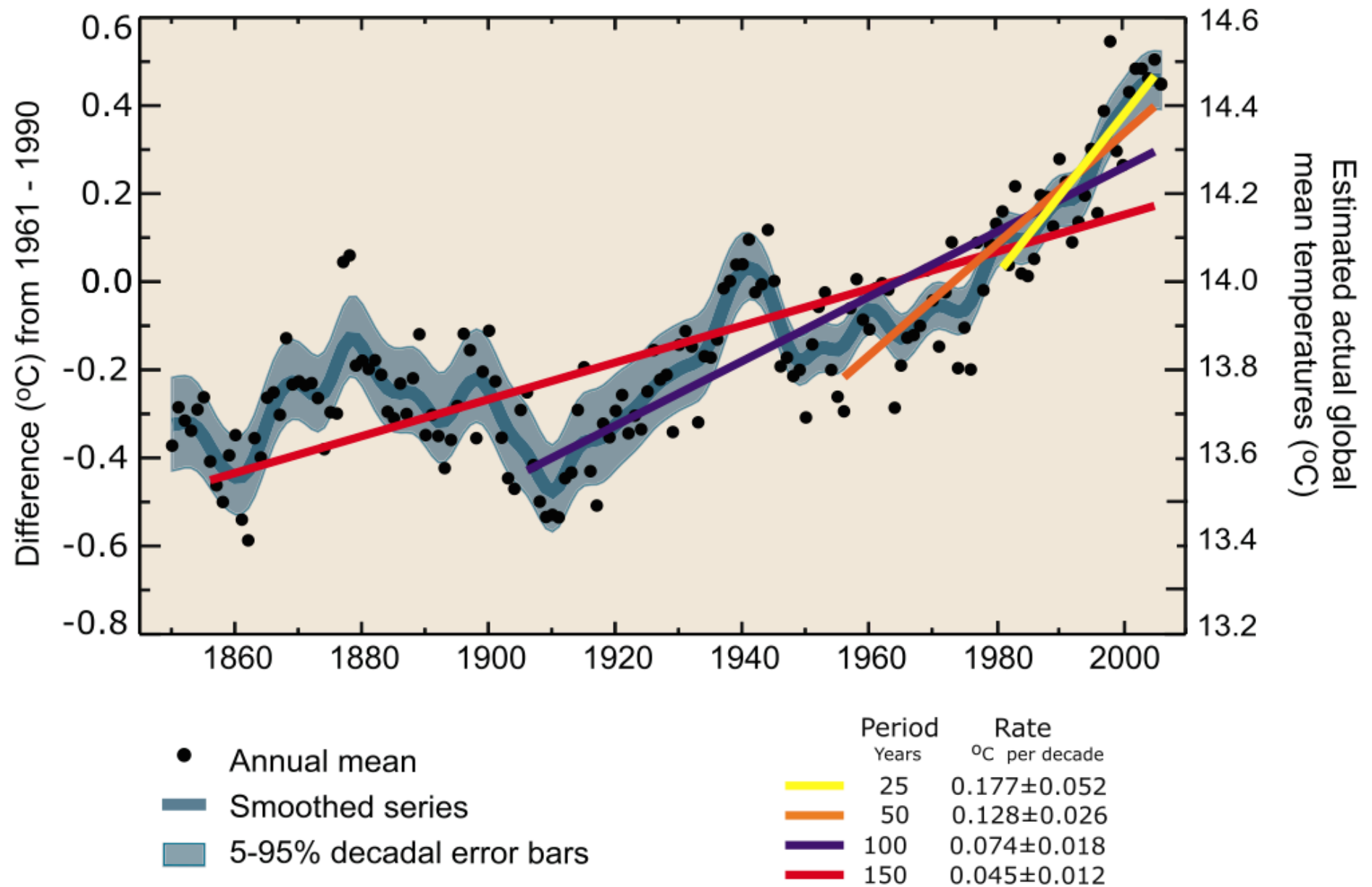
Global Mean Temperature



Global Mean Temperature



Global Mean Temperature

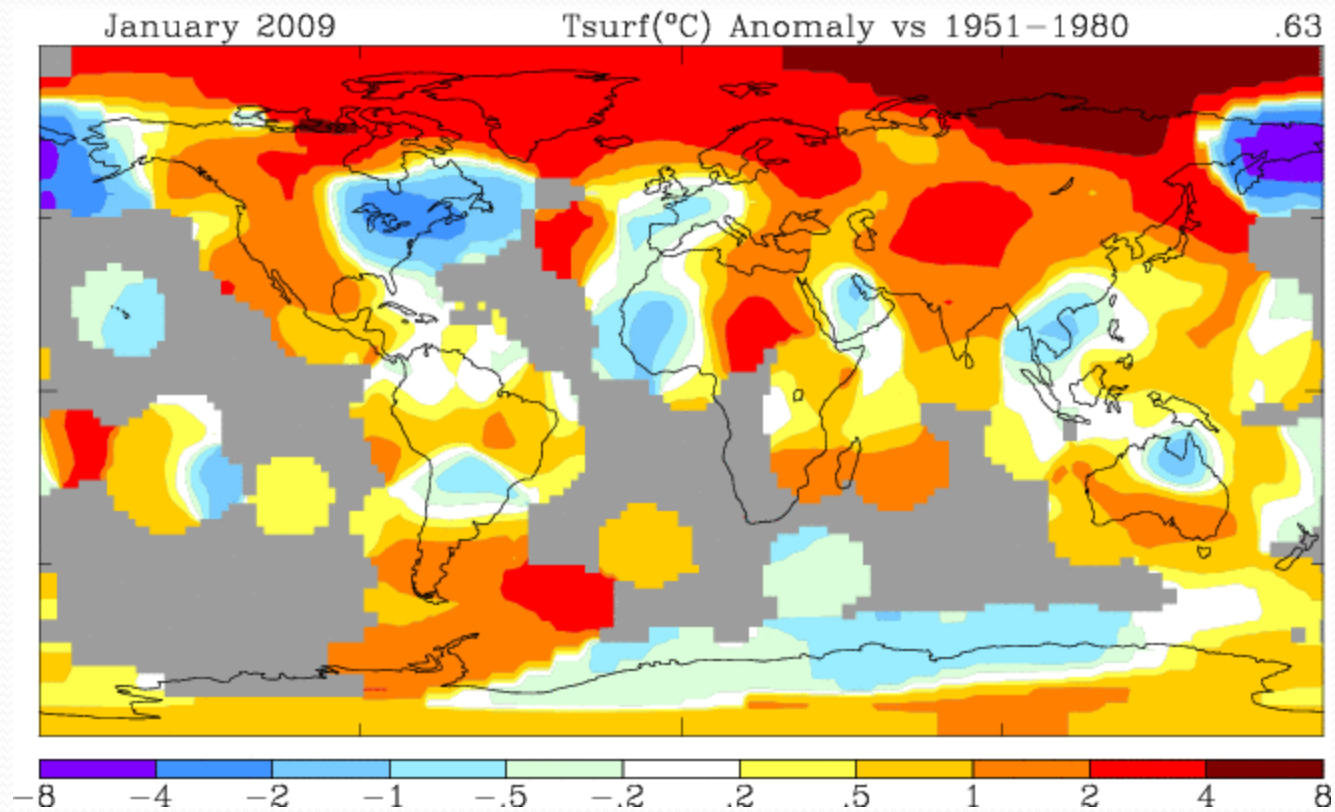


http://ipcc-wg1.ucar.edu/wg1/FAQ/wg1_faq-3.1.html

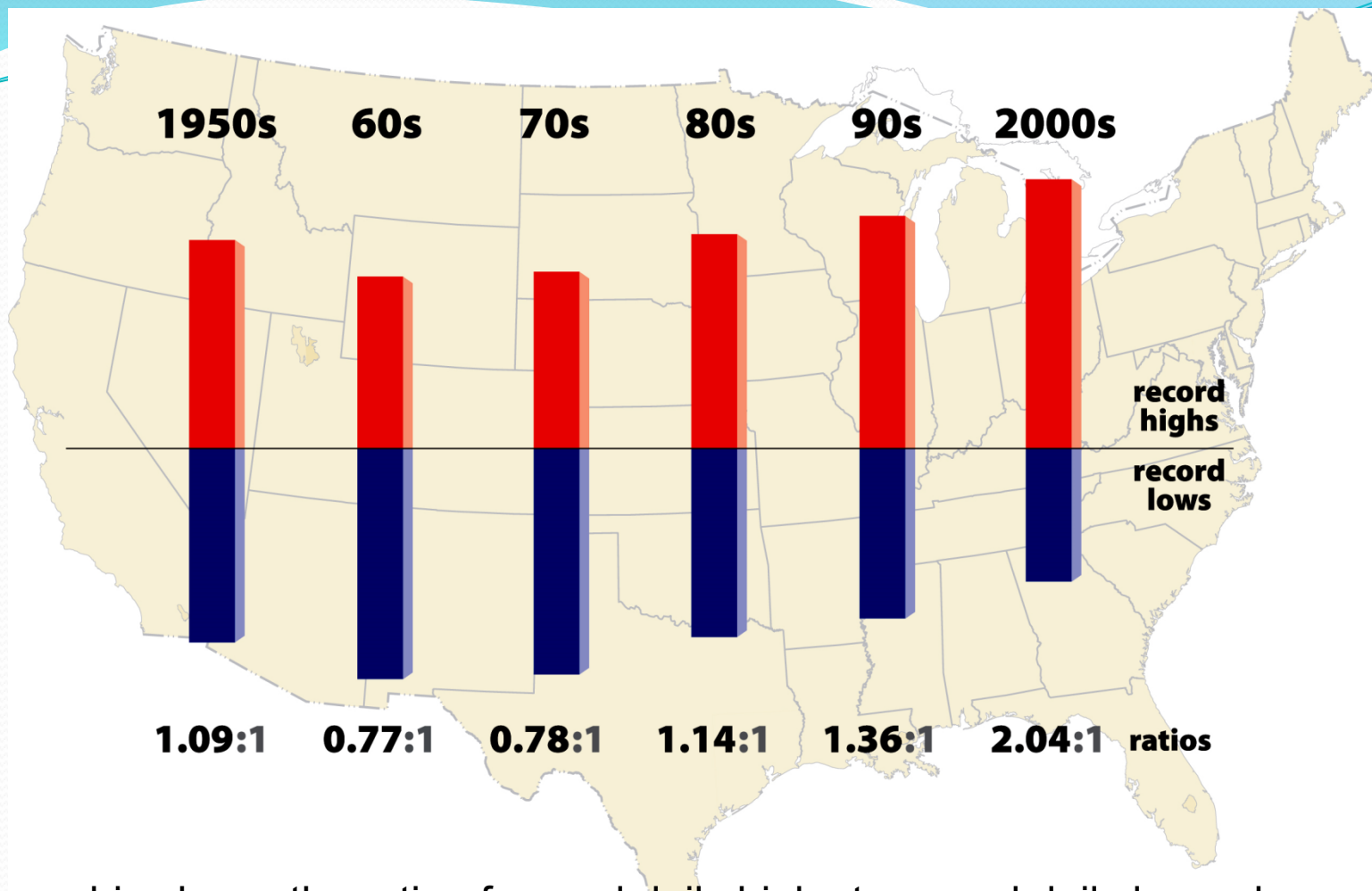


How should we use this?

- Have students try to read and interpret the graph before covering regression.
- Cover regression.
- Go back and have students interpret again, reproduce the graph (with analysis), and explain differences.
- Good question: Is a line the best fit of this data?



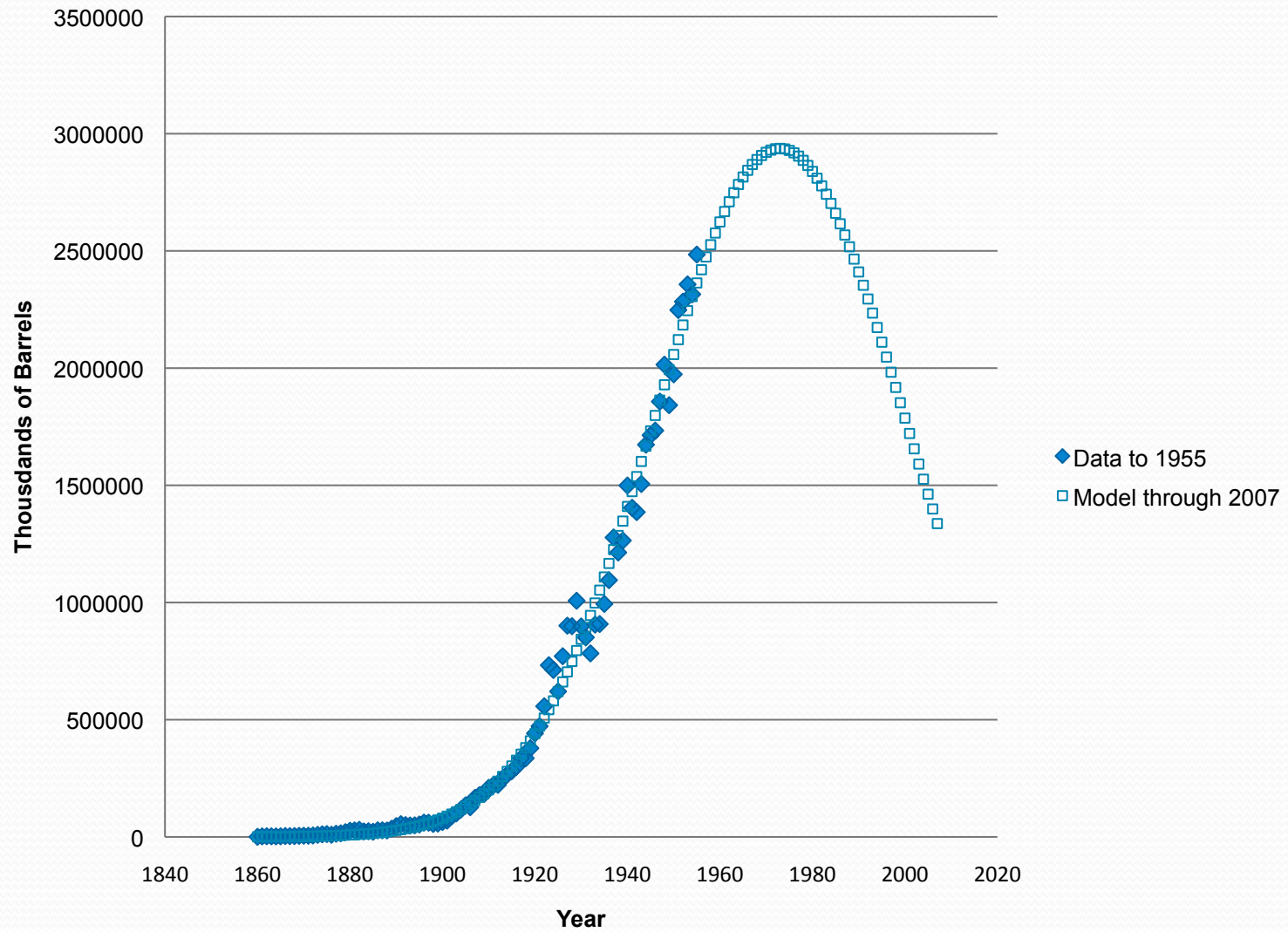
<http://data.giss.nasa.gov/gistemp/maps/>



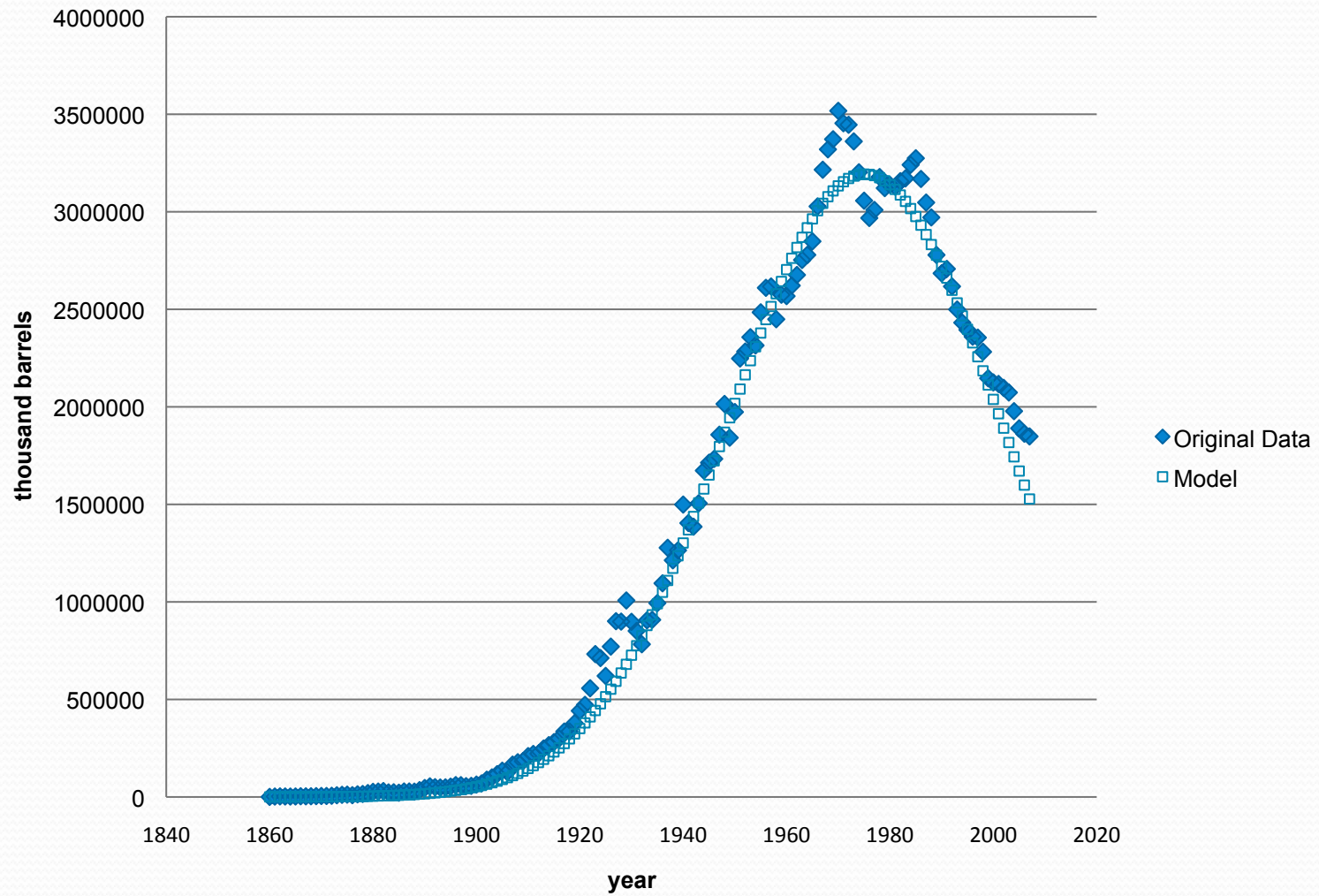
This graphic shows the ratio of record daily highs to record daily lows observed at about 1,800 weather stations in the 48 contiguous United States from January 1950 through September 2009. (20-to-1 by mid-century and 50-to-1 by 2100)

<http://www.ucar.edu/news/releases/2009/maxmin.jsp#>

Yearly U.S. Oil Production to 1955



Yearly U.S. Oil Production through 2007

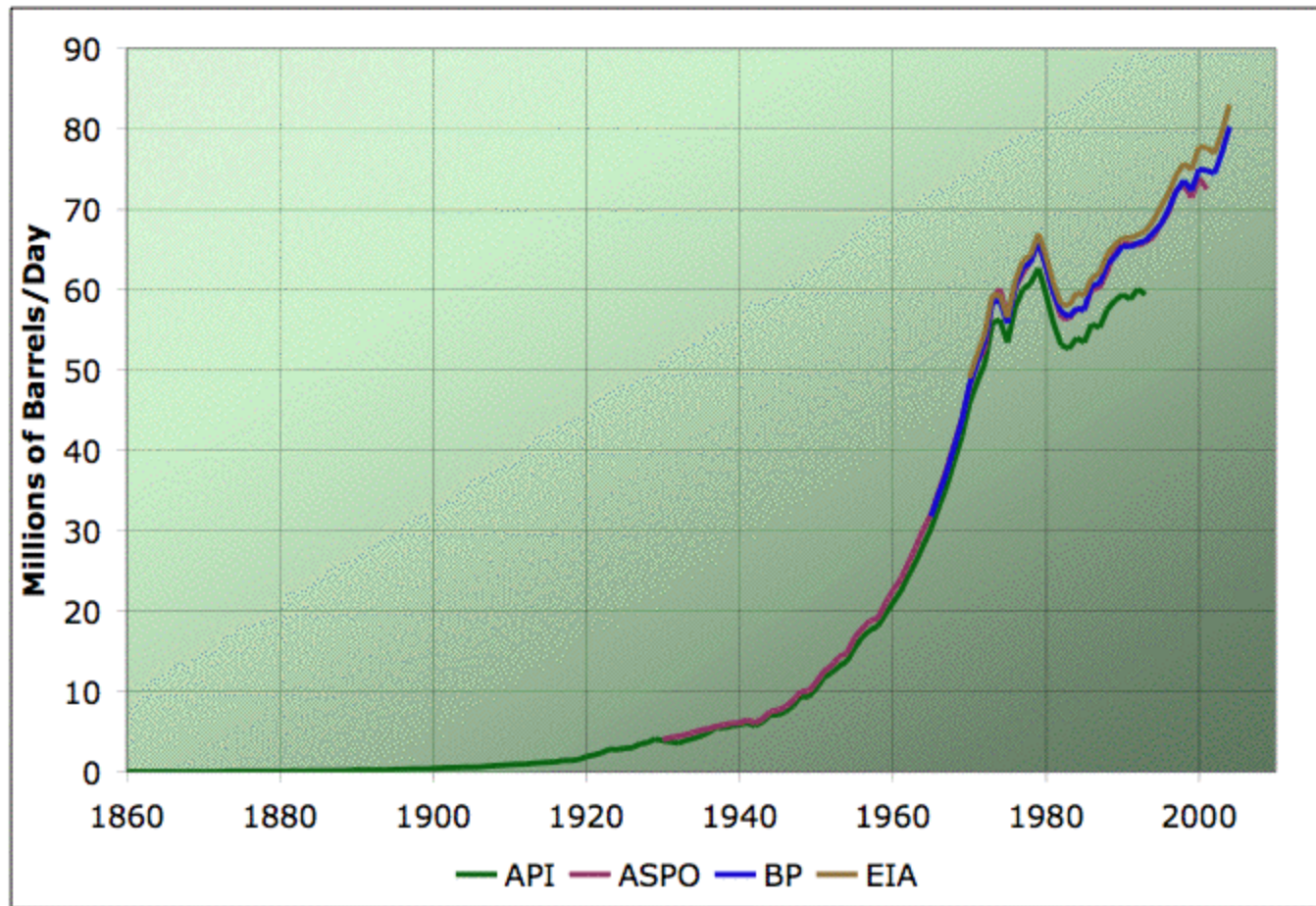


	A	B	C	D	E	F	G	H	I	J	K
1	Resources										
2	Math Horizons, Sept 2005, pg 18, Mathematics and Oil: Do They Mix										
3	http://tonto.eia.doe.gov/dnav/pet/hist/mcrfpus2a.htm										
4					Data to 1955	Data through 2007					
5				Q	200004295	210001073.7			Sum Error to 1955	4.18379E+11	
6				μ	1972.913994	1975.140422			Sum Error to 2007	2.26164E+12	
7				σ	27.16366652	26.23436351					
8		U.S. World Crude Oil Production (Including Lease Condensate), Thousand Barrels per Day	Yearly Production, thousand barrels	Estimated Value Using Normal Model with Q, μ , σ . Using data to 1955.	Normal Model (to 1955) Square Error	Estimated Value Using Normal Model with Q, μ , σ . Using data through 2007.	Normal Model (through 2007) Square Error				
9	Date										
9	1860	1	365	519.8433804	23976.47246	209.6253642	24141.27744			3500000	
10	1861	6	2190	605.3930847	2510979.076	247.6191623	3772843.319				
11	1862	8	2920	704.0667107	4910360.343	292.0745051	6905992.407				
12	1863	7	2555	817.7142816	3018161.667	344.0107618	4888473.412			3000000	
13	1864	6	2190	948.4201498	1541520.524	404.5939535	3187674.751				



How Should we Use This?

- According to the model, what percentage of our oil supply did we use from 1960 to 1990?
- According to the model, what percentage of our oil will we consume after 2010?
- What is the interquartile range for the model?
- In what year will we have consumed 95\% of our oil? (~2026)



<http://www.theoildrum.com/story/2006/1/22/04219/1102>



Resources

- <http://data.giss.nasa.gov/gistemp/maps/>
- http://ipcc-wg1.ucar.edu/wg1/FAQ/wg1_faq-3.1.html
- <http://www.ucar.edu/news/releases/2009/maxmin.jsp#>
- [http://www.theoildrum.com/story/
2006/1/22/04219/1102](http://www.theoildrum.com/story/2006/1/22/04219/1102)
- <http://www.ithaca.edu/tpfaff/sustainability.htm>
- tpfaff@ithaca.edu