Image source: http://www.noaa.gove/hurricanes/ivanpic3.html

Relationship Between Global Surface Temperature and Weather Damage

Susan Smith, Tuesday morning lab

CALS 002/085

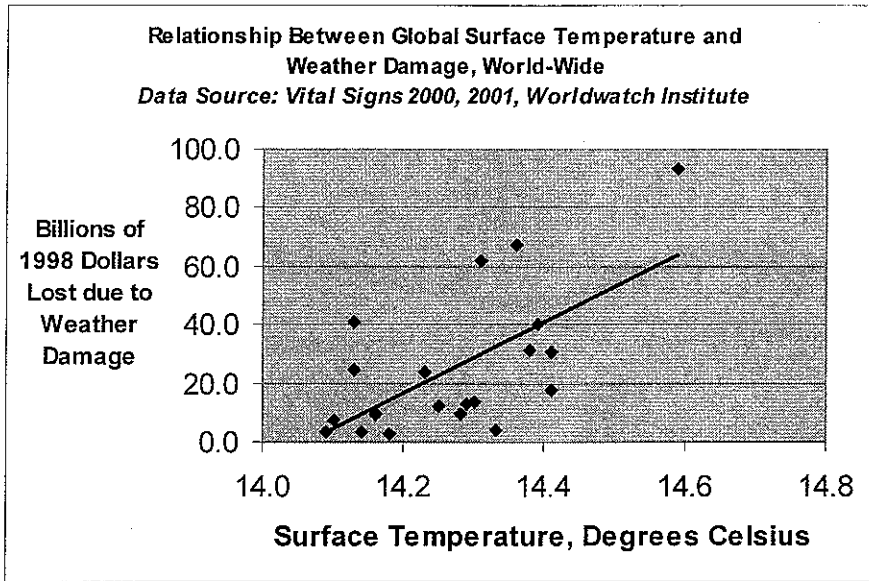Lab Instructors: Jane Gates and Donna Anderson

Image source: http://www.weatherdamabe.com/image5.html

**Relationship Between Global Surface Temperature
and Weather Damage, World-Wide, 1980-1999**
Data Source: Vital Signs 2000, 2001, Worldwatch Institutue

Year	Losses in Billions of 1998 Dollars	Global Surface Temperature Celsius
1980	2.8	14.2
1981	13.3	14.3
1982	3.4	14.1
1983	9.5	14.3
1984	3.4	14.1
1985	7.2	14.1
1986	9.4	14.2
1987	13.0	14.3
1988	4.2	14.3
1989	12.2	14.3
1990	18.0	14.4
1991	31.2	14.4
1992	40.5	14.1
1993	24.4	14.1
1994	24.1	14.2
1995	40.3	14.4
1996	61.7	14.3
1997	30.3	14.4
1998	92.9	14.6
1999	67.1	14.4

Relationship Between Global Surface Temperature and Weather Damage, World-Wide
Data Source: Vital Signs 2000, 2001, Worldwatch Institute

The graph above is an X-Y scatter plot that shows the relationship between global surface temperature and billions of dollars of weather-related damage in 1998 adjusted dollars from the years 1980 to 1999. There is a weak positive correlation showing that years that had higher global surface area had a higher expenditure of money to recover from storm damage.

Although this may a reflection of global warming and the increase in storm frequency and strength, it also could be a reflection of the increase in wealth and number of people in general. As population and wealth increases, so would storm damage costs, even though the number of storms and their strength may be the same. These data come from Worldwatch Institute's publication, *Vital Signs* from 2000 and 2001.

Below is the spreadsheet for the population pyramid of China:

China 2000 - population by age and sex

Age	Male (000s)	Female (000s)	Total (000s)	% male	%female
00-04	50,111	45,772	95,883	-3.97	3.63
05-09	54,199	49,416	103,615	-4.29	3.91
10-14	62,817	57,148	119,965	-4.98	4.53
15-19	51,386	47,673	99,059	-4.07	3.78
20-24	49,357	46,532	95,889	-3.91	3.69
25-29	61,095	57,719	118,814	-4.84	4.57
30-34	64,435	60,704	125,139	-5.10	4.81
35-39	52,752	50,054	102,806	-4.18	3.96
40-44	42,780	39,492	82,272	-3.39	3.13
45-49	43,199	40,832	84,031	-3.42	3.23
50-54	31,731	29,323	61,054	-2.51	2.32
55-59	23,851	21,973	45,824	-1.89	1.74
60-64	21,071	19,655	40,726	-1.67	1.56
65-69	17,488	17,146	34,634	-1.39	1.36
70-74	12,131	12,954	25,085	-0.96	1.03
75-79	7,055	8,845	15,900	-0.56	0.70
80-84	3,114	4,793	7,907	-0.25	0.38
85+	1,203	2,668	3,871	-0.10	0.21
Total	649,775	612,699	1,262,474	51.47	48.53

Population Pyramid for China, 2000, Data Source: US Census Bureau
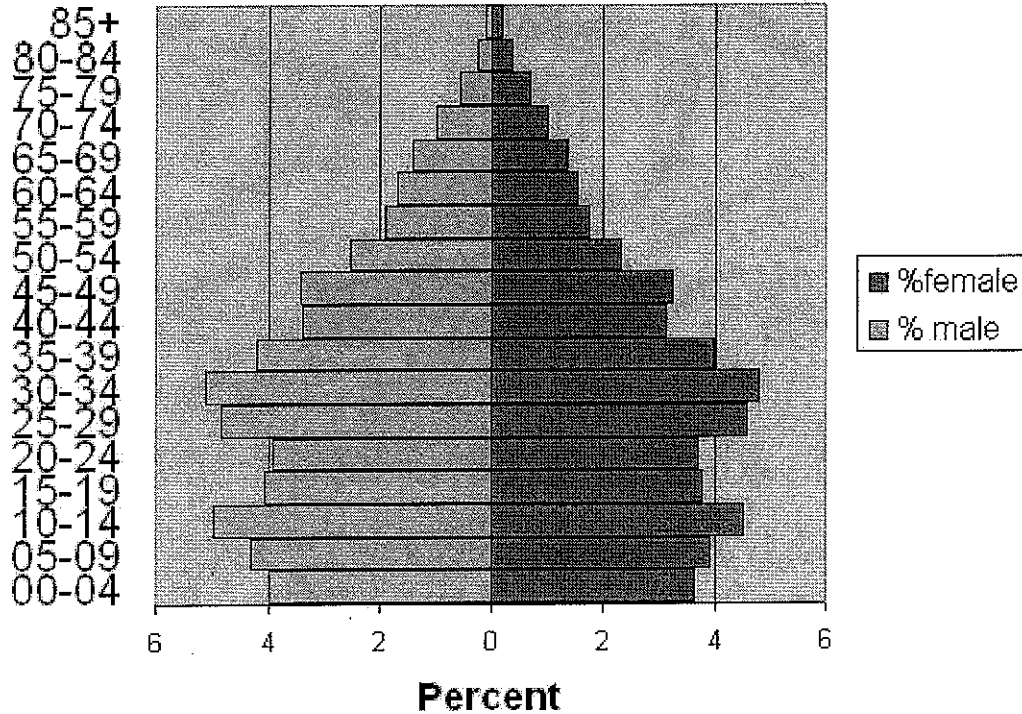
The population pyramid for China, 2000, shows a country that is heading towards population stabilization and zero population growth. There was a population boom or baby boom in the 1960s as seen in the bulge around 30-34 year olds. The echo of that baby boom is visible as a bulge around the 10-14 year old cohort. It is interesting to note there are more males reported in the 0-4 year old cohort, which may reflect the culture of son's being more valuable than daughters in traditional China, and possible infanticide of female babies.

Original Data Source for X-Y scatter plot are on the following pages
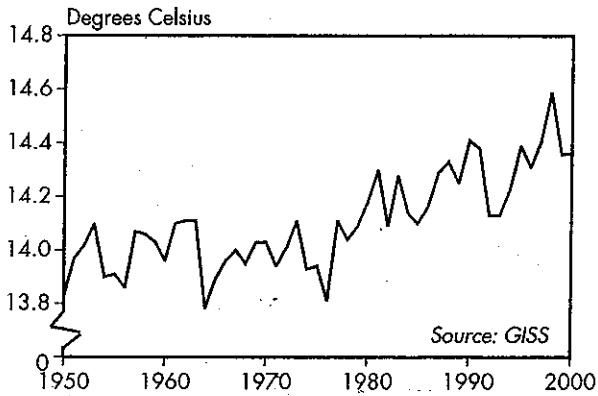
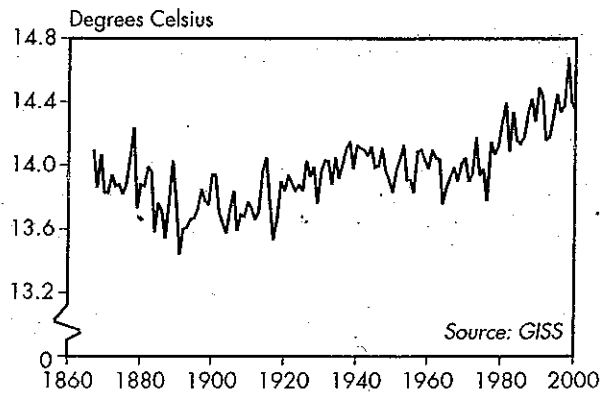Figure 1: Global Average Temperature at Earth's Surface, 1950–2000

Figure 2: Global Average Temperature at Earth's Surface (Land-Based Series), 1867–2000

Global Average Temperature, 1950–2000

Year	Temperature (degrees Celsius)
1950	13.83
1955	13.91
1960	13.96
1965	13.89
1970	14.03
1971	13.94
1972	14.01
1973	14.11
1974	13.93
1975	13.94
1976	13.81
1977	14.11
1978	14.04
1979	14.09
1980	14.18
1981	14.30
1982	14.08
1983	14.28
1984	14.14
1985	14.10
1986	14.16
1987	14.29
1988	14.33
1989	14.25
1990	14.41
1991	14.38
1992	14.13
1993	14.13
1994	14.23
1995	14.39
1996	14.31
1997	14.41
1998	14.59
1999	14.36
2000 (prel)	14.36

Source: Surface Air Temperature Analysis, Goddard Institute for Space Studies, 19 January 2001

ECONOMIC LOSSES FROM WEATHER-RELATED NATURAL DISASTERS WORLDWIDE, TOTAL AND INSURED, 1980–99

YEAR	TOTAL LOSSES (bill. 1998 dollars)
1980	2.8
1981	13.3
1982	3.4
1983	9.5
1984	3.4
1985	7.2
1986	9.4
1987	13.0
1988	4.2
1989	12.2
1990	18.0
1991	31.2
1992	40.5
1993	24.4
1994	24.1
1995	40.3
1996	61.7
1997	30.3
1998	92.9
1999 (prel)	67.1

YEAR	INSURED LOSSES (bill. 1998 dollars)
1980	0.1
1981	0.6
1982	1.5
1983	4.5
1984	1.5
1985	2.9
1986	0.3
1987	5.8
1988	1.0
1989	5.6
1990	12.0
1991	9.3
1992	25.3
1993	5.8
1994	1.9
1995	9.4
1996	9.3
1997	4.5
1998	15.1
1999 (prel)	19.7

SOURCE: Munich Re database and e-mail, 3 February 2000.
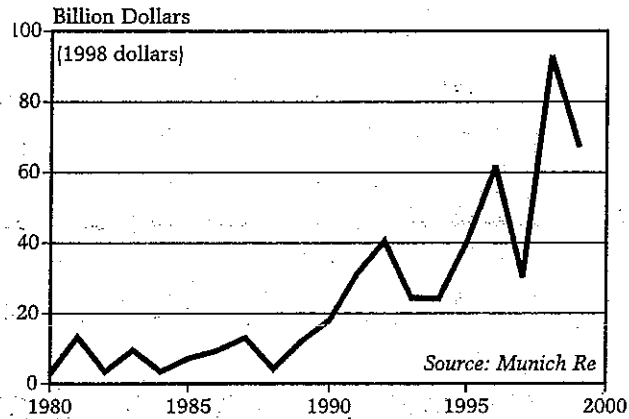

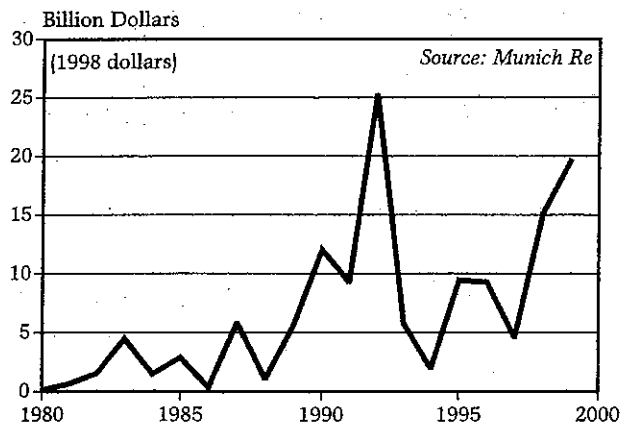Figure 1: Economic Losses from Weather-Related Natural Disasters Worldwide, 1980–99

Figure 2: Insured Losses from Weather-Related Natural Disasters Worldwide, 1980–99