The December Press Release 2005.

The global combined sea surface temperature (SST) and land surface air temperature anomaly for 2005, with respect to the 1961-1990 average, to the end of November has been +0.48°C . 2005 is currently the second warmest year on record and 2005 is likely to be among the warmest 4 years in the official temperature record since 1861, but final figures will not be released until February. The last 10 years (1996-2005), with the exception of 1996, are the warmest years on record. The anomaly so far for the Northern Hemisphere is 0.65°C and for the Southern Hemisphere 0.32°C. The current 2005 values for the Northern Hemisphere make it the warmest on record and the current value for the Southern Hemisphere make it the fourth warmest. *Table 1 .a* shows the 10 warmest years using our official figures, for each region. *Table 1.b* shows the 11 warmest years using simple area averaged data, including the value for January to November 2005, for each region. Out of the past ten years, only 1996 does not fall in the ten warmest – its place is taken by 1995.

All the temperature values have uncertainties, which arise mainly from gaps in data coverage. The sizes of the uncertainties are such that, although it is most likely to be the second warmest year, the global average temperature for 2005 is statistically indistinguishable from, and could be anywhere between, the first and the eighth warmest year in the record. Similar analyses in the United States rank the year as first (GISS) and second (NCDC), but NCDC note that uncertainties arising from sparse observations or measurement biases make 2005 statistically indistinguishable from 1998 as well as from other recent years such as 2002 and 2003.

Figure 1.a shows the official surface temperature record in order of rank from 1861 to 2005 for the globe. *Figure 1.b* shows the official ranked surface temperature record from 1955 to 2005 for the globe. The size of the coloured bars in *Figures 1.a and 1.b* indicate the uncertainty estimates for each year.

Figures 2a to *f* show series of estimated global and regional mean surface temperature anomalies (to the end of November 2005) relative to the average for 1961-1990. The regions shown are the Globe, the Northern Hemisphere, Southern Hemisphere, Northern and Southern Extratropics (latitude > 30°) and Tropics (latitude <30°).

Globally, two months in 2005 had record land surface air anomalies: October 2005 was the warmest October on record at 1.01˚C above the 1961-1990 average, surpassing last year's record of 0.9°; June 2005 was the warmest June on record at 0.97˚C above the 1961-1990 average, surpassing the previous record anomaly of 0.83˚C, set in 1998.

A global field of temperature percentiles for the period January to October 2005 is shown in *Figure 3.a,* and anomalies in *Figure 3.b*. The data in *Figure 3.a* are expressed as percentiles of gamma distributions fitted to the 1961-1990 data. Areas of significant warmth were widespread with large areas of Africa, Australia, Brazil, China and the US showing significantly above average temperatures. Much of the north Atlantic, mid Atlantic and tropical Indian Ocean were also significantly warm, along with the Gulf of Alaska. SSTs in the North Atlantic in 2005 are likely to be the warmest on record (*Figure 4).*

In September 2005, sea-ice extent in the Northern Hemisphere fell to $5.9x10^6$ km^2. This is the first time that it has dropped below $6.0x10^6$ km^2 and it is the lowest sea-ice extent recorded since satellite observations began in the 1970s. *Figure 5* shows the Northern hemisphere sea ice extent anomaly relative to the 1973-2005 average. In the Southern Hemisphere, around Antarctica, there has been little change in 2005, as seen over the last two decades. (*Figure 5.b*)

Aloft, the global troposphere and stratosphere have continued their respective warming and cooling trends (*Figure 6.a). Figure 6.b* shows the zonally averaged temperature anomalies from October 2004 to September 2005, relative to the 1966 to 1995 climatology.

The UK has seen another warm year with the mean Central England Temperature (CET) for 2005 likely to be in the top 10 warmest years in the 347 year record with a current anomaly, from 1961-90, of 1.07˚C to 12th December. The warmest years were 1999 and 1990 with an anomaly of 1.16C and again 2005 is not distinguishable from this value given the uncertainties in the data. (*Table 2.a* and *Figure 6).* The daytime maximum CETs have averaged well above the 1961-1990 normal during 2005 so far. October was unusually warm and the mean and minimum CET for October were both the second warmest on record. The minimum temperature of 15.2º C on 12th October 2005 was the warmest in October since records of minimum temperature began in 1878. The autumn mean CET (SON) at 11.60º C, is currently the warmest Autumn since 1818 (*Table 2.b*).

Data and Figures

GLOBE		NORTHERN HEMISPHERE		SOUTHERN HEMISPHERE	
1998	0.54	2003	0.66	1998	0.46
2002	0.50	1998	0.66	2002	0.39
2003	0.49	2002	0.63	2003	0.36
2004	0.44	2004	0.62	1997	0.28
2001	0.40	2001	0.55	1987	0.26
1997	0.39	1995	0.53	2001	0.25
1995	0.38	1997	0.51	1991	0.25
2000	0.30	1999	0.48	2004	0.25
1999	0.30	2000	0.42	1996	0.24
1991	0.29	1990	0.42	1988	0.24

Table 1.a. The official surface temperature record showing the 10 warmest years (up to 2004) in the hemispheres and globe. The data are optimally averaged temperature relative to the 1961-1990 mean, derived from the combined Hadley Centre/Climatic Research Unit dataset HadCRUT2v (Jones and Moberg, 2003).

GLOBE		NORTHERN HEMISPHERE		SOUTHERN HEMISPHERE	
1998	0.57	2005	0.65 (Nov)	1998	0.48
2005	0.48 (Nov)	1998	0.65	2003	0.33
2003	0.46	2004	0.61	2002	0.33
2002	0.46	2003	0.60	2005	0.32 (Nov)
2004	0.44	2002	0.59	1997	0.32
2001	0.41	2001	0.53	2001	0.28
1997	0.40	1995	0.48	2004	0.27
1995	0.36	1997	0.47	1987	0.27
1999	0.33	1999	0.46	1995	0.24
1990	0.30	1990	0.41	1983	0.24
2000	0.28	2000	0.39	1996	0.22

Table 1. b. These values are the simple area-weighted averages of HadCRUT2v (Jones and Moberg, 2003) zeroed over 1961-1990, including the latest 2005 figure with data to November.

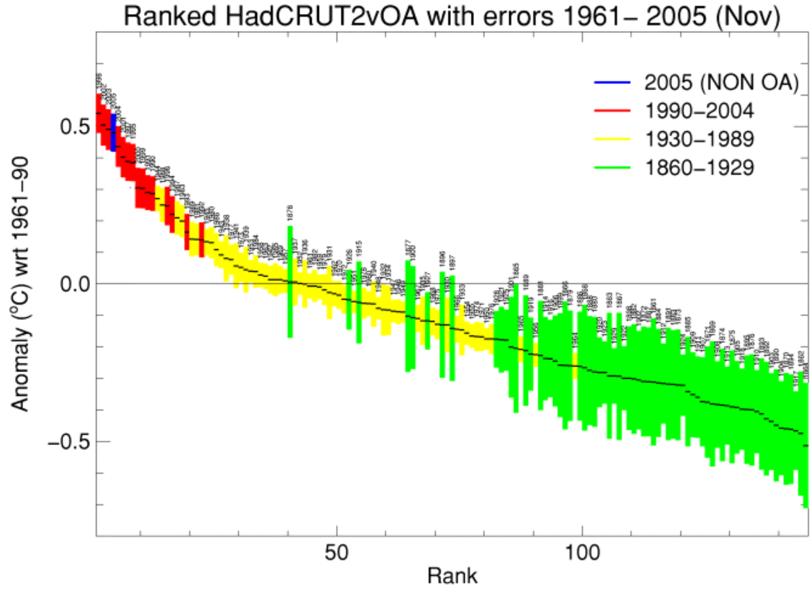

Figure 1.a: Global ranked surface temperatures from 1861. The size of the bars indicates the uncertainty associated with each year. The source data are 10 years (1861-1870) of blended land (Jones, 1994) and SST (Parker et al., 1995) data, followed by the blended land and SST (Jones and Moberg, 2003) HadCRUT2v series. Values are optimal averages (OA) except 2005 which is for January to November and is a simple area weighted average.

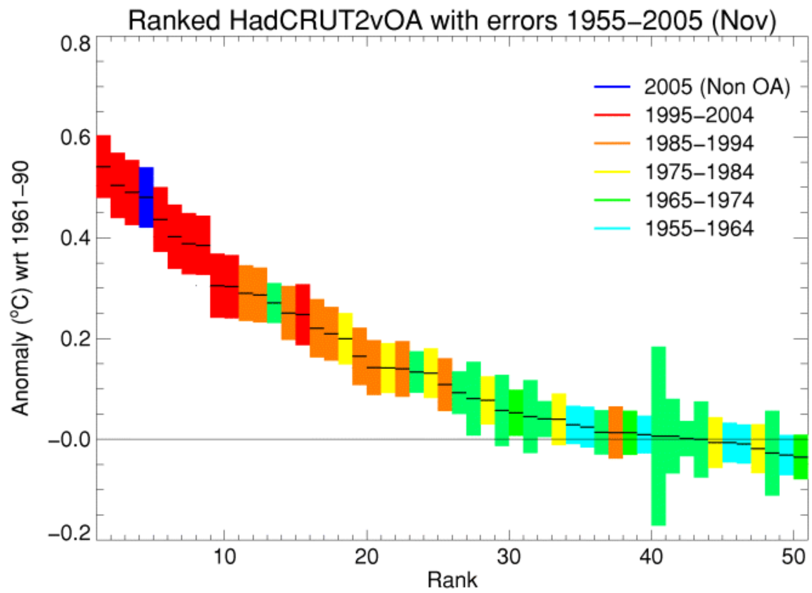

Figure 1.b: As Figure 1a but for 1955 to 2005 November.

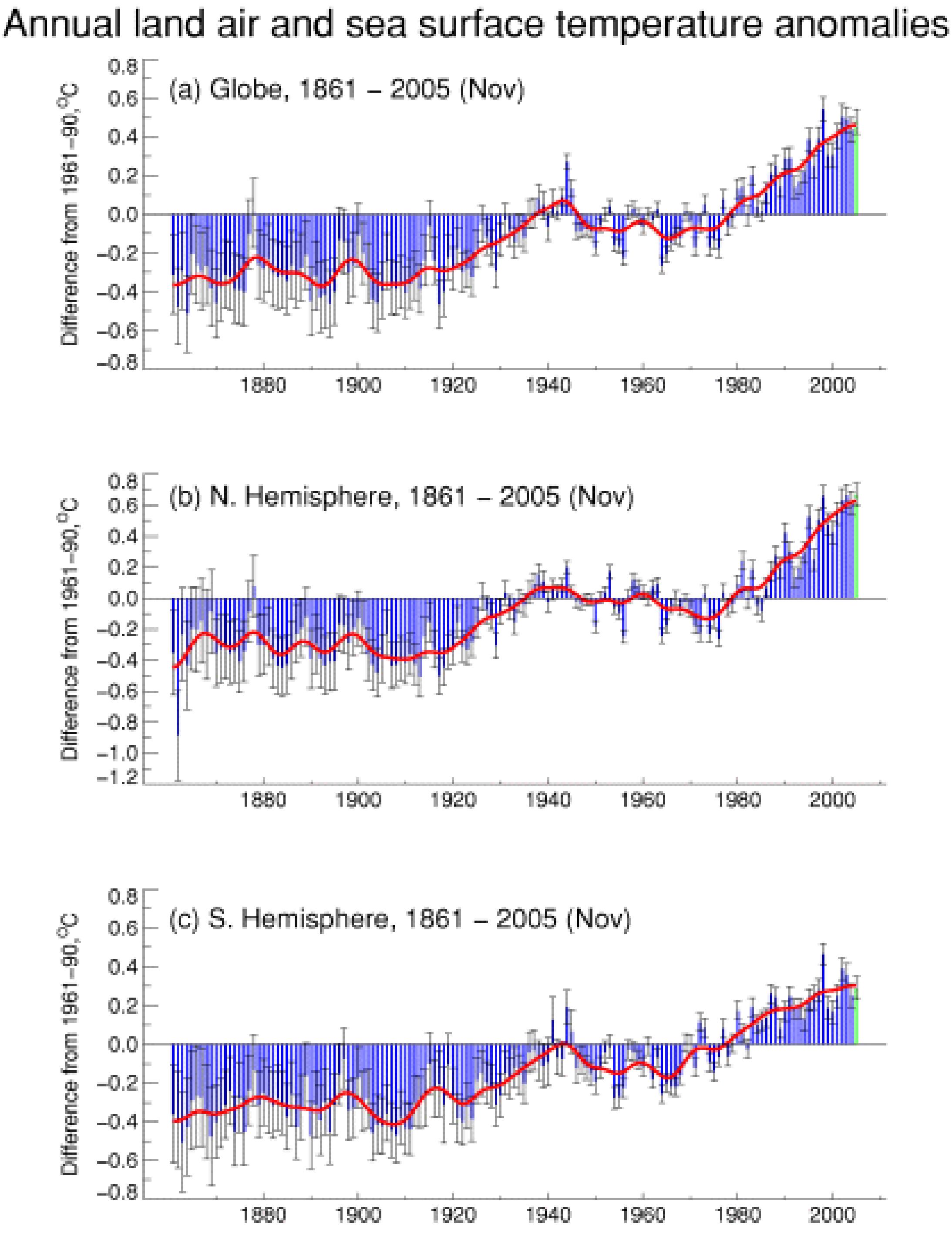

Figure 2. Annual combined land surface air temperature and SST anomalies, 1861-2005, with respect to the 1961-1990 mean. The data for 2005 are for January to November only. The source data are 10 years (1861-1870) of blended land (Jones, 1994) and SST (Parker et al., 1995) data, followed by the blended land and SST (Jones and Moberg, 2003) HadCRUT2v series. Values are optimal averages (OA) except 2005 which is a simple area-weighted average. The same data sources are used for Figures 2(d) to 2(f) but the data are not optimally averaged.

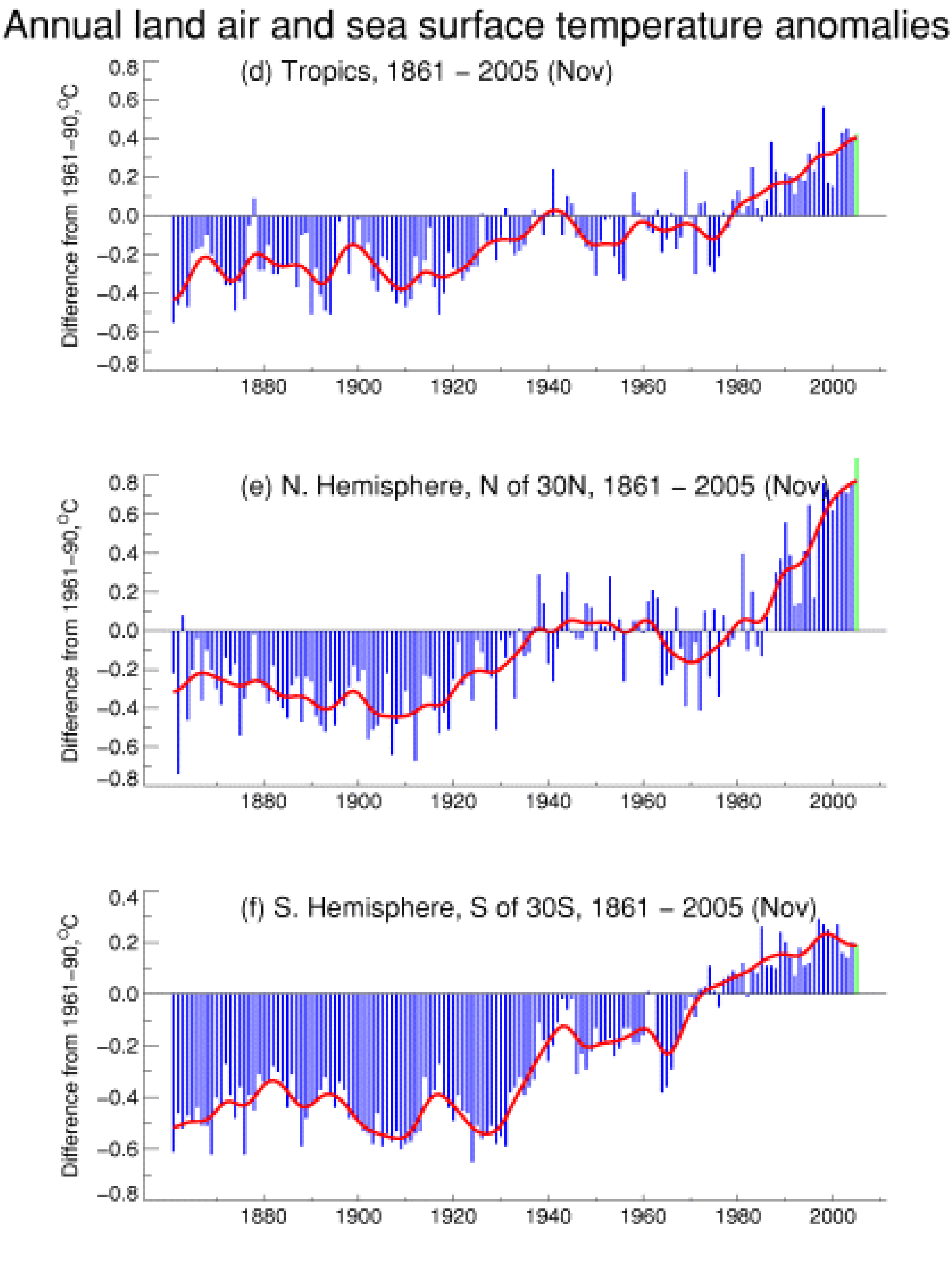

Figure 2 (continued).

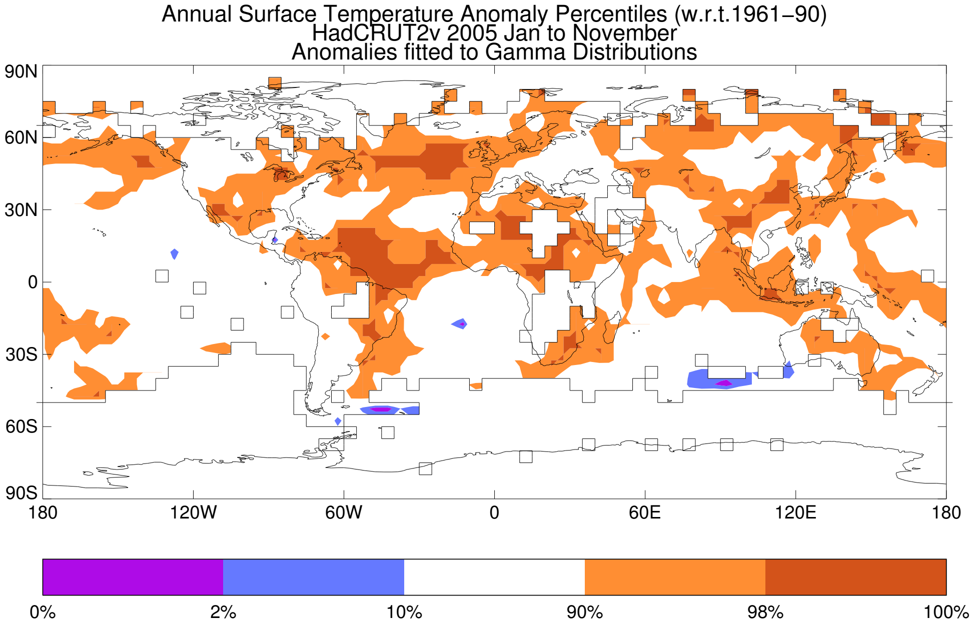

Figure 3.a: Global field of temperature percentiles for the period January to November 2005, estimated from gamma distributions fitted to 1961-1990 data.

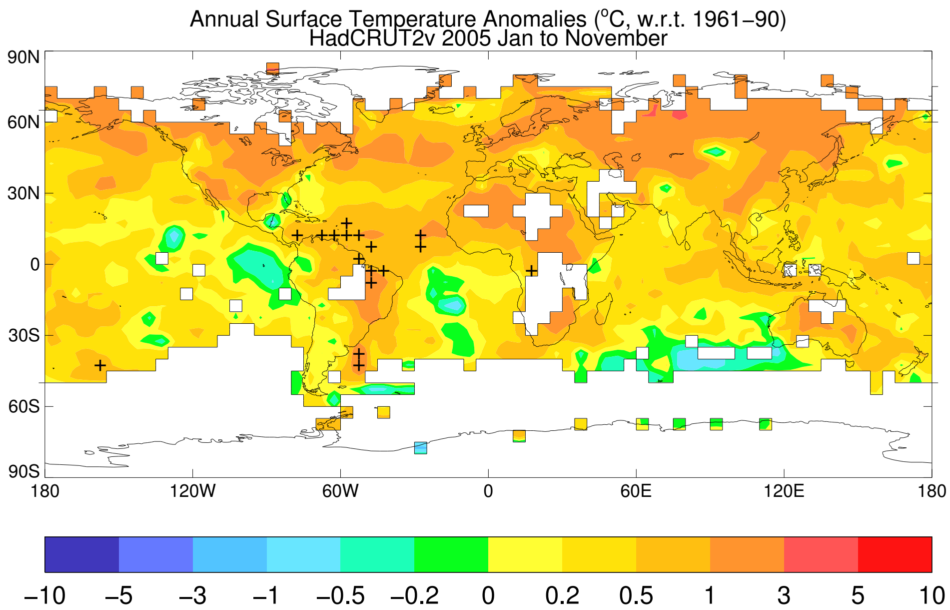

Figure 3.b: Global field of temperature anomalies, relative to the 1961-1990 mean, for the period January to November 2005. Crosses indicate that the anomaly in a pixel is the warmest in the record for that pixel.

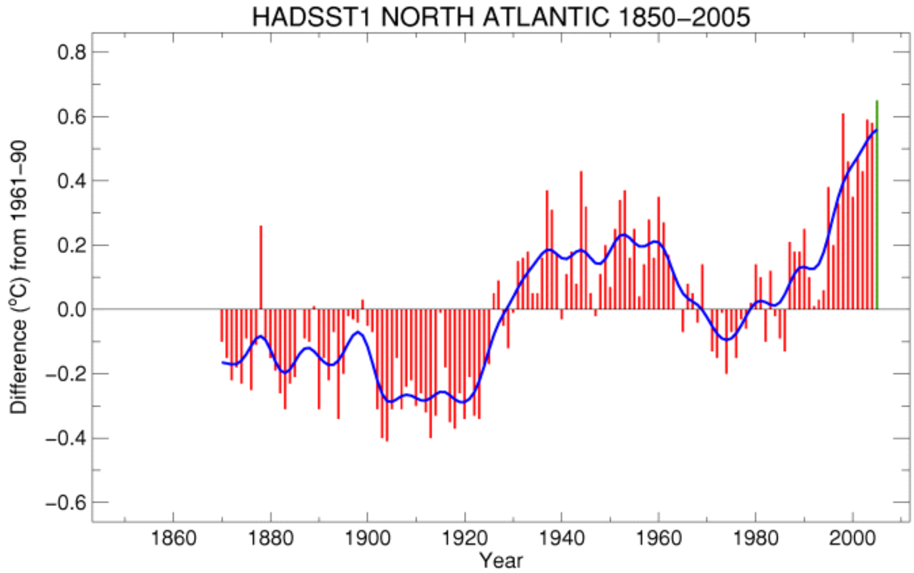

Figure 4: Annual average SST in the North Atlantic from 1880-2005, relative to the 1961-1990 mean. Red bars show the averages for complete years and the green bar shows the January to November average for 2005. The blue line shows the annual values after smoothing with a 21-term binomial filter and represents the variability on roughly decadal timescales.

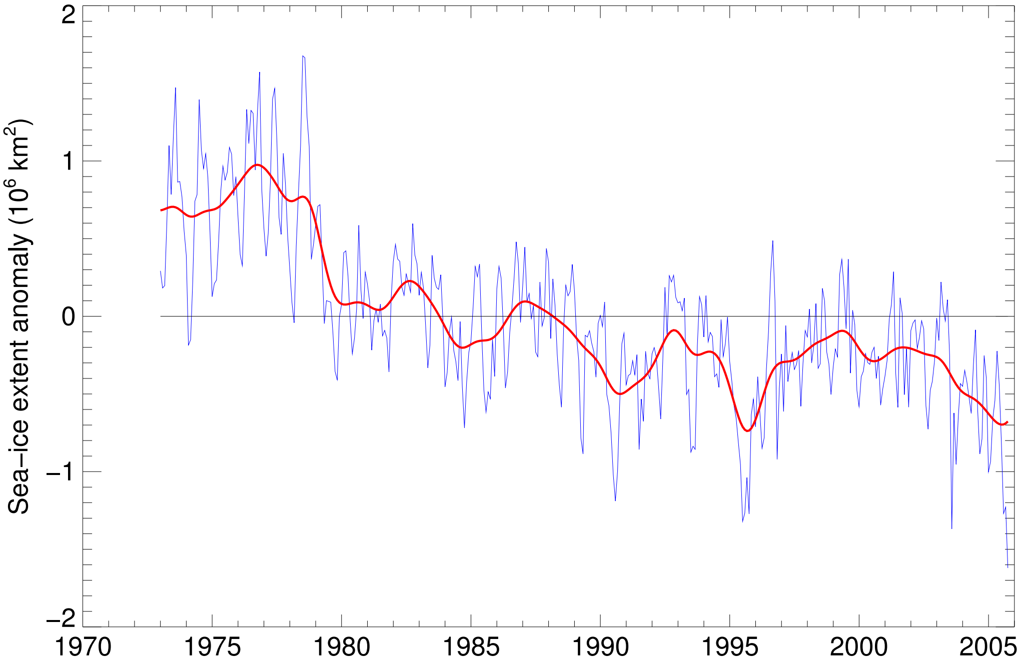

Figure 5.a: Northern hemisphere sea ice extent anomaly to October 2005 relative to the 1973-2005 average.

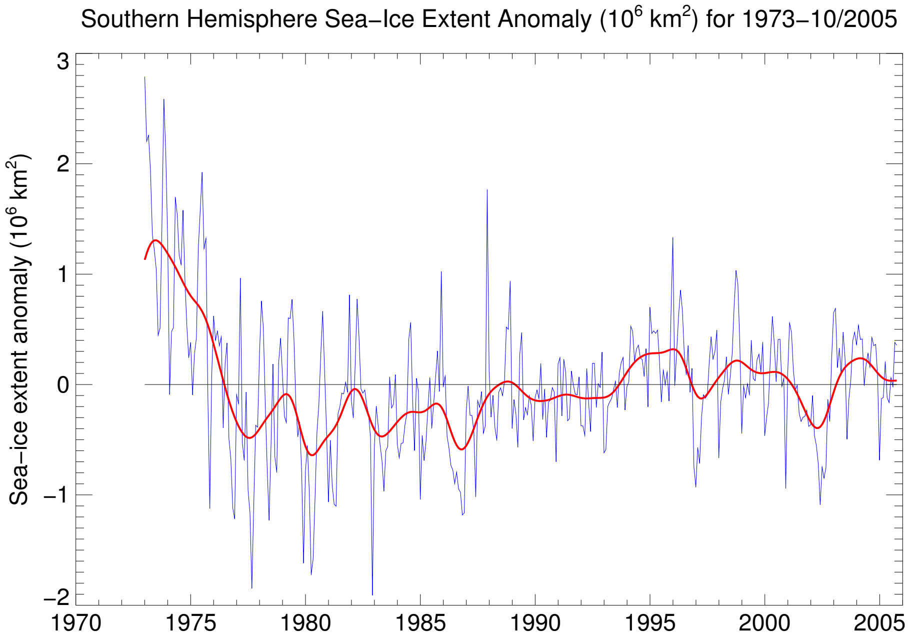

Figure 5.a: Southern hemisphere sea ice extent anomaly to October 2005 relative to the 1973-2005 average.

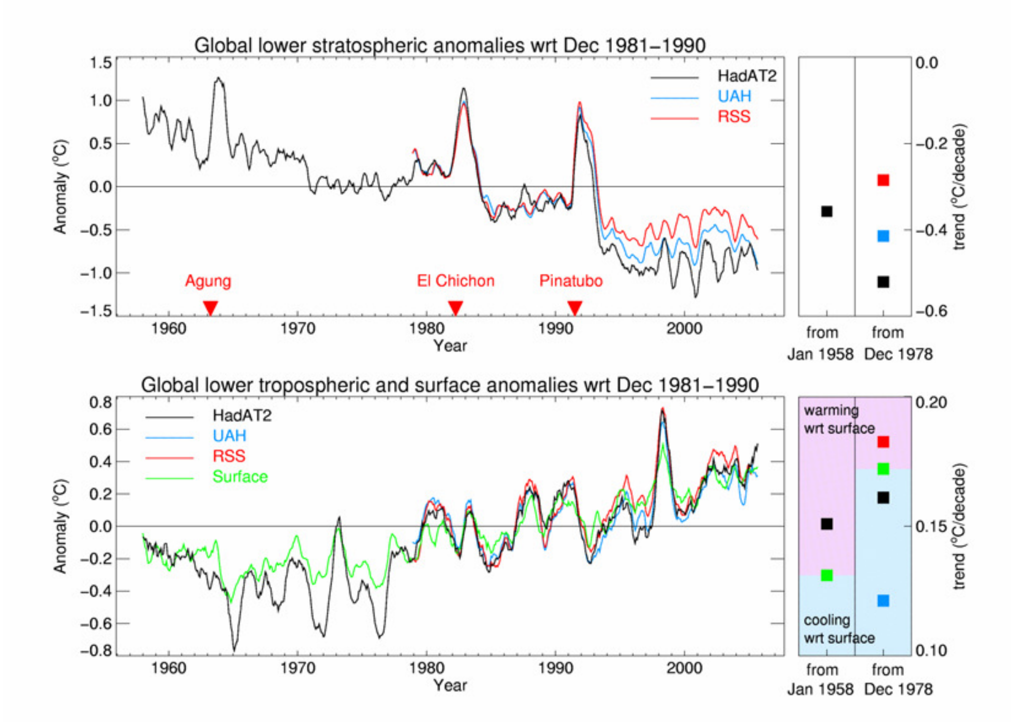

Figure 6.a: Global upper air temperature anomalies (relative to the 1981-1990 mean), based on HadAT radiosonde data (black; Thorne et al., 2005). The UAH (blue; Spencer et al., 2006) and RSS (red; Mears and Wentz., 2005) series are two independently produced satellite estimates based on the same Microwave Sounding Units (MSU) temperature retrievals. HadAT has been vertically weighted to create an MSU-equivalent time series and the surface temperature anomalies (green) are based on HadCRUT2v. All data have been smoothed using a simple 7-point filter. The squares in the right hand panels denote the trends or the radiosonde and satellite eras, calculated using the median of pairwise slopes. The blue/pink areas on the tropospheric plot highlight tropospheric cooling/warming relative to the surface.

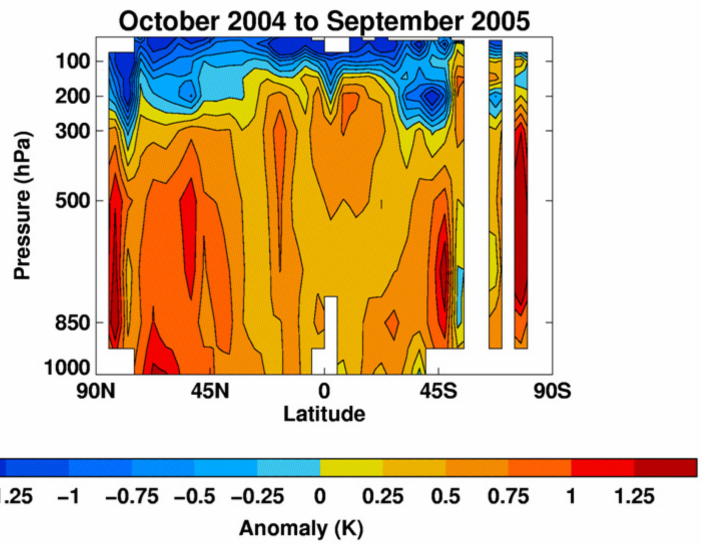

Figure6.b: HadAT zonal mean global upper air temperature anomalies, relative to the 1966-1995 mean. (Thorne et al , 2005).

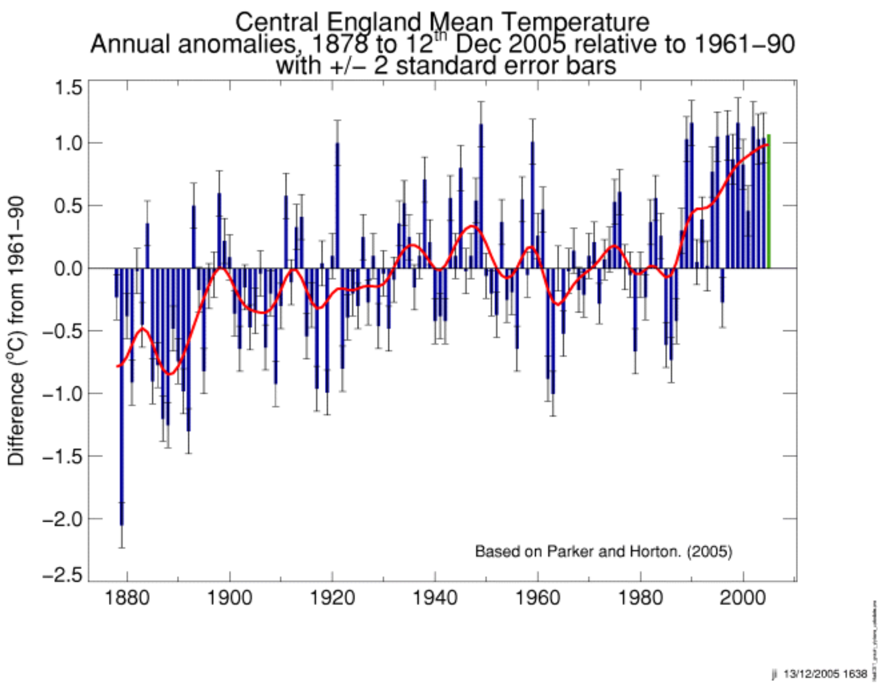

Figure 7. Annual mean CET anomalies, relative to the 1961-1990 mean, with uncertainties. Data for 2005 are from January to December 12th.

CET 10 Warmest Years	**Mean CET°C (anomaly w.r.t. 1961-1990)**
1999	10.63 (+1.16)
1990	10.63 (+1.16)
1949	10.62 (+1.15)
2002	10.60 (+1.13)
2005 (to 12th Dec)	10.59 (+1.07)
1997	10.53 (+1.06)
1995	10.52 (+1.05)
2004	10.51(+1.04)
2003	10.50 (+1.03)
1989	10.50 (+1.03)

Table 2. The ten warmest years in the Central England Temperature record, 1659-2005. (Parker and Horton, 2005)

PLEASE NOTE:
The preliminary estimates of surface temperatures for 2005 are based on observations up to the end of November from a network of ships, buoys and land based weather stations. More extensive information will be made available later in early February. All images contained within this document are available as postscript files; please email jen.hardwick@metoffice.gov.uk or john.kennedy@metoffice.gov.uk for these images or any further information.

Figures and data compiled from: HadCRUT2v. CRUTEM2v, HadSST, HadISST, HadAT and HadCET; all produced at the Hadley Centre.

Please note that our official Global land surface air temperature and SST, the source data are 10 years (1861-1870) of blended land (Jones, 1994) and SST (Parker et al., 1995) data, followed by the blended land and SST (Jones and Moberg, 2003) HadCRUT2v series. Official values are optimal averages (OA) except 2005 which is for January to October and is a simple area-weighted average that is re-anomalised over 1961-1990.

HadAT are radiosonde data, produced by the Hadley Centre and are available at http://www.hadobs.org. UAH MSU satellite data are produced by the University of Alabama in Huntsville and are available at http://www.nsstc.uah.edu/public/msu courtesy of John Christy and Roy Spencer. RSS MSU satellite data are produced by Remote Sensing Systems and are available at http://www.remss.com courtesy of Carl Mears.

To arrange interviews with climatologists from the University of East Anglia, call Simon Dunford, UEA Press Officer, on +44 (0)1603 592203 oremail press@uea.ac.uk.

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