

YEAR	Temperature Anomaly	ENSO index
2010	0.547	0.9
2005	0.539	0.6
1998	0.531	2.5
2003	0.503	0.7
2006	0.495	-0.1
2009	0.494	-0.3
2002	0.492	0.1
2013	0.486	0.1
2007	0.483	0.6
2012	0.448	-0.4
2004	0.445	0.3
2001	0.437	-0.4
2011	0.406	-1.4
1997	0.392	0.0
2008	0.388	-0.9
1995	0.324	0.9
1999	0.301	-0.8
2000	0.294	-0.8
1990	0.291	0.1
1991	0.253	0.4
1994	0.203	0.7
1988	0.201	1.0
1983	0.191	2.4
1987	0.186	1.3
1996	0.179	-0.4
1993	0.143	0.9
1981	0.142	0.2
1989	0.121	-1.1
1992	0.102	1.5
1953	0.101	0.2
1980	0.093	0.7
1973	0.063	1.2

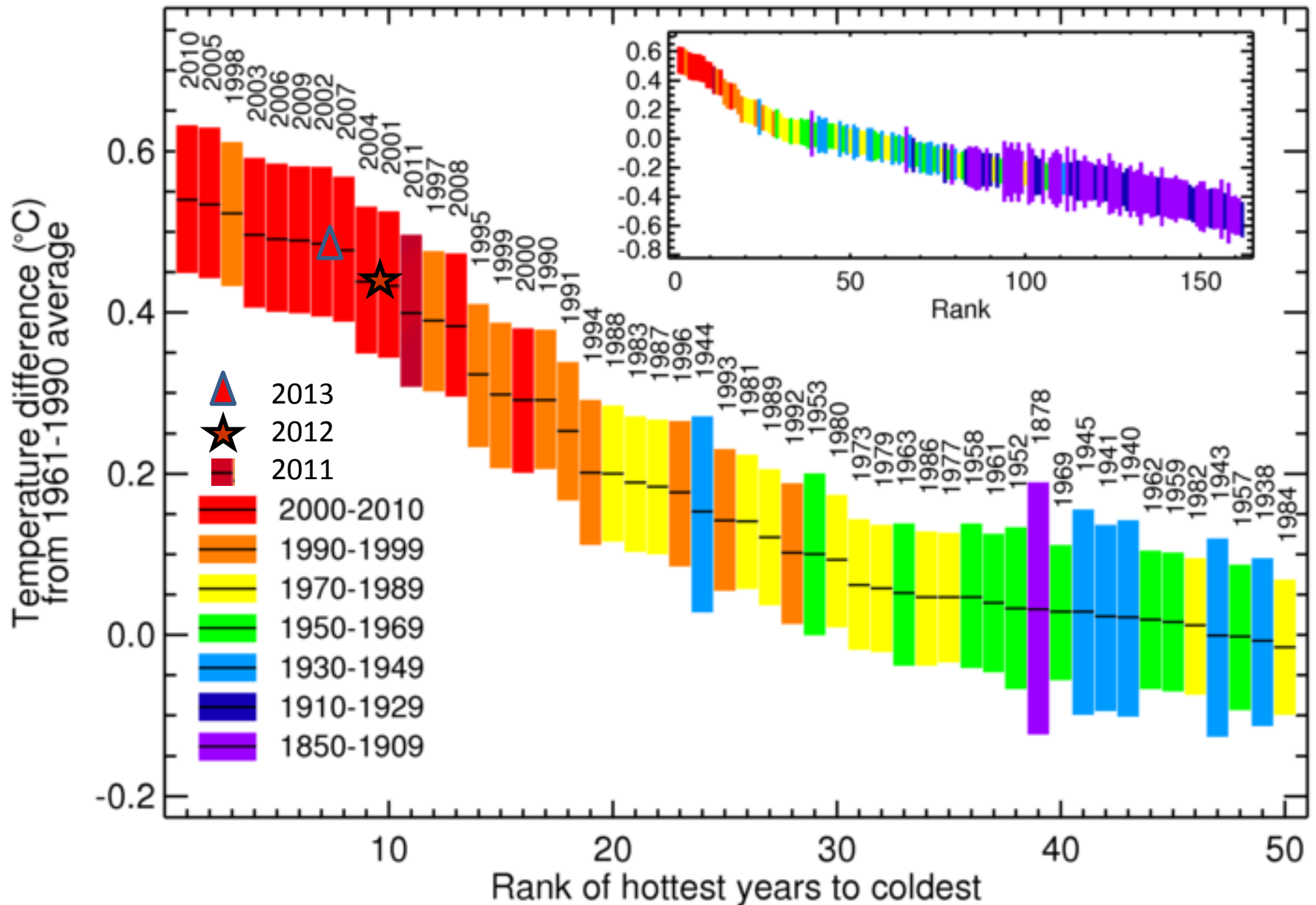
Group Work:

Global warming & natural variability

Left: Global annual temperature departure from 1961-1990 climatology from HadCRUT4 dataset and multi-ENSO index

- The following years are affected by El Niño:
1973, 1983, 1987-88, 1992-3, 1995, 1998, 2010
 - The following years are affected by La Niña:
1971, 1974-76, 1989, 1999-2000, 2008, 2011
 - The following years were affected by volcanic eruptions:
1963-1964, 1982-83, 1991-93
1. How do these events affect the global annual temperature and can you estimate their approximate magnitude?
 2. How does natural variability affect the rankings?
 3. An El Niño is developing this year. What does this suggest about 2014 and 2015 temperatures?

Ranked HadCRUT4 Data (available at www.metoffice.gov.uk)



See also: <http://skepticalscience.com/foster-and-rahmstorf-measure-global-warming-signal.html>