Evidence of Global Warming

Temperatures are rising

The graph in Figure 1 shows there has been a gradual increase in the average annual temperature across Australia in the past century. The red graph shows the average maximum temperature for each year and the blue graph shows the average minimum temperature each year.

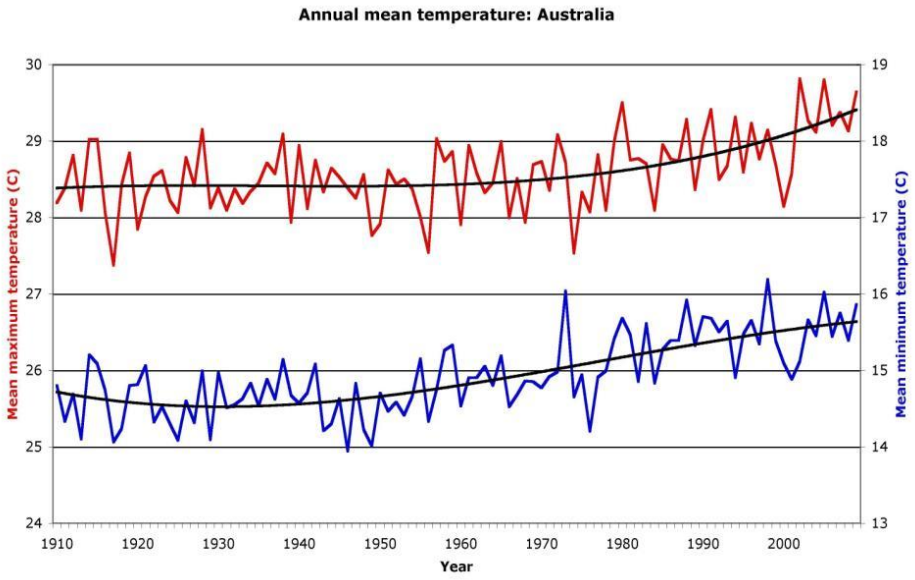

Figure 1: Annual mean temperatures in Australia

Notice the curve that traces through the middle of the red graph. This is called a trend line – a line that evens out the fluctuations to show the trend in values. The graph points for this trend line are calculated using statistics. Similarly a trend line is drawn for the blue graph. It is clear that while the temperatures fluctuate (go up and down), there is an increase in the mean annual temperature.

This increase in temperature everywhere across Australia also is illustrated in the following map (Figure 2). The map, prepared by the Australian Bureau of Meteorology, shows the average *change* in temperature per 10 years over the past century for each region.

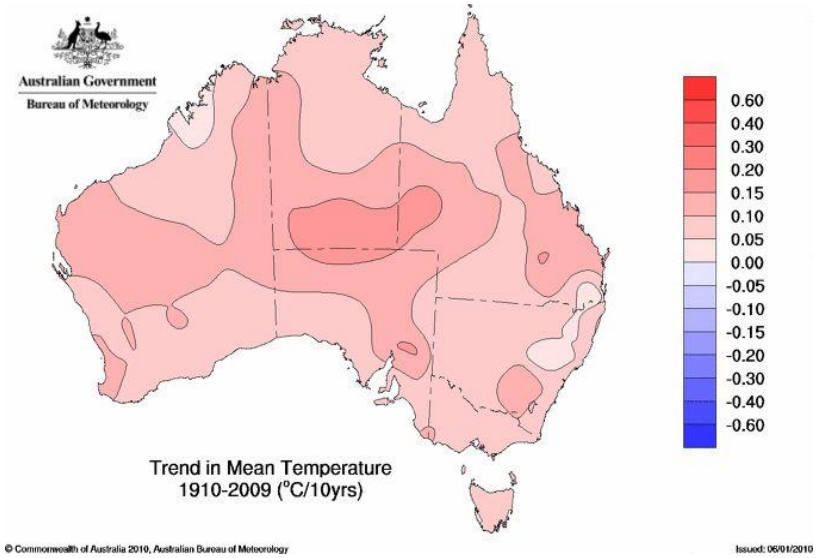

Figure 2: Some places in Australia are warming more than others

Like Figure 1 for Australia, the graph in Figure 3 shows that there has been a gradual net rise in average temperatures across all countries over the past 130 years.

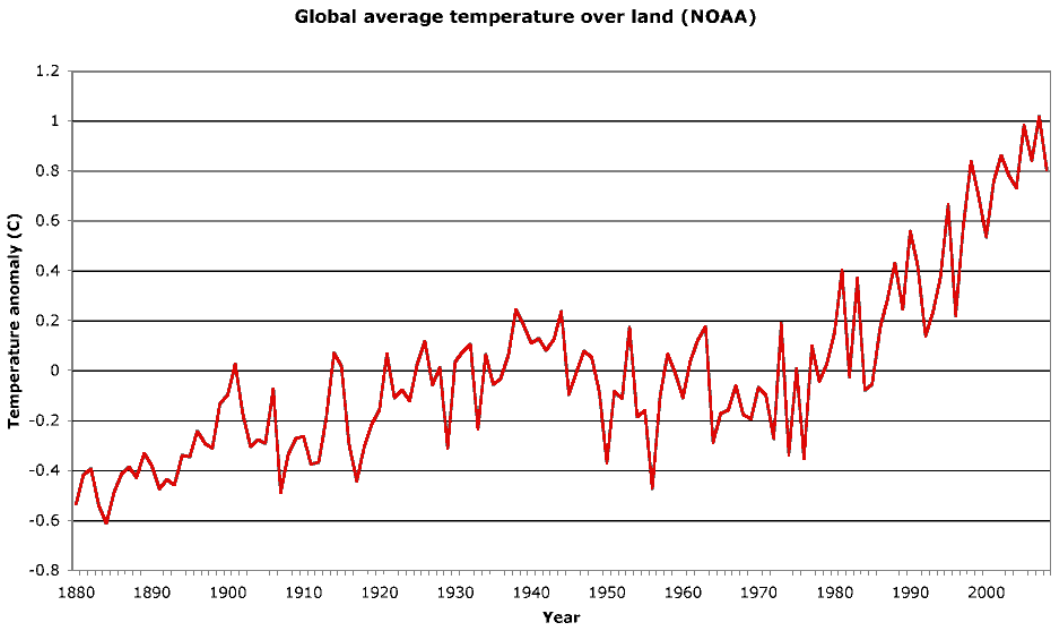

Figure 3: Global average temperatures are rising

Note: The vertical scale shows the 'temperature anomaly', not the actual average temperature. Temperature anomaly is a measure of how much the temperature is higher or lower than a long-term average.

The graph in Figure 3 was constructed from temperature data collected from a network of 4000 temperature stations across the globe. Approximately 1650 of these stations have kept records for longer than 100 years.

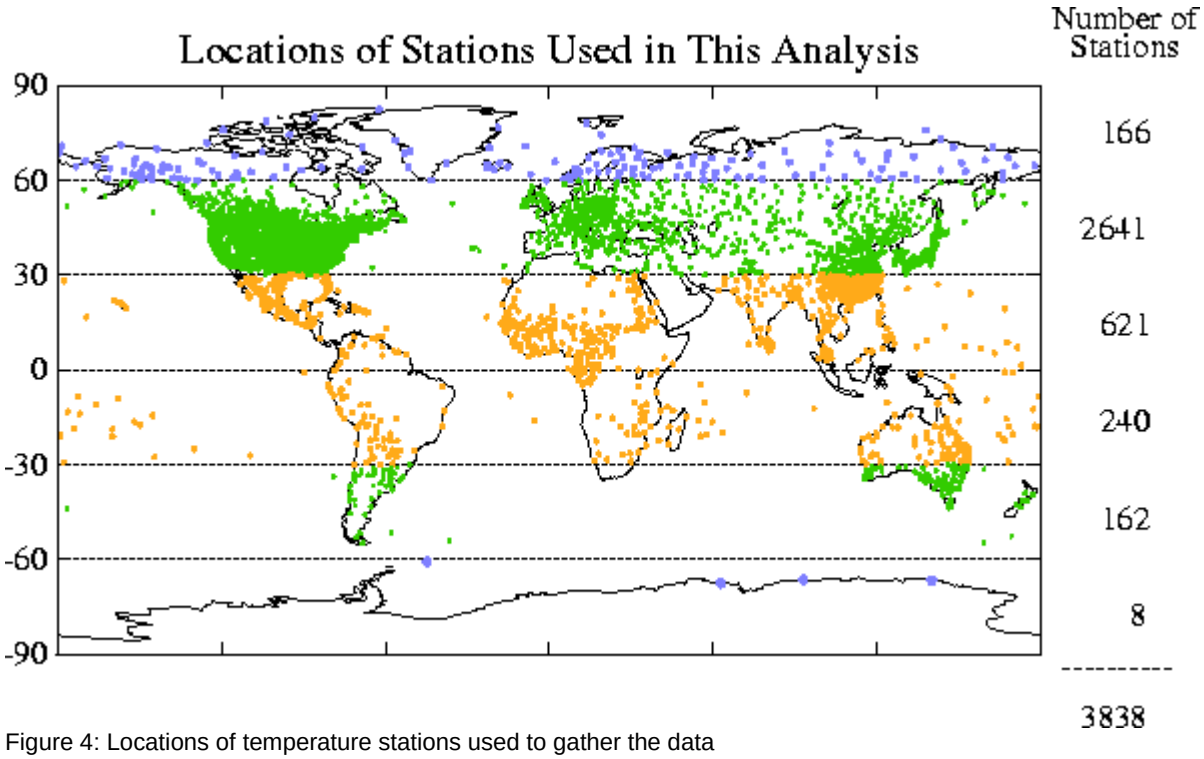

Figure 4: Locations of temperature stations used to gather the data

Figure 5 shows the same trend over the months September-February, with satellite data shown in red.

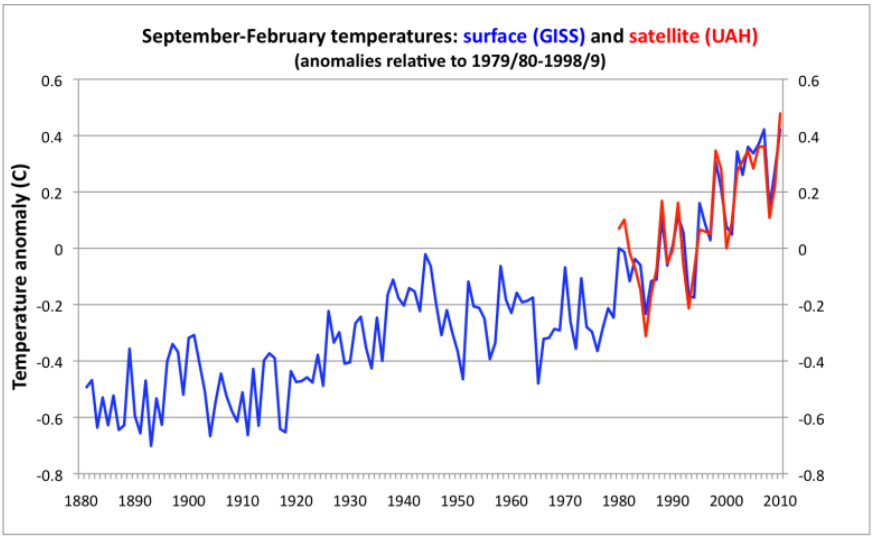

Figure 5: Satellite data backs up the data obtained from temperature stations around the world.

We can conclude that there is overwhelming, reliable evidence that there has been a gradual increase in the temperature at the Earth's surface over the past 130 years.

Acknowledgement: The above graphs were provided by Professor Neville Nicholls, of Monash University. Professor Nicholls is a Lead Author for the Intergovernmental Panel on Climate Change (IPCC), which was established in 1988.

Misleading information

It should be noted that some climate change skeptics take small parts of these graphs – parts where the graph line goes down – and use them to 'prove' that global temperatures are not rising. This is misusing the data. Long term-trends need to be examined if we are to draw valid evidence-based conclusions about what is happening to temperatures on Earth.