

Climate models generally predict more warming at high latitudes. I wanted to see if I could detect this trend in the Northern Hemisphere so I used the Climate Time Series Browser to get data for meteorological stations at 30, 45, and 60 degrees N to see if there was difference in warming at the different latitudes. Stations between 28 and 32 degrees were selected for the 30 degree data, as were stations between 43 and 47 degrees for the 45 degree data. Since there were many fewer stations at 60 degrees N, stations between 55 and 65 degrees were selected for that latitude. All stations that had significant data before 1950 and after 2000 were chosen so the data could be normalized and temperature trends up to the present day could be calculated. There were 50 stations found at 30 and 60 degrees N each, and 139 stations at 45 degrees.

After the stations were selected the data from all stations at each latitude was normalized by subtracting the average value for 1900-1950 from each record. And then the data was combined into a composite at each latitude for each time range.

The temperature trends were computed for the entire time range of 1950 to 2013, as well as for 1970 to 2013 which is when anthropogenic global warming greatly increased. Then the data was also analyzed for 20 year periods from 1950 to 1970, 1970 to 1990, and 1990 to 2013.

		Time Range				
		1950-2013	1950-1970	1970-2013	1970-1990	1990-2013
Latitude	30°N	0.14	-0.31	0.28	0.10	0.45
	45°N	0.22	0.06	0.34	0.31	0.34
	60°N	0.27	-0.13	0.36	0.42	0.25

Figure 1. Temperature trends, °C/decade, for three different latitudes over the time range 1950-2013.

Figure 1 shows the results. The temperature increased at all three latitudes from 1950 to 2013, and increased more at 45 degrees than 30, and more at 60 degrees than 45. From 1950 to 1970 there was not a consistent pattern with temperature decreases at 30 and 60 degrees, and an increase at 45.

All results showed warming for all stations in bidecadal averages after 1970. From 1970 to 2013 and from 1970 to 1990 the temperature increased more at 45 degrees than at 30, and more at 60 than at 45 which matches the climate model predictions. However, contrary to model predictions the temperature at the selected stations increased more at 30 degrees than at 45, and more at 45 than at 60 degrees from 1990 to 2013. In a search of the web I was not able to find a possible suggestion as to why the results from 1990 to 2013 showed more warming at lower latitudes (possibly a result of the stations selected).