Computational HW—Fourier Transform

Use the EPICA Ice Dome C Ice core data (http://www.ncdc.noaa.gov/paleo/icecore/antarctica/vostok/vostok_isotope.html) from Antarctica to find the modes of oscillation of the earth's temperature over the past 8e5years.

To do this you must convert the data from its current state (temperature data points equally spaced in depth) to a useable state (temperature data points equally spaced in time). This can be done either by interpolation or down sampling. State which method you used and describe (in a couple of sentences) how you implemented it.

Use mathematica to perform a discrete Fourier transform of the data to take it from the time domain to the frequency domain.

Identify a few of the strongest low frequency modes of oscillation and state their frequency (real frequency not angular frequency). It is a good idea to compare this to the graphed time series to make sure that the units are working out.

Turn in a paper copy of your mathematica notebook that includes a graph of your data (Temp vs time) and the fourier transformed data (Temp vs freq).