Sun Spot Prediction Algorithm

Summary:

Using provided sunspot data, remove the random noise to provide a smoothed data set for analysis of 11 year sunspot cycles. Graph the smoothed data to provide a visual representation of the sunspot activity for the period of time the data covers.

Algorithm:

1. Create a function that formats the raw data from dailysunspots.txt into monthly.txt:
   1. Open file
   2. With a for loop, read the txt file line-by-line
      1. If sunspot count is not 999:
         1. Split line into strings, retaining date and sunspot count
         2. Create dictionary full of each year/month’s values (split on month value)
      2. Average values from each dictionary month’s dictionary
      3. Formatted properly, write each month’s (dictionary’s) average to a line in a new file called monthly.txt
2. Create a function that “smooths” the data from monthly.txt:
   1. Open file
   2. With a for loop, read the txt file line-by-line
      1. Copy into dictionary of values
   3. For all values with six months before and after, calculate smoothed value: (.5 \* first value + .5 \* last value + sum of all other values )/ 12)
   4. Save each calculated, smoothed value into a line of new file called smooth.txt
3. Create a function that graphs the data from smooth.txt:
   1. Using pylab, graph the monthly data from smooth.txt