Title: Mapping PM 2.5 air pollution in Texas

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Progress Report

What I've made:

I have collected the PM2.5 data measured at 18 locations in Texas from 1/1/2013 to 10/23/2013. Based on monthly average value, maps showing PM 2.5 average concentrations over Texas are developed by Interpolation tools. It is easy to find that higher concentrations occur in the summer time (June, July and August). The two maps on the next page show the distribution of PM 2.5 in February and July respectively.
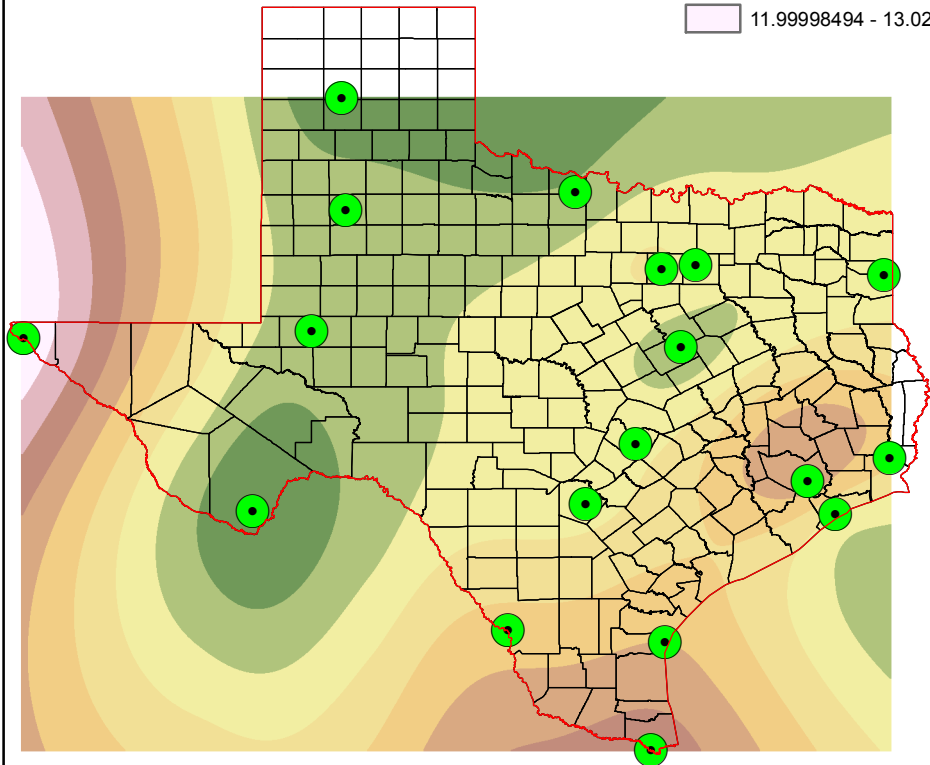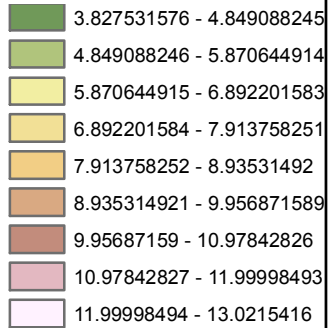

What I am working on now:

Some regions in Texas have more PM 2.5 reporting stations (up to 11 stations) than other regions. Now I am looking into San Antonio regions because 7 stations are located more uniformly in this region. I am doing time-series analysis (from 9/1/2013 to 10/23/2013) on this region and by doing interpolation, I will be able to find more polluted area in this regions. At the same time, by looking at the daily, precipitation data, it is easy to find out that PM 2.5 concentration decreases after certain amount of rain.

Time series animation should be available once I figure out the correct coding in the PyScriptor, which is the difficulty I have right now. Another challenge is that the data size. As the reporting sites measures the PM 2.5 concentration every hour, the data size is big and it takes a good amount of time to have them all downloaded.
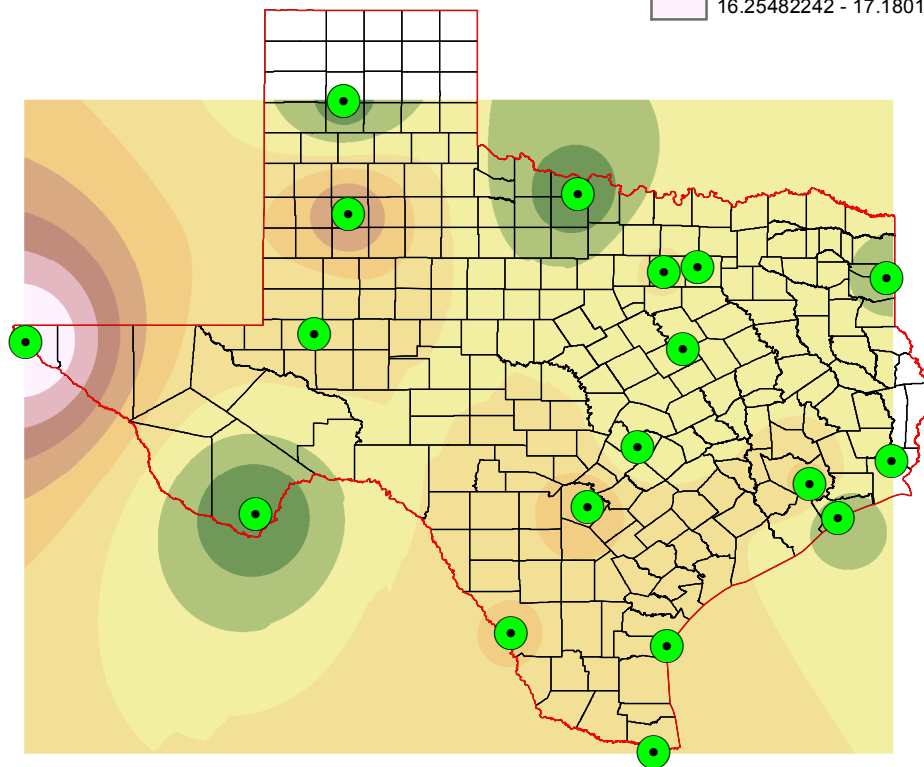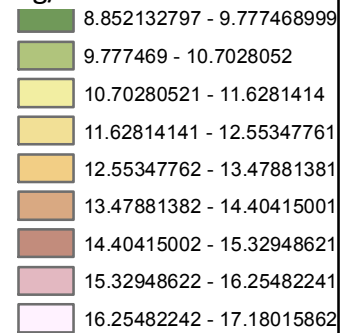

What I intend to do:

For the next step of the project I will look into year 2011 and 2012 PM 2.5 concentration data. As Texas suffered a major drought in 2011, it would be interesting to see if PM 2.5 concentration (A higher concentration is expected) can reflect the drought, as it has been indicated above that PM 2.5 concentration drops after precipitation.

PM 2.5 Concentration ug/m³ (February)

- 3.827531576 - 4.849088245
- 4.849088246 - 5.870644914
- 5.870644915 - 6.892201583
- 6.892201584 - 7.913758251
- 7.913758252 - 8.93531492
- 8.935314921 - 9.956871589
- 9.95687159 - 10.97842826
- 10.97842827 - 11.99998493
- 11.99998494 - 13.0215416

PM 2.5 Concentration ug/m³ (June)

- 8.852132797 - 9.777468999
- 9.777469 - 10.7028052
- 10.70280521 - 11.6281414
- 11.62814141 - 12.55347761
- 12.55347762 - 13.47881381
- 13.47881382 - 14.40415001
- 14.40415002 - 15.32948621
- 15.32948622 - 16.25482241
- 16.25482242 - 17.18015862

February

June