EAS503 Project Description

Group 17

Project Introduction:
We will be attempting to find the correlation between the weather conditions of different cities at different times and its cause on the occurrence of tornadoes and other weather events. Our main objective is to try and analyse as to how does the occurrence of a tornado depends on different weather conditions such as change in temperature or pressure or wind direction or speed.
While focusing on the above we would also try to analyse the different regions and different times of the year in the USA which are more prone to tornadoes and what are the (drastic) differences in the weather in different regions at different times of the year. We will also attempt to find other various correlations between weather condition attributes and the geographical locations.

Datasets needed:
1) Dataset 1 - Historical Hourly Weather Data (USA)
The above dataset contains around 5 years of hourly measurements data of various weather attributes, such as temperature, humidity, air pressure, etc for the various cities in USA.

2) Dataset 2 - USA Historical Tornado
This dataset contains the details of tornadoes from 1950 to 2015. This contains features like the number of tornadoes, the latitudes and longitudes of the origin among others.

3) Dataset 3 - Longitudes and Latitudes of Cities in USA
This dataset contains the longitudes and latitudes of different American cities.

Analysis:
- Analyse hourly weather data to know the discrepancy of attributes like temperature, wind speed, pressure etc., in different cities at different times.
- Predict the weather of a location for given parameters.
- Depending on the weather conditions we can make assumptions on occurrences of drastic changes in the current weather conditions.
- If we know the weather condition we can predict the chances of tornado occurrence and their location.

Visualisation:
We will use the output from our analysis and plot out the different regions that are prone to tornadoes on a map. We will also plot the tornado occurrences vs the different time periods and individual weather condition attributes.