A) An outline of steps taken to prepare the data

SQL is used to pull the data

select * from city_data where city in (select city from city_list where city in('Hyderabad','Delhi'))
and country in (select country from city_list where country = 'India')

select * from global_data

Sample Initial Raw Data (with 12 year Moving Average Calculations)

year	city	country	avg_temp	12_yr_MA_Avg_Temp
1796	Delhi	India	25.03	
1797	Delhi	India	26.71	
1798	Delhi	India	24.29	
1799	Delhi	India	25.28	
1800	Delhi	India	25.21	
1801	Delhi	India	24.22	
1802	Delhi	India	25.63	
1803	Delhi	India	25.38	
1804	Delhi	India	25.68	
1805	Delhi	India	25.3	
1806	Delhi	India	25.22	
1807	Delhi	India	24.97	=AVERAGE(D1:D13)
1808	Delhi	India		25.24333333
1809	Delhi	India		25.26272727

Sample Final Raw Data (with 12 year Moving Average Calculations separate for all the 3 categories)
The data is preprocessed in excel to combine all the data for Delhi, Hyderabad and Global
(Assuming the temperature given is in Degree Celsius)

| year	12_yr_MA_Avg_Temp_Delhi	12_yr_MA_Avg_Temp_Hyderabad	12_yr_MA_Avg_Temp_Global
1807	25.2	26.2	8.5
1808	25.2	26.2	8.5
1809	25.3	26.3	8.4
1810	25.1	26.3	8.2
1811	25.2	26.4	8.1
1812	25.2	26.4	8.0
1813	25.1	26.5	7.9
1814	25.1	26.6	7.9
1815	24.9	26.7	7.7

B) How did you calculate the moving average?

Moving average is calculated for 12 years

C) Key considerations when deciding how to visualize the trends
Wanted to time align the data for all the 3 categories (Global , Delhi, Hyderabad)
As 12 year moving average is taken for all the 3 categories, hence a line / trend chart is populated
w.r.t Year and Avg temperature

Line chart with local and global temperature trends

Temperature Trend (12 Year Moving Average Temperature)
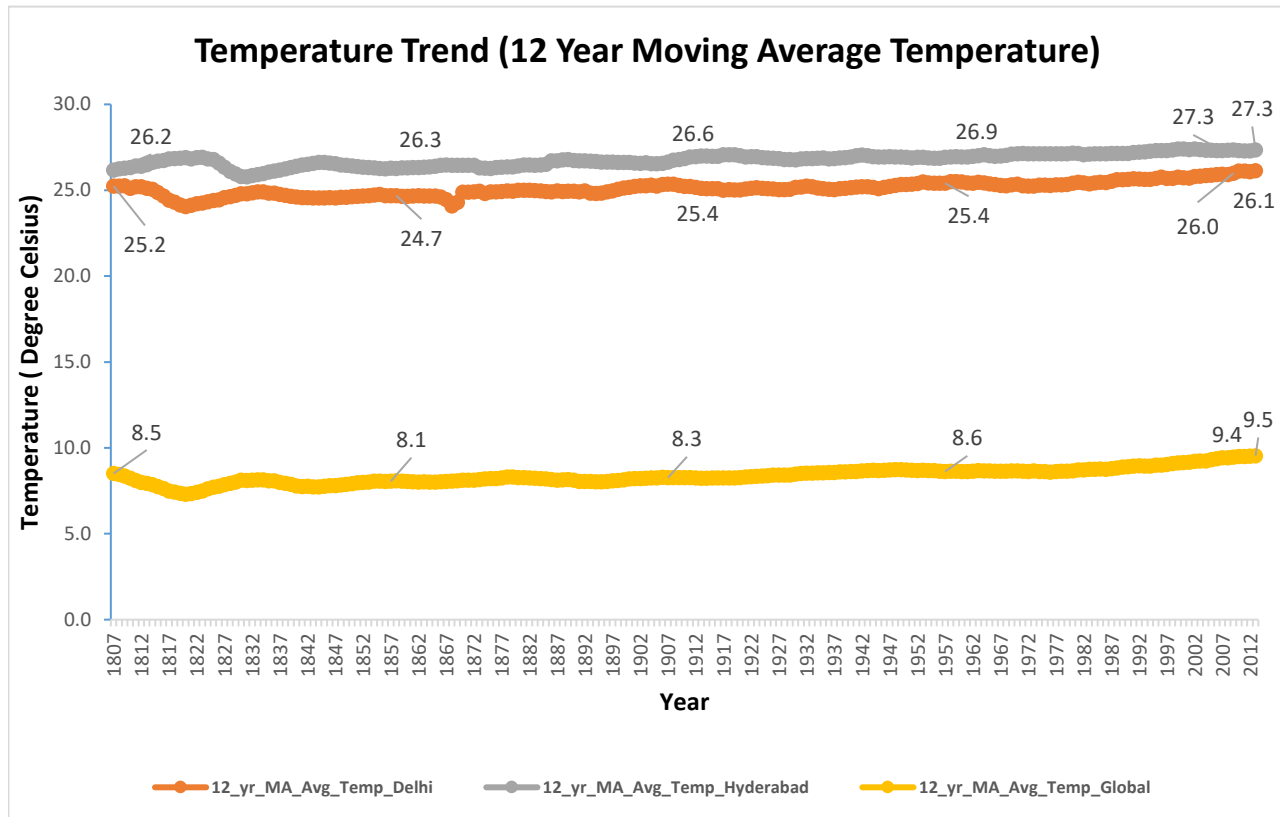
At least four observations about the similarities and/or differences in the trends

a) Global temperatures are very less compared to Hyderabad and Delhi

b) The temperatures for all the 3 categories have increased marginally in the last 200 years of data

c) The lowest temperatures found for Global (7.3 deg C) around 1820, whereas for Hyderabad (25.8 deg C) around 1830. and for Delhi (26 deg C) around 1820

d) Hyderabad temperature increment is more at present compared to Global and Delhi

e) Exactly 50 years from the year 1807, we observe that Global and Delhi have their temperatures dipped but for Hyderabad it is consistent.

f) The global temperature remained consistent until the year 1957, but after 1957 increased.
there seems to be a lot of change in temperatures . Hence global temperatures are

g) At every 50 years interval, the temperatures are shown in chart ,
Hence we can observe that temperatures have changed by +/ -0.3

h) The correlation coefficient for (Global vs Delhi -> 0.937) and (Global vs Hyderabad -> 0.687)
So from above, the changes in Global temperature will have huge impact to Delhi when compared to Hyderabad

i) The difference in 12 year MA temperatures for Global (0.89) , Hyderabad(1.16), Delhi (1.04)
(comparison done w.r.t 1807 vs 2013)