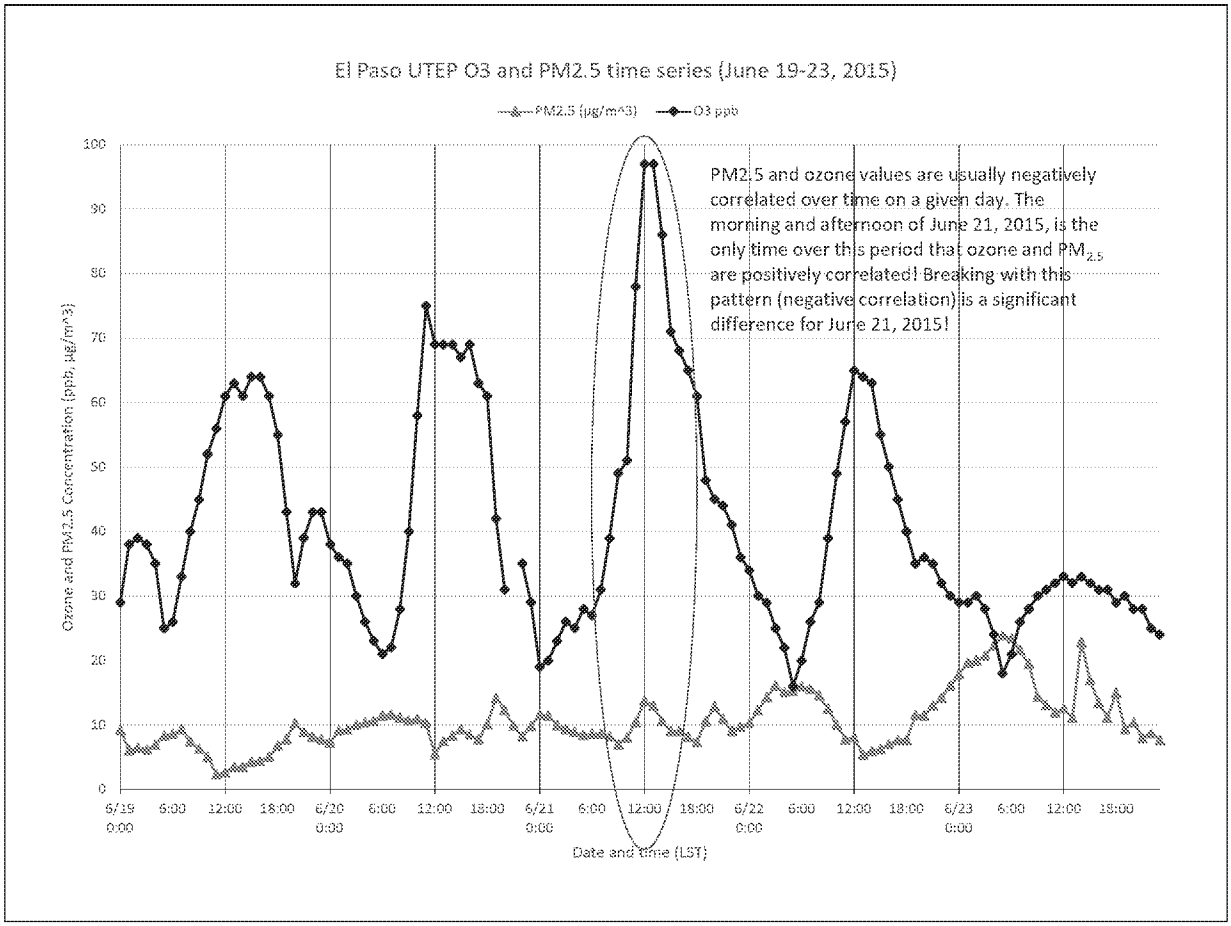
Additional Information

El Paso UTEP Exceptional Event on June 21, 2015

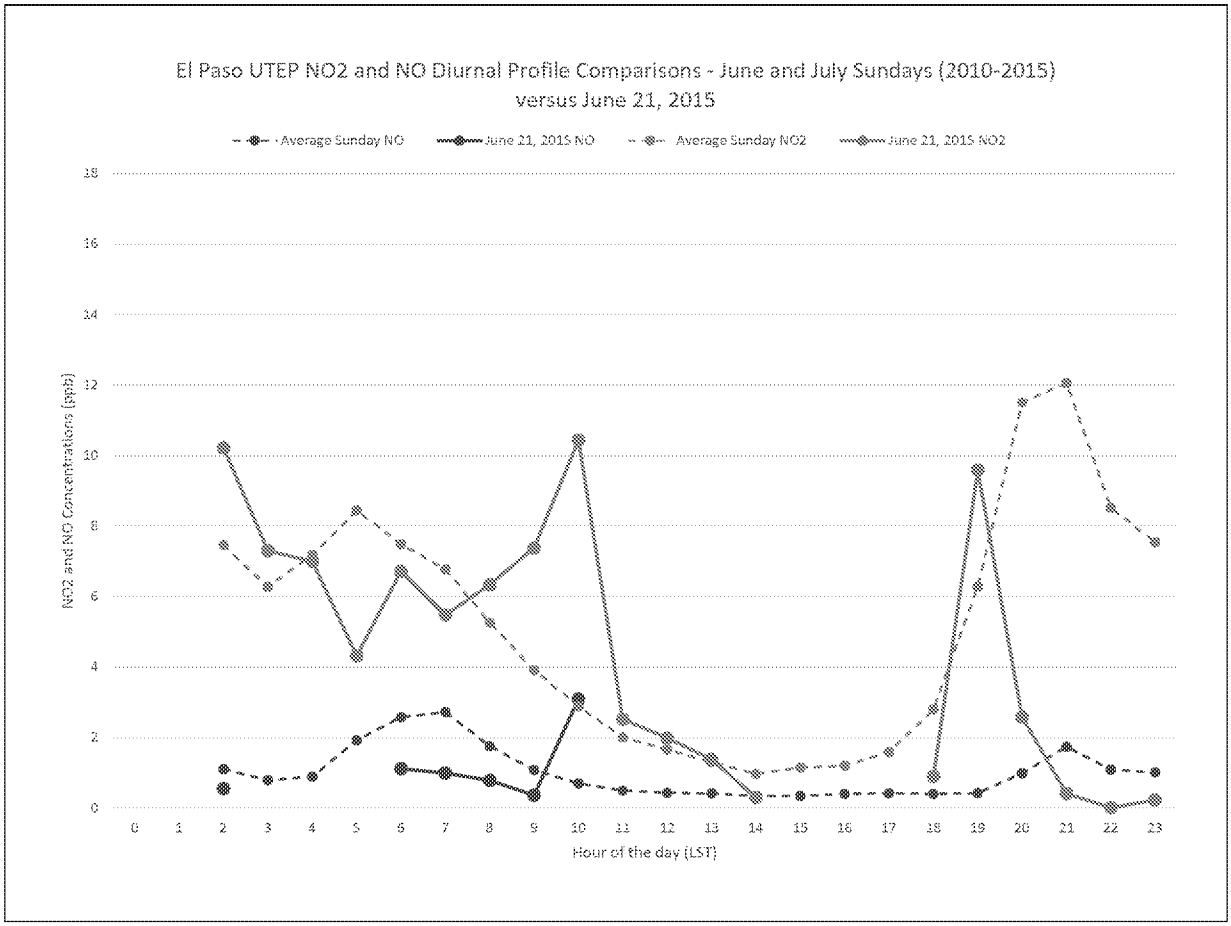
Local El Paso Emissions

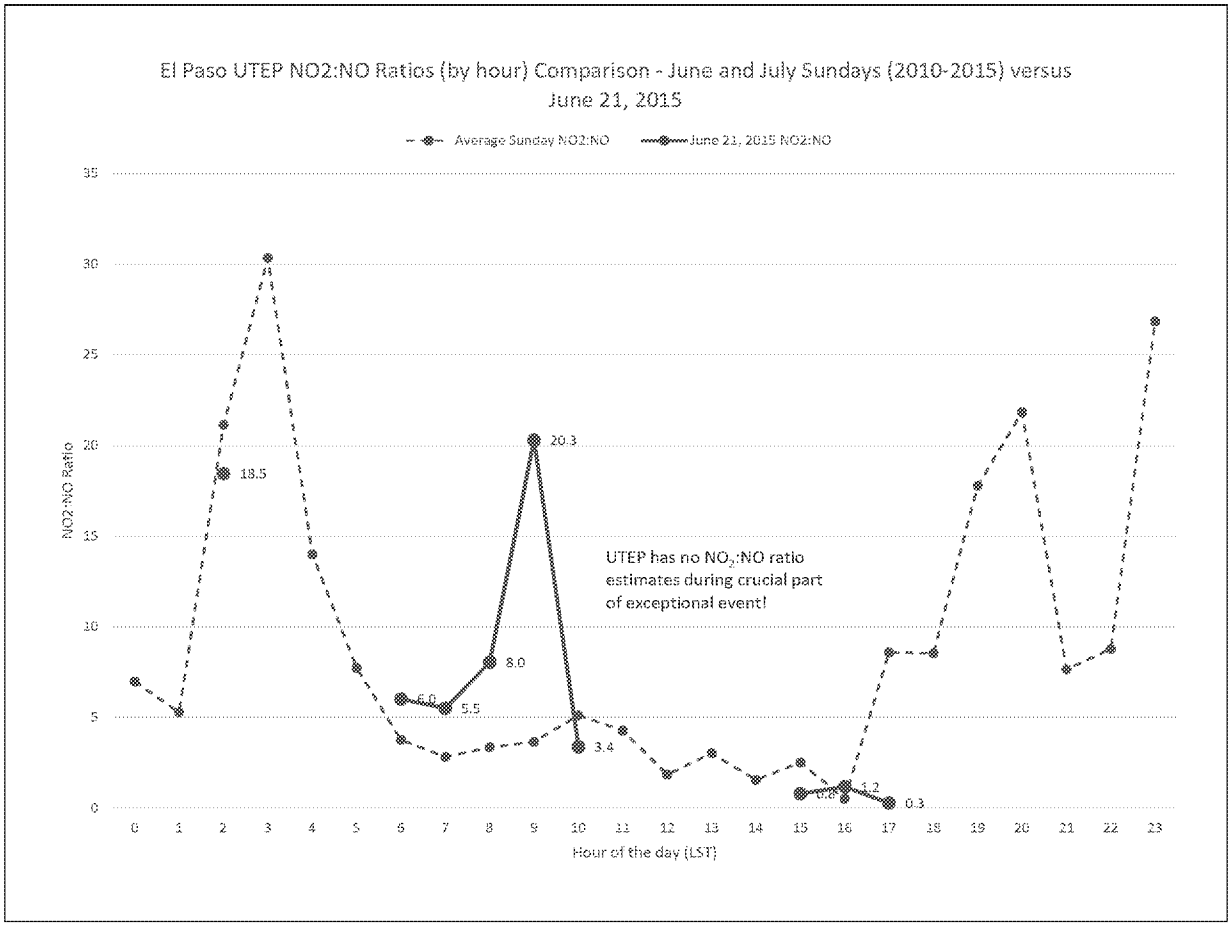
- No emissions events reported in the El Paso County during the month of June 2015.
- No unusual events occurring on June 21, 2015.

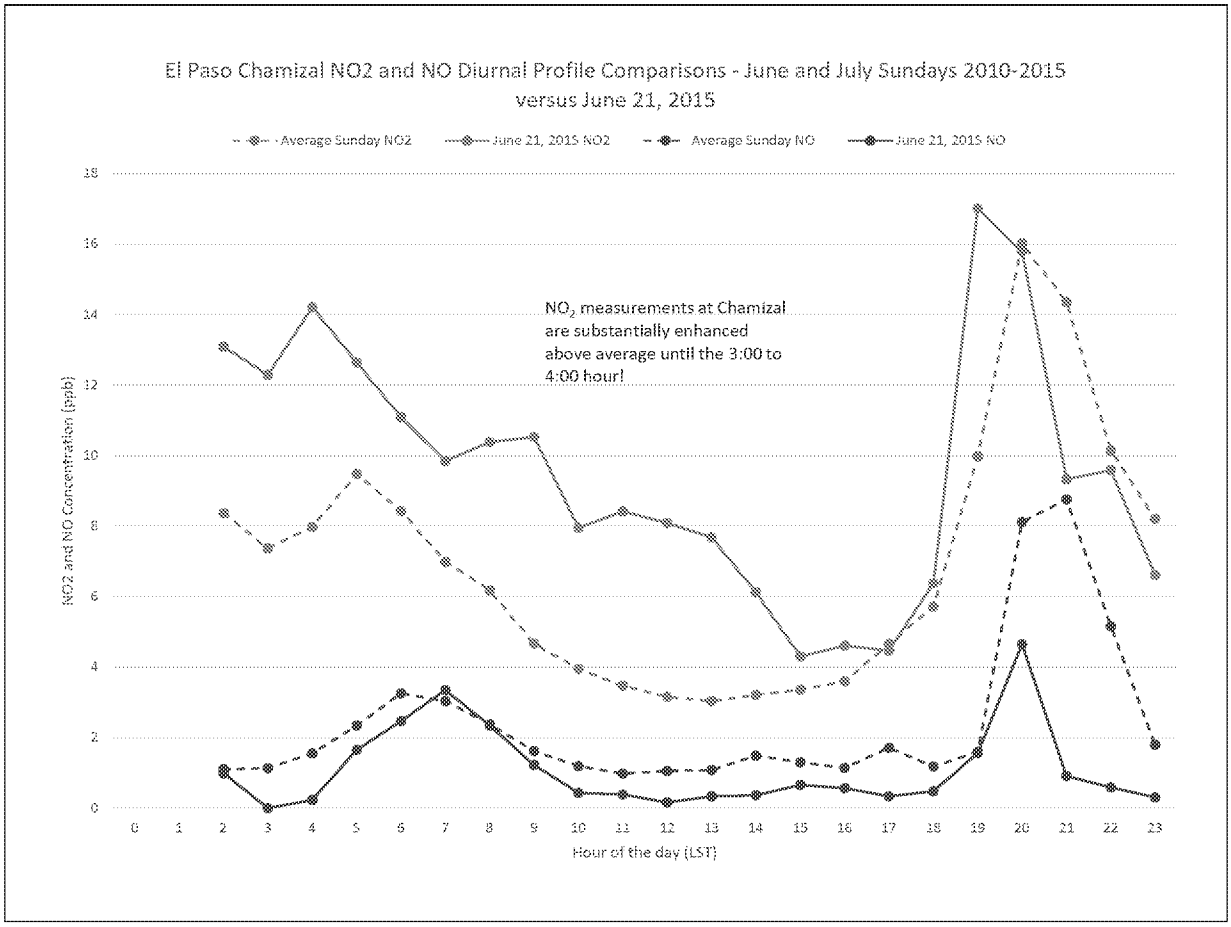
El Paso UTEP Time Series for O_3 and $PM_{2.5}$

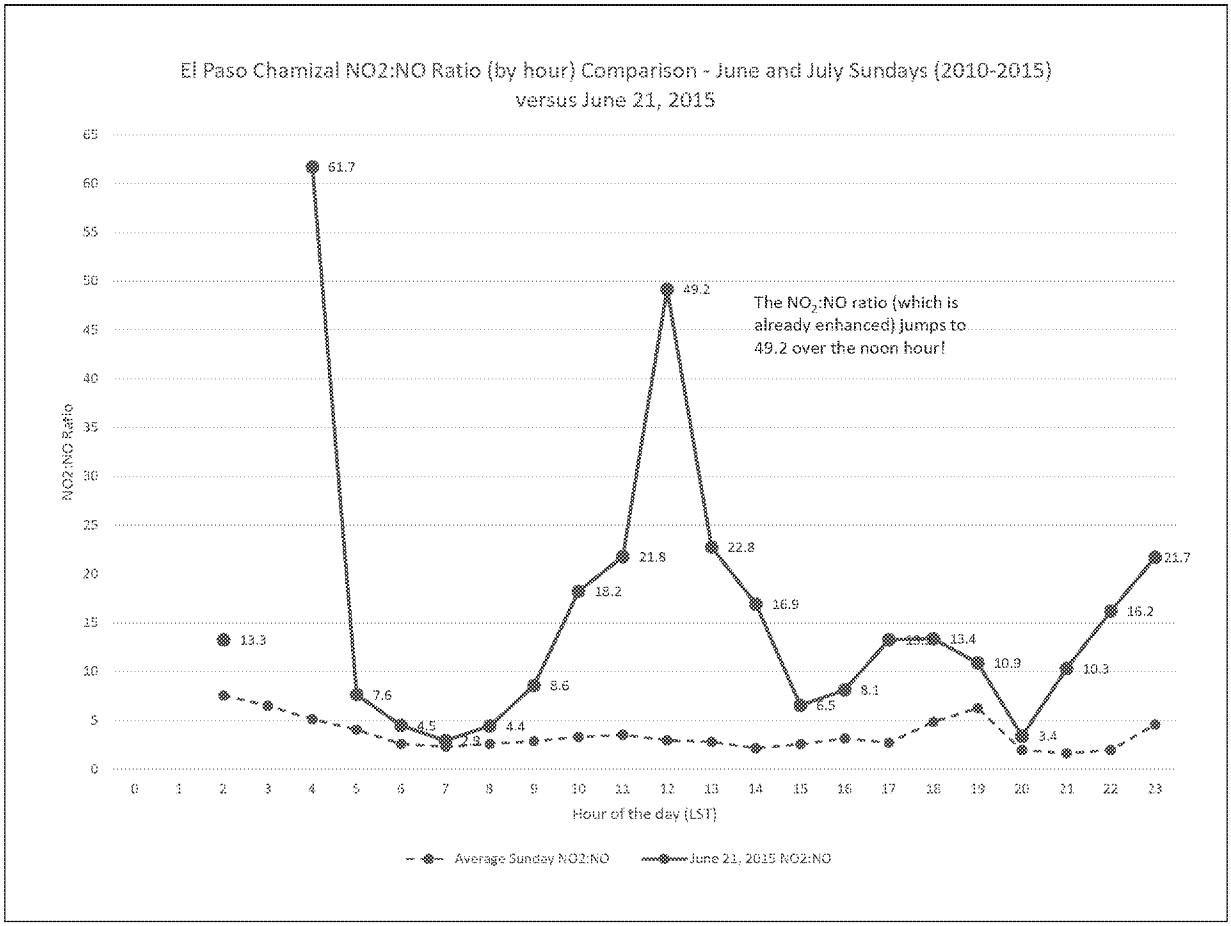

El Paso UTEP O3 and PM2.5 time series (June 19-23, 2015)
PM2.5 (µg/m^3)
O3 ppb
PM2.5 and ozone values are usually negatively correlated over time on a given day. The morning and afternoon of June 21, 2015, is the only time over this period that ozone and PM2.5 are positively correlated! Breaking with this pattern (negative correlation) is a significant difference for June 21, 2015!
Ozone and PM2.5 Concentration (ppb, µg/m^3)
Date and time (LST)
0
10
20
30
40
50
60
70
80
90
100
6/19 0:00
6:00
12:00
18:00
6/20 0:00
6:00
12:00
18:00
6/21 0:00
6:00
12:00
18:00
6/22 0:00
6:00
12:00
18:00
6/23 0:00
6:00
12:00
18:00

NO_2 and NO Measurements in El Paso

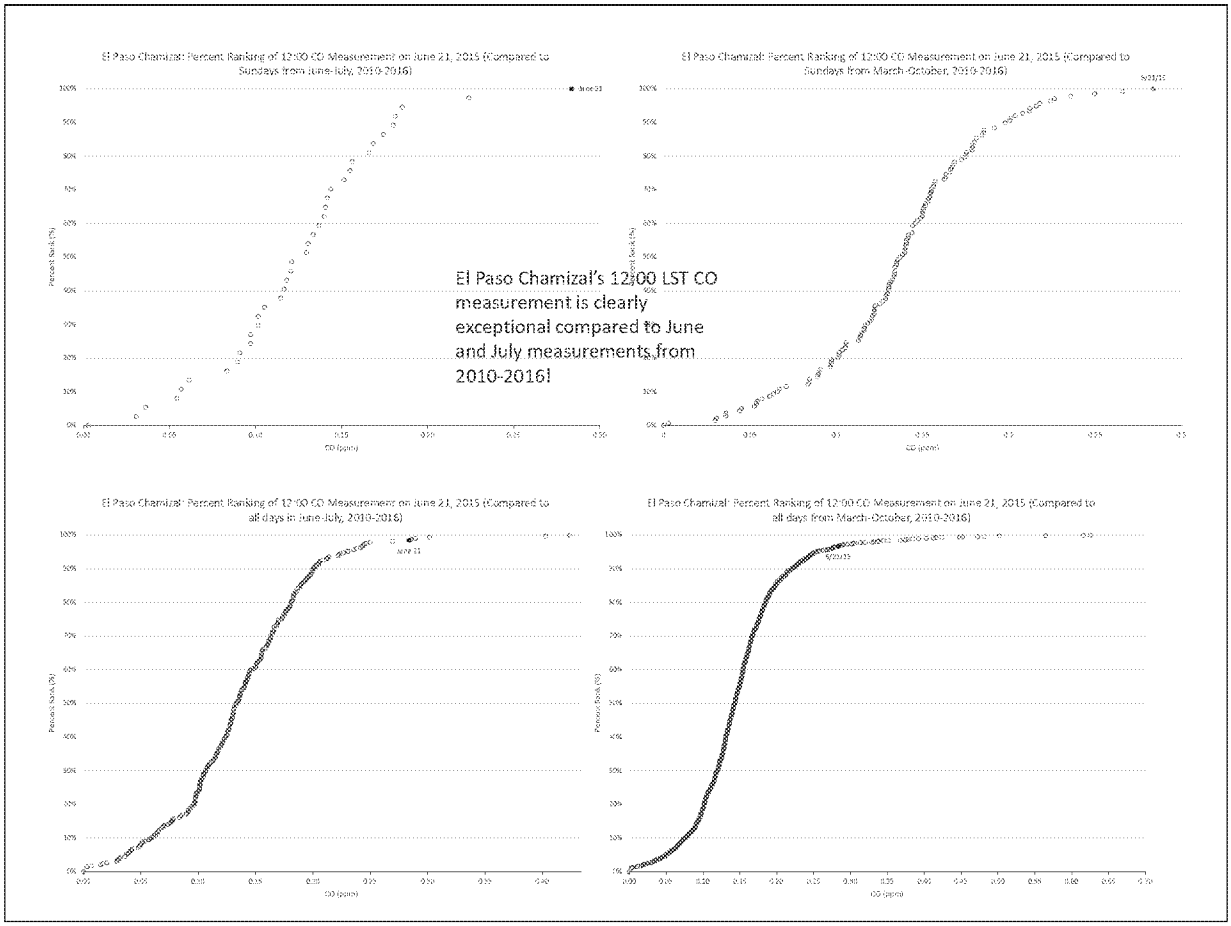

El Paso UTEP NO2 and NO Diurnal Profile Comparisons - June and July Sundays (2010-2015) versus June 21, 2015
Average Sunday NO
June 21, 2015 NO
Average Sunday NO2
June 21, 2015 NO2
NO2 and NO Concentrations (ppb)
Hour of the day (LST)


El Paso UTEP NO2:NO Ratios (by hour) Comparison - June and July Sundays (2010-2015) versus June 21, 2015
Average Sunday NO2:NO
June 21, 2015 NO2:NO
NO2:NO Ratio
Hour of the day (LST)
UTEP has no NO_2:NO ratio estimates during crucial part of exceptional event!
18.5
20.3
8.0
5.5
3.4
1.2
0.3

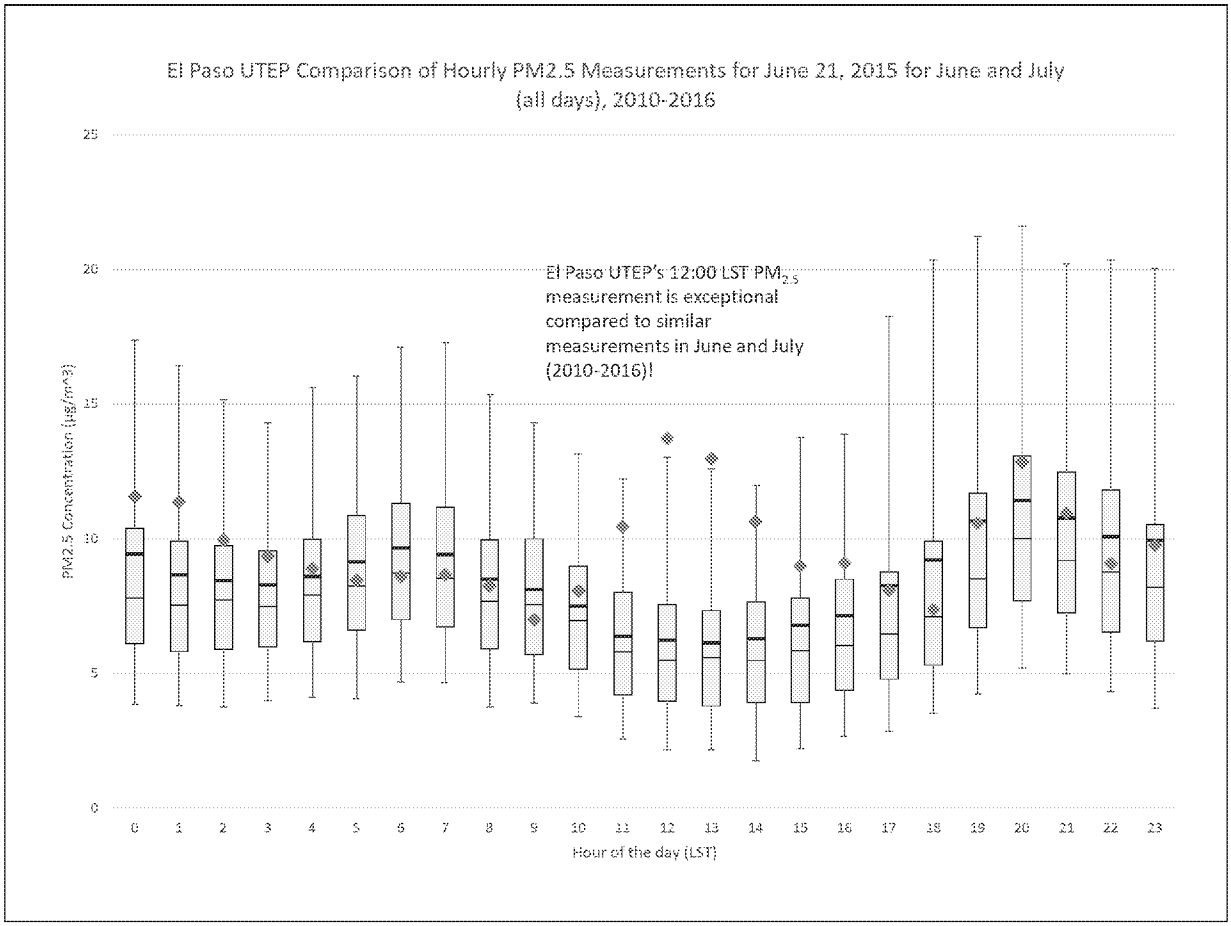

El Paso Chamizal NO2 and NO Diurnal Profile Comparisons - June and July Sundays 2010-2015 versus June 21, 2015
Average Sunday NO2
June 21, 2015 NO2
Average Sunday NO
June 21, 2015 NO
NO2 and NO Concentration (ppb)
Hour of the day (LST)
NO2 measurements at Chamizal are substantially enhanced above average until the 3:00 to 4:00 hour!

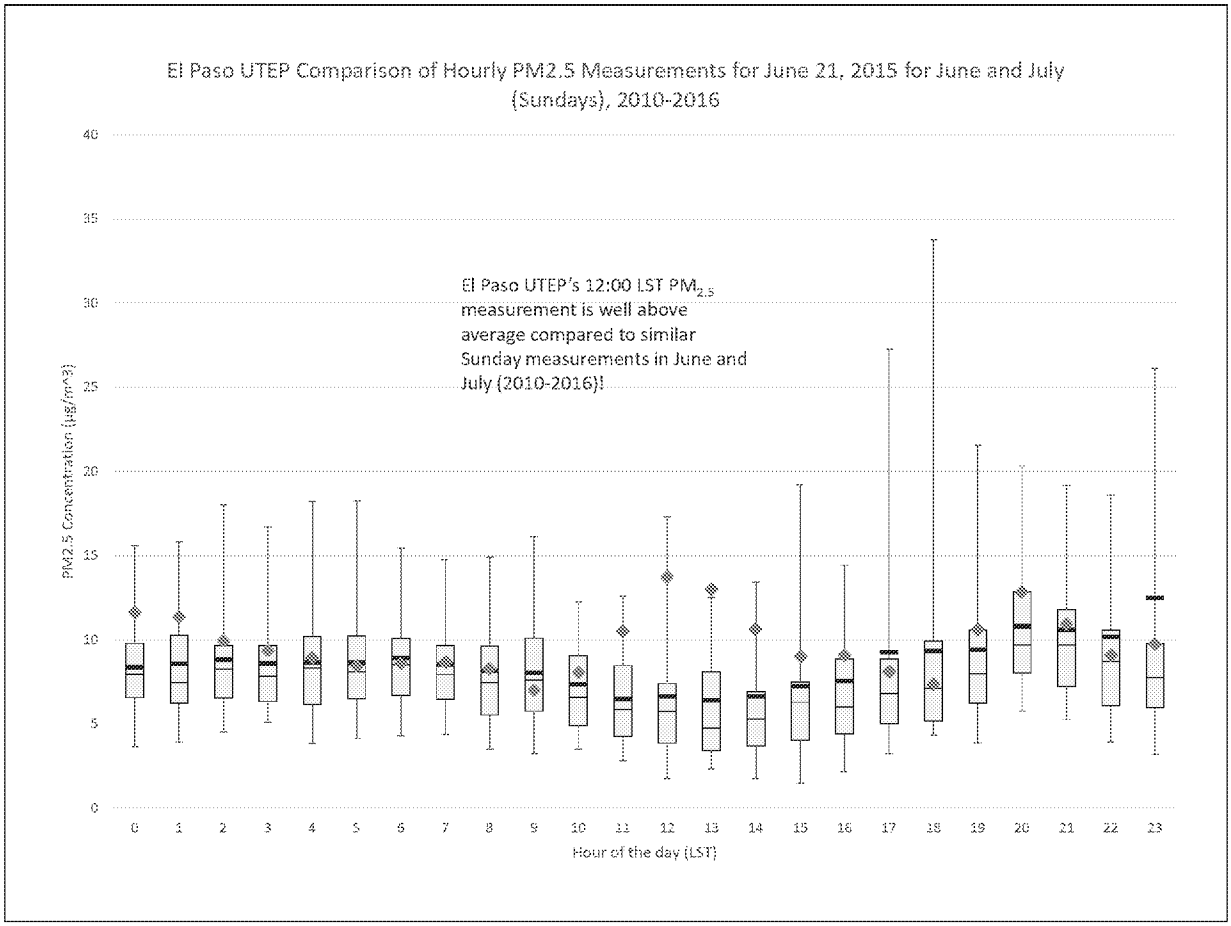

El Paso Chamizal NO2:NO Ratio (by hour) Comparison - June and July Sundays (2010-2015) versus June 21, 2015
NO2:NO Ratio
Hour of the day (LST)
The NO_2:NO ratio (which is already enhanced) jumps to 49.2 over the noon hour!
61.7
49.2
22.8
21.8
21.7
18.2
16.9
16.2
13.4
13.3
13.1
10.9
10.3
8.6
8.1
7.6
6.5
4.5
4.4
3.4
2.8
Average Sunday NO2:NO
June 21, 2015 NO2:NO

Carbon Monoxide Measurements at Chamizal (CAMS 41)


El Paso Chamizal: Percent Ranking of 12:00 CO Measurement on June 21, 2015 (Compared to Sundays from June-July, 2010-2016)
El Paso Chamizal: Percent Ranking of 12:00 CO Measurement on June 21, 2015 (Compared to Sundays from March-October, 2010-2016)
El Paso Chamizal: Percent Ranking of 12:00 CO Measurement on June 21, 2015 (Compared to all days in June-July, 2010-2016)
El Paso Chamizal: Percent Ranking of 12:00 CO Measurement on June 21, 2015 (Compared to all days from March-October, 2010-2016)
El Paso Chamizal's 12:00 LST CO measurement is clearly exceptional compared to June and July measurements from 2010-2016!

$PM_{2.5}$ Measurements at El Paso UTEP (CAMS 12)

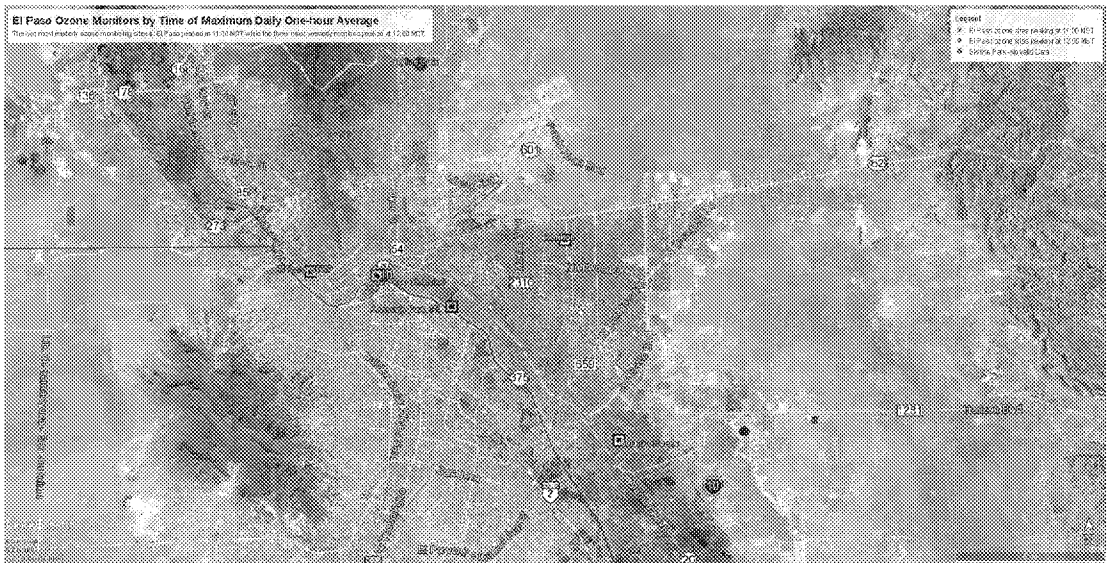

El Paso UTEP Comparison of Hourly PM2.5 Measurements for June 21, 2015 for June and July (all days), 2010-2016
El Paso UTEP's 12:00 LST PM2.5 measurement is exceptional compared to similar measurements in June and July (2010-2016)!
PM2.5 Concentration (µg/m^3)
Hour of the day (LST)
0
5
10
15
20
25
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23


El Paso UTEP Comparison of Hourly PM2.5 Measurements for June 21, 2015 for June and July (Sundays), 2010-2016
El Paso UTEP's 12:00 LST $PM_{2.5}$ measurement is well above average compared to similar Sunday measurements in June and July (2010-2016)!
PM2.5 Concentration (µg/m^3)
Hour of the day (LST)
0
5
10
15
20
25
30
35
40
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

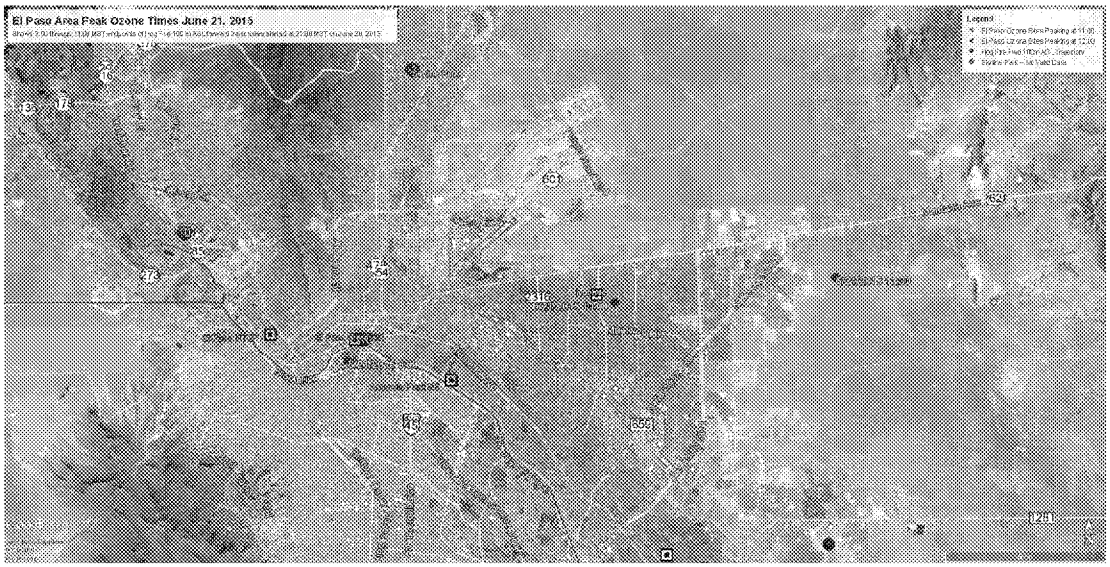
Why did some El Paso Sites have declining ozone concentrations of the early afternoon?

Answer: The El Paso Ivanhoe and Socorro Hueco sites peaked one hour before El Paso UTEP, Chamizal, and Ascarate Park SE because of flow reversal.

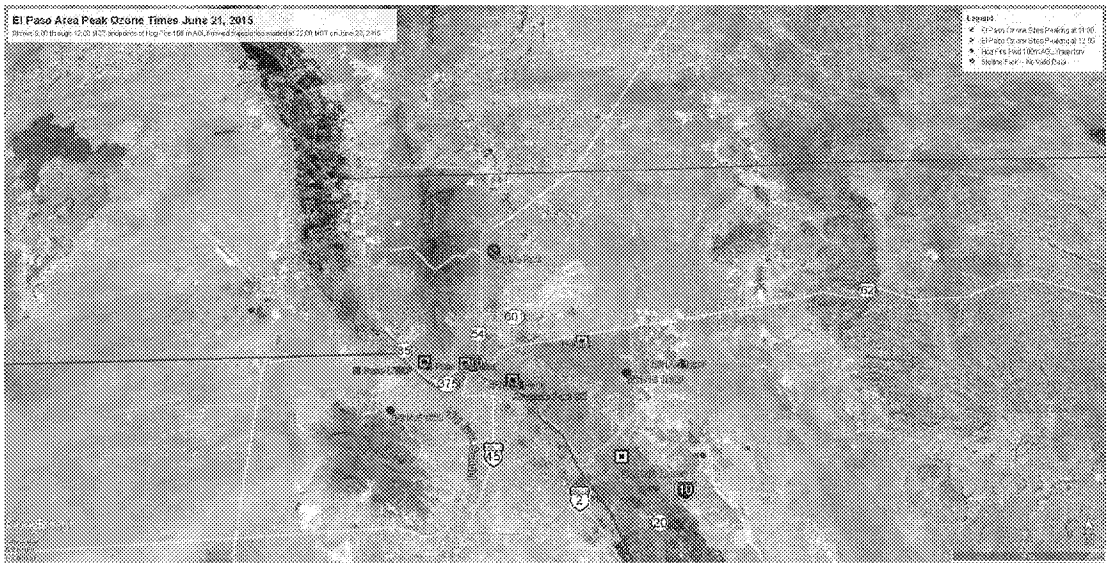
The two most easterly ozone sites (Ivanhoe and Socorro Hueco) peaked one hour ahead of the three more westerly ozone sites (UTEP, Chamizal, and Ascarate Park SE). One monitoring site (Skyline Park) did not have valid monitoring data.



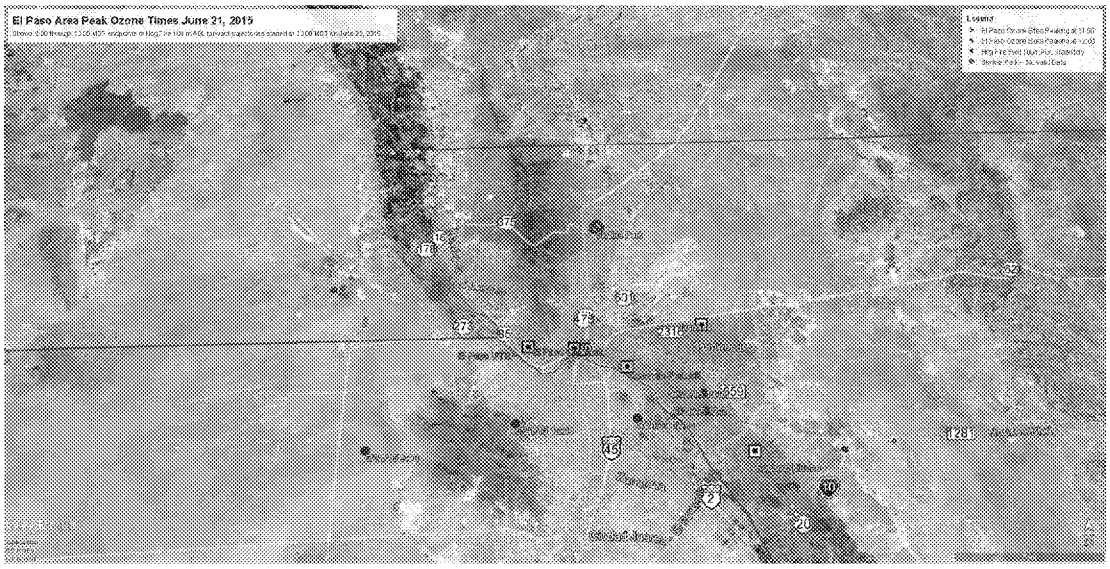
Early forward trajectories from the Hog Fire (e.g., beginning at 21:00 MST on June 20, 2015) travelled over both the eastern and western monitoring sites…



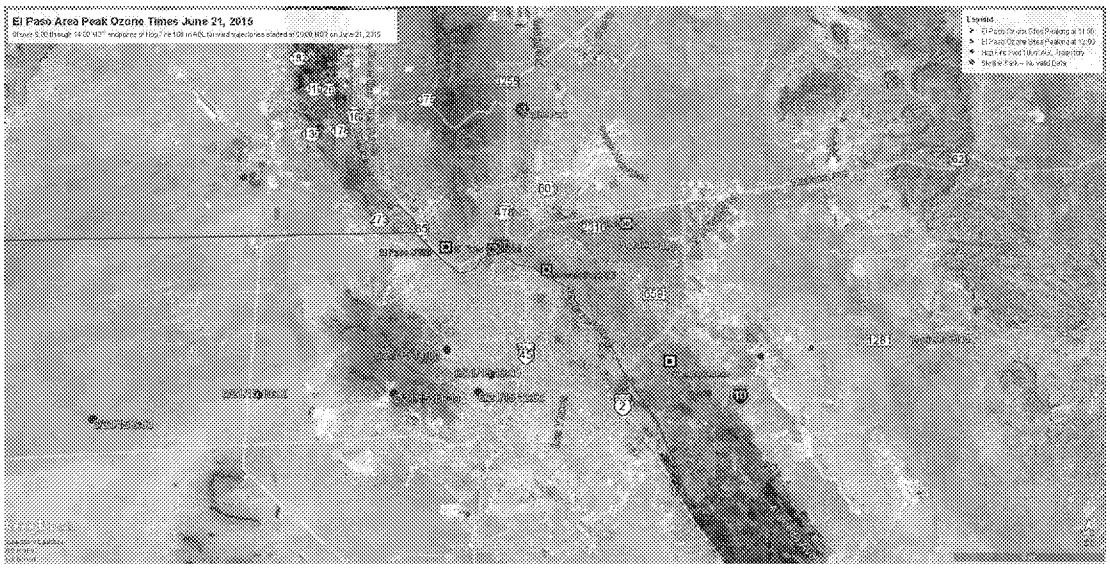
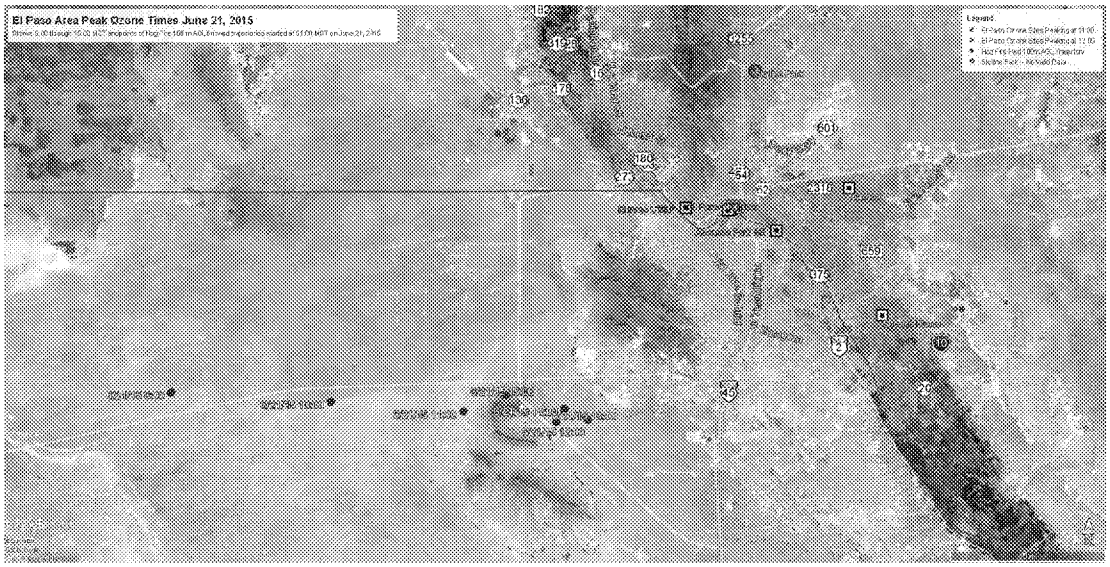
… beginning at 22:00 MST on June 20, 2015 …



Beginning with trajectories starting at 23:00 MST (June 20, 2015), lower level winds over the El Paso area began stall and turn north between 11:00 and 12:00 MST, blocking trajectories from continuing further east. The air begins to stagnate on the Texas side of the Rio Grande. This allows more than hour's worth of ozone to accumulate.



Low level trajectories starting at 0:00 MST (June 21, 2015) actually reverse direction short of the Rio Grande.



Even more so for trajectories starting at 1:00 MST (June 21, 2015).