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Supplement of

Revisiting day-of-week ozone patterns in an era of evolving US air quality

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Extra figures showing comparison of modeled and observed median WE-WD NO_x differences and trends

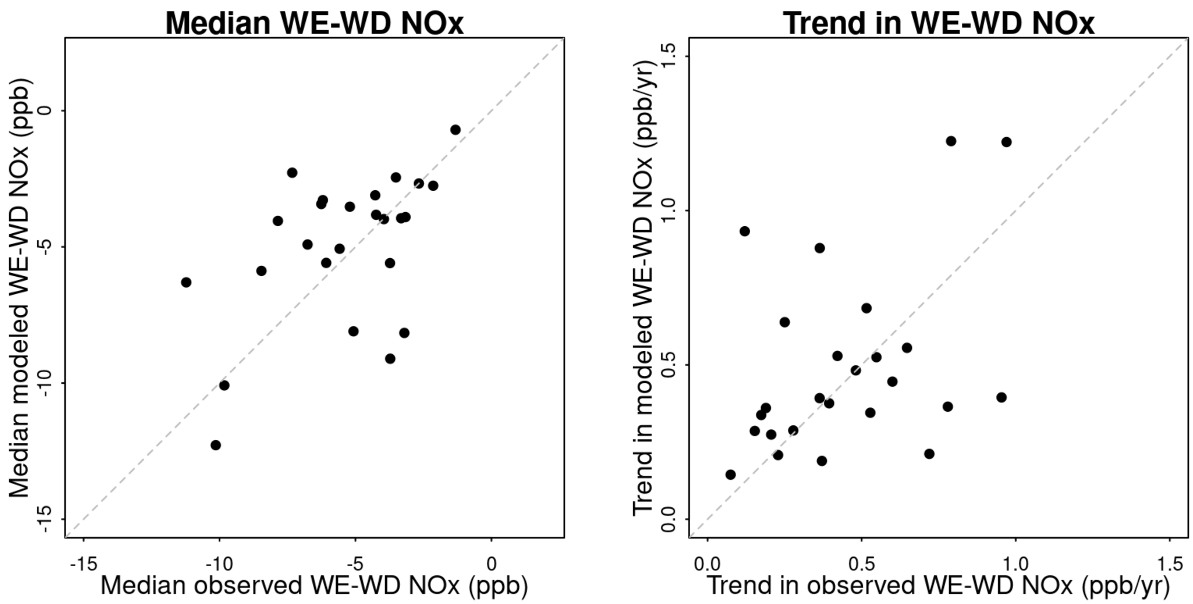
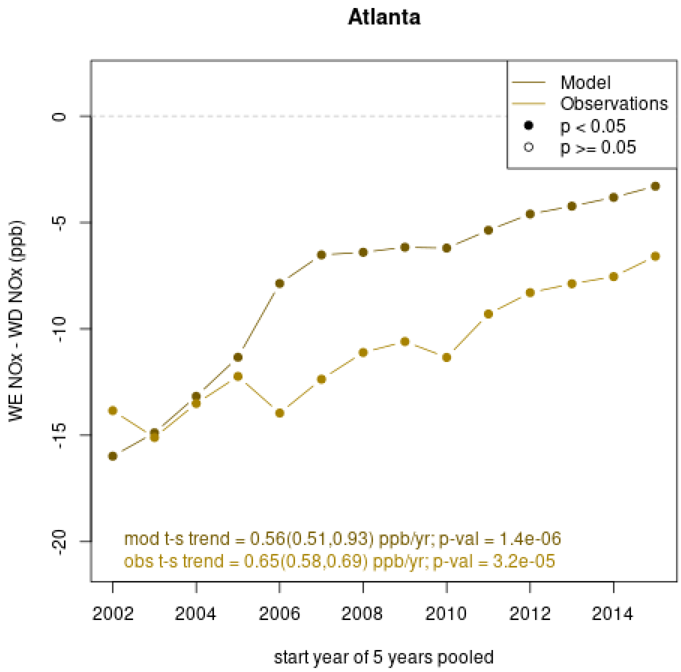


Figure S1. Comparison of observed and modeled NO_X WE-WD differences (left) and 2002-2019 trends in WE-WD differences (right)



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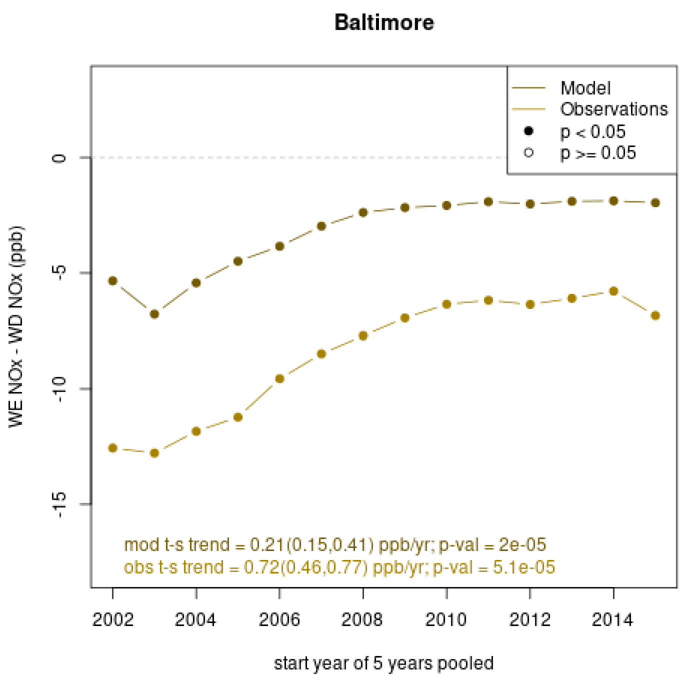

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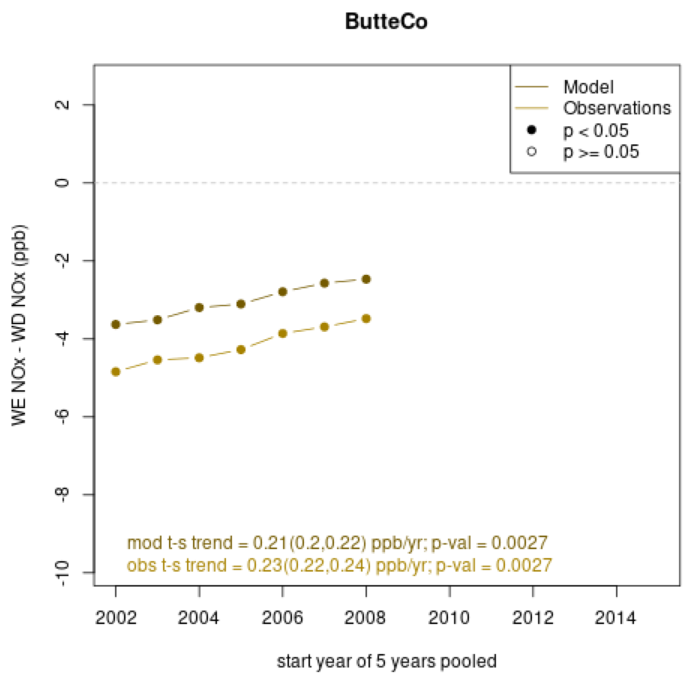

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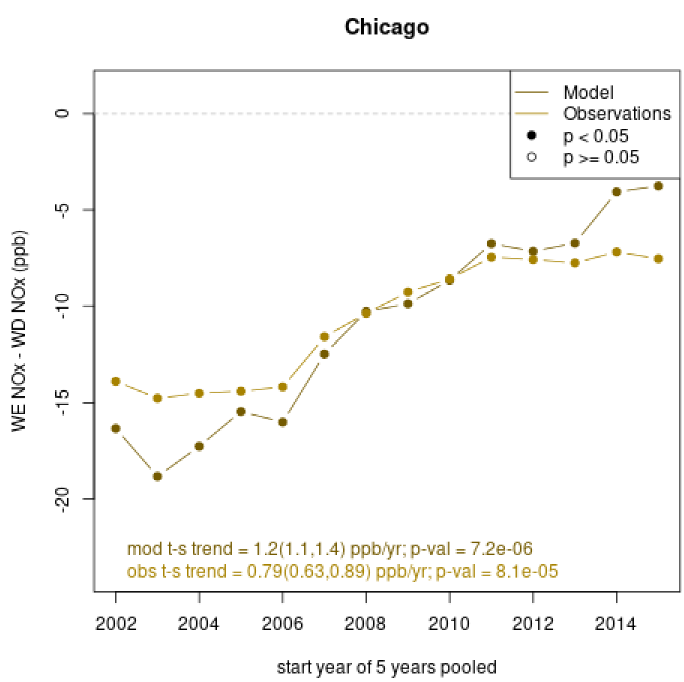

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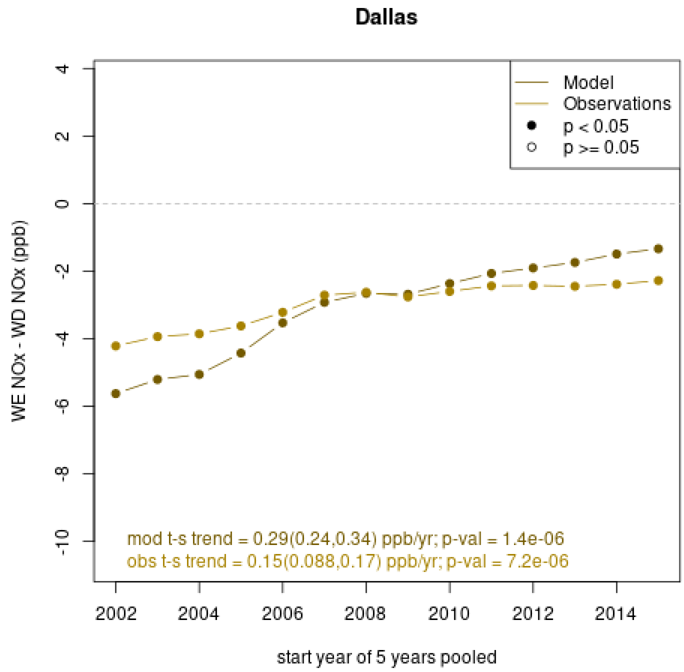

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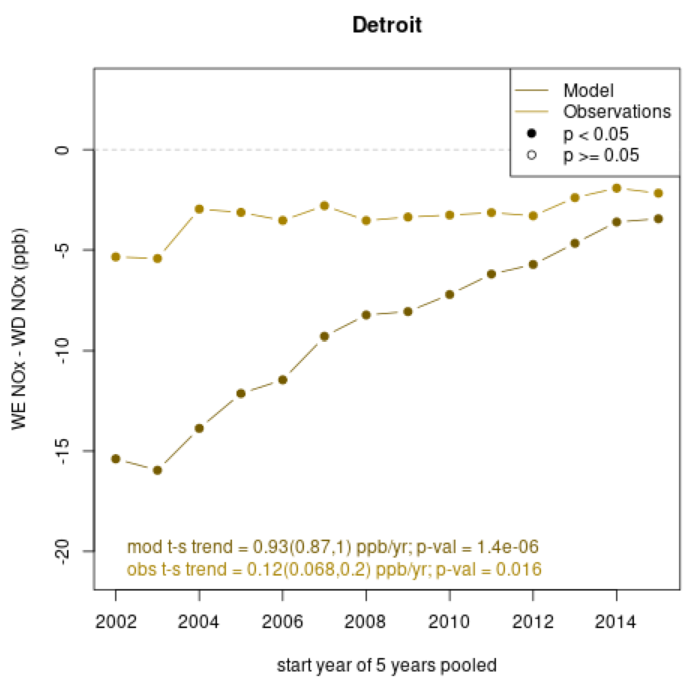

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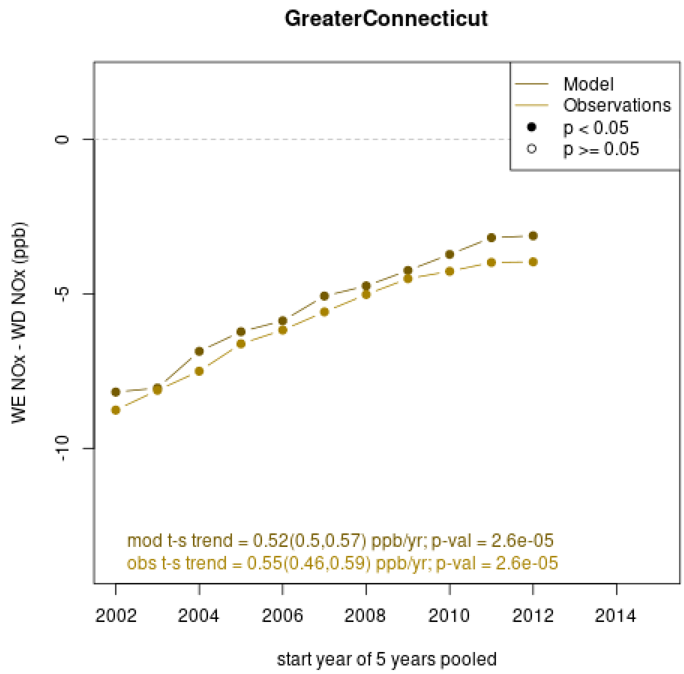

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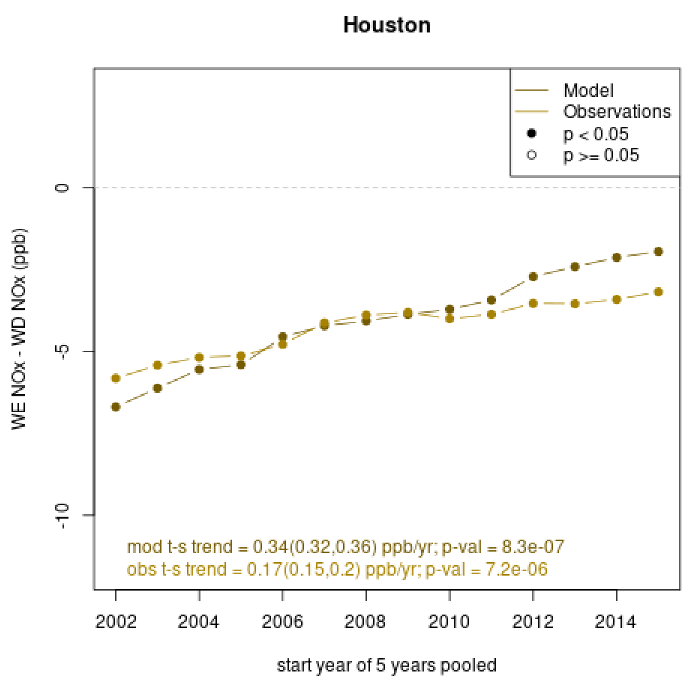


Figure S9. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Houston nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

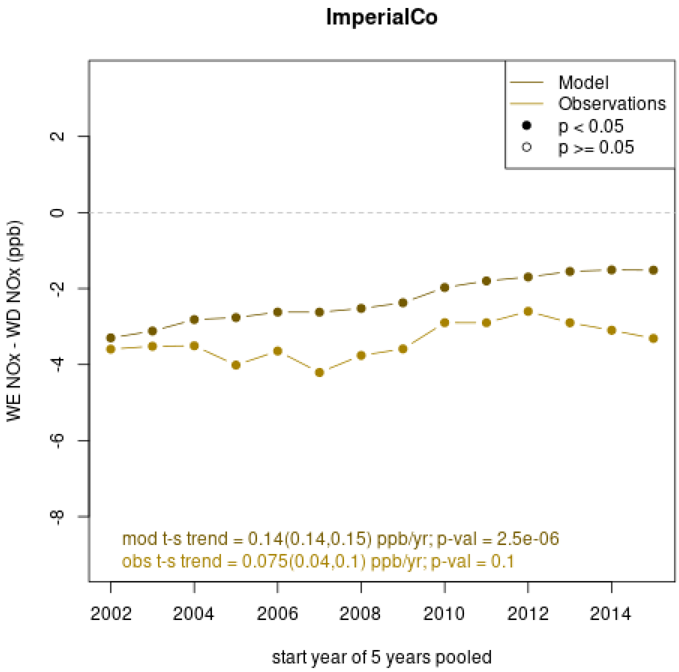


Figure S10. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Imperial County nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

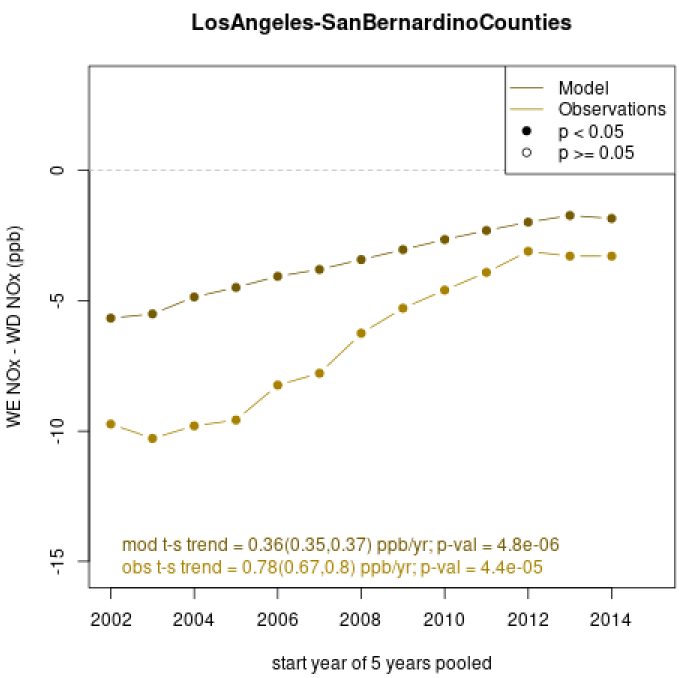


Figure S11. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Los Angeles – San Bernardino Counties nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

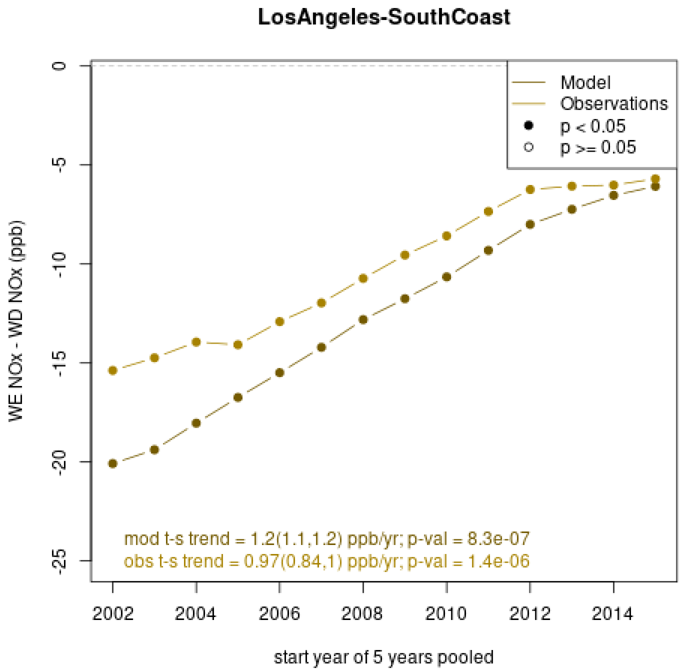
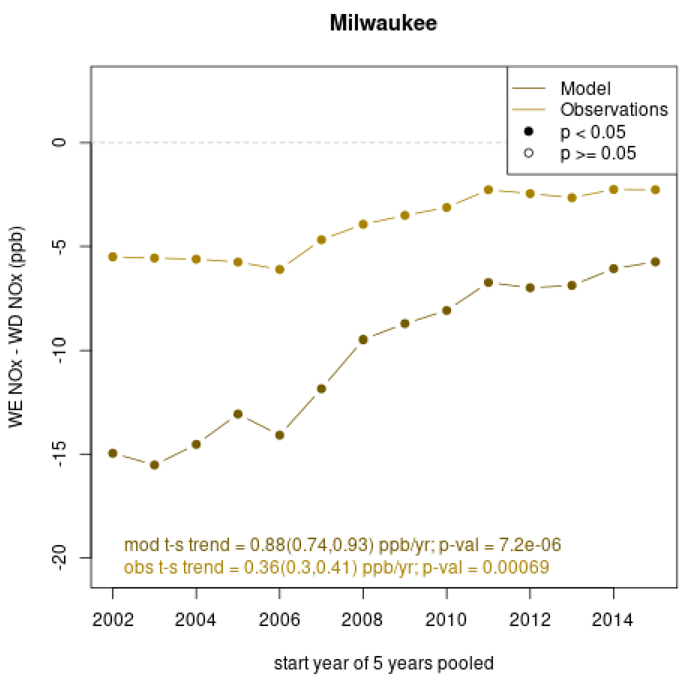


Figure S12. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Los Angeles – South Coast nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.



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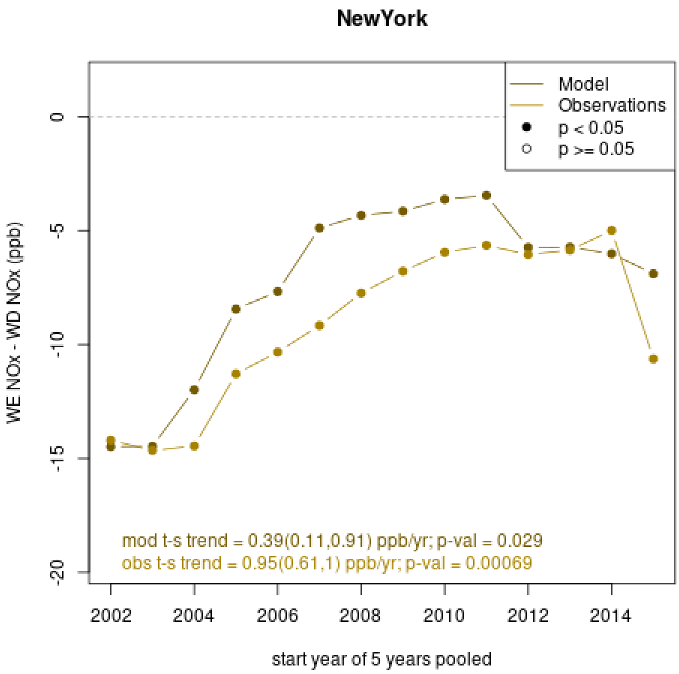

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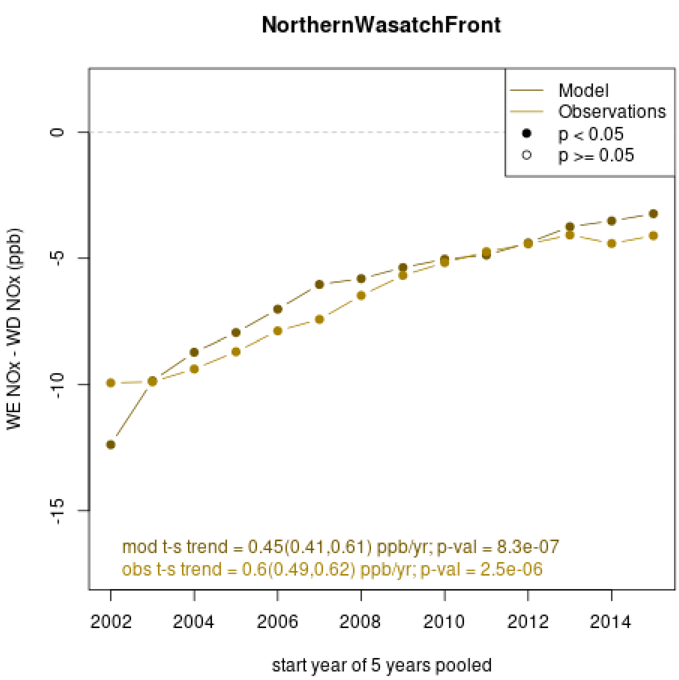


Figure S15. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Northern Wasatch Front nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

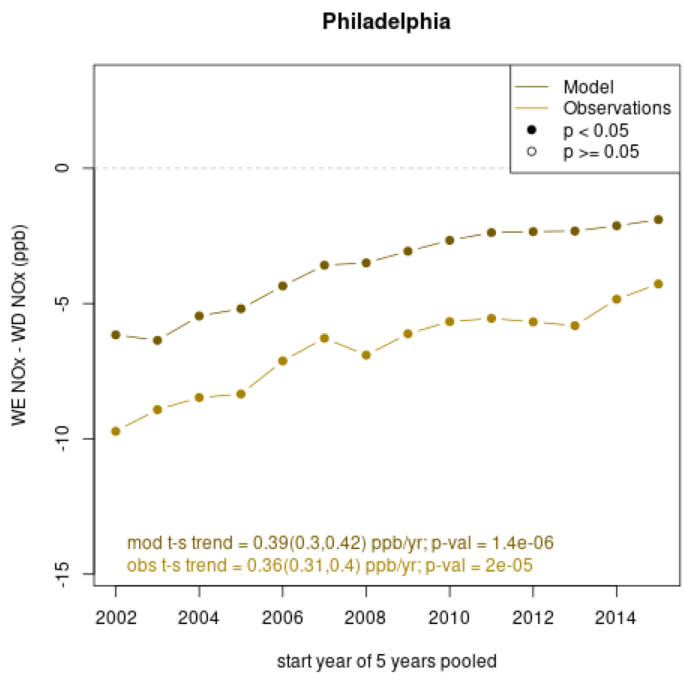


Figure S16. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Philadelphia nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

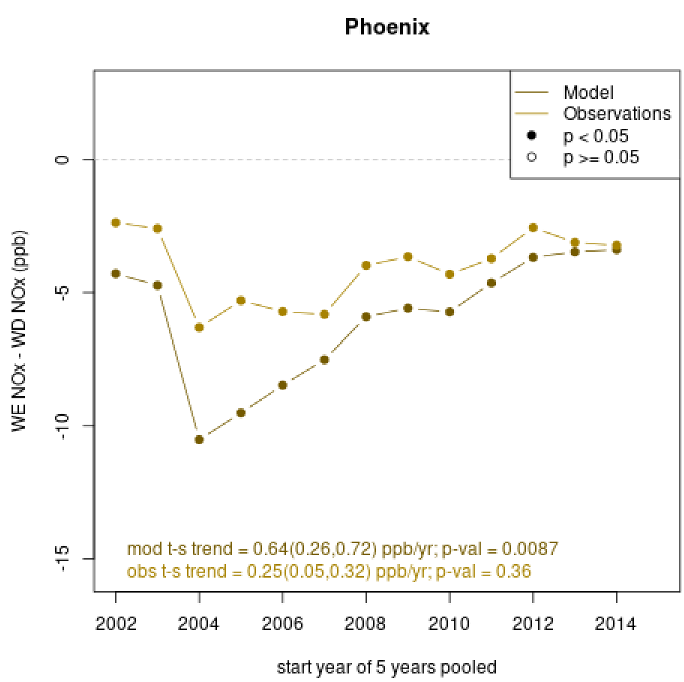


Figure S17. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Phoenix nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

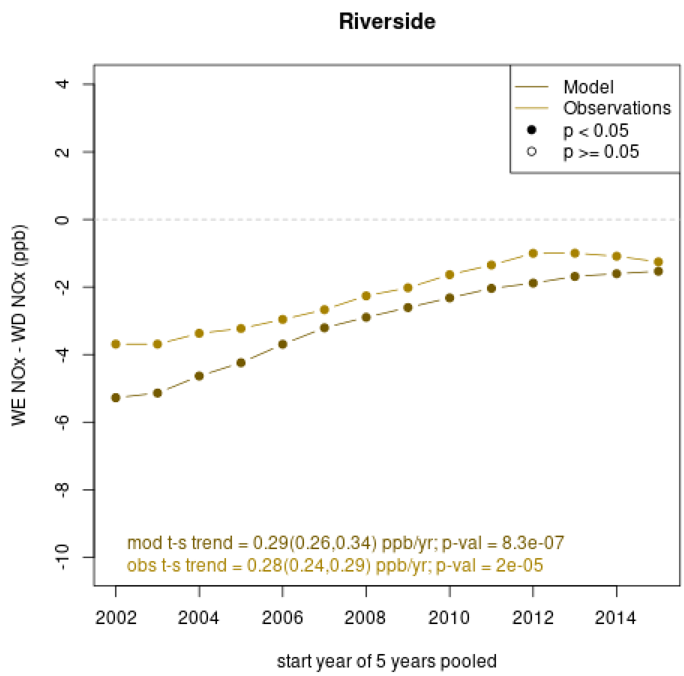


Figure S18. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Riverside nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

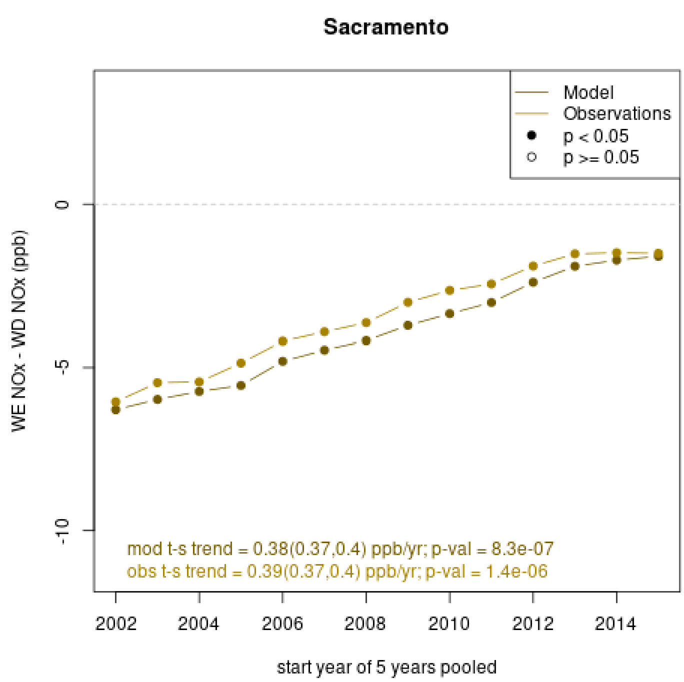


Figure S19. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Sacramento nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

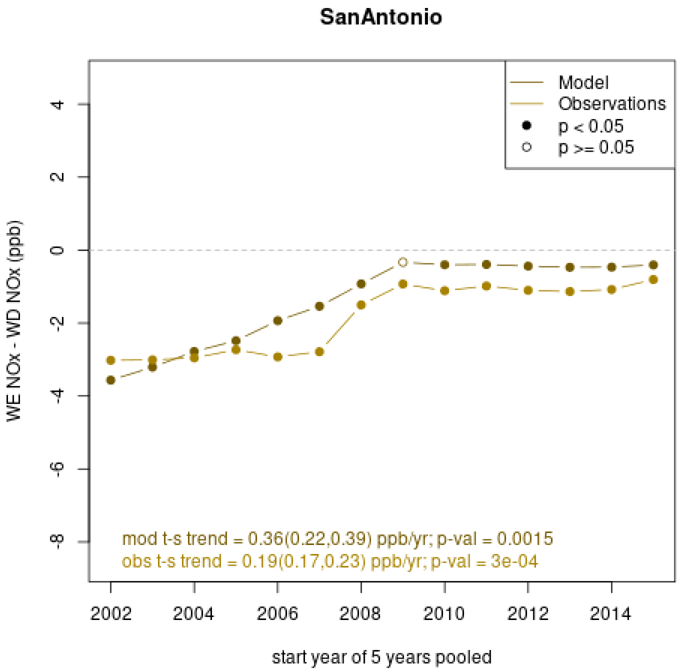


Figure S20. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the San Antonio nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

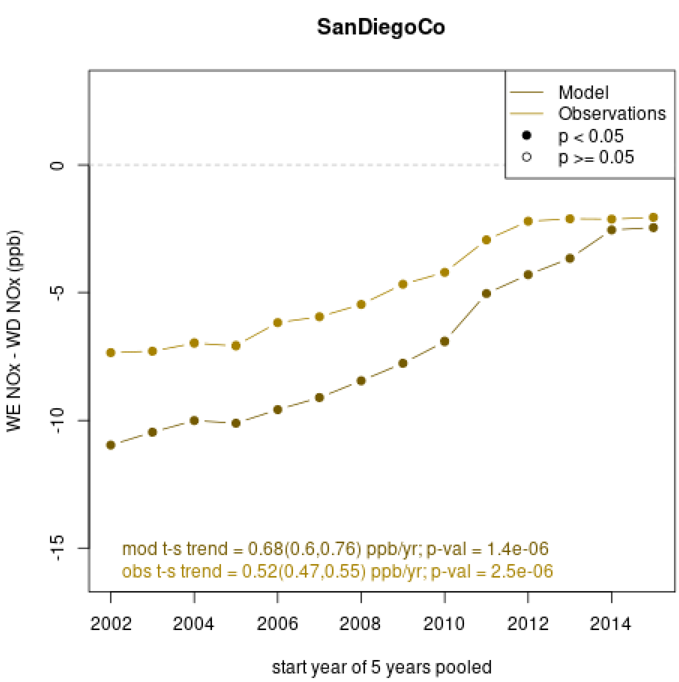


Figure S21. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the San Diego nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

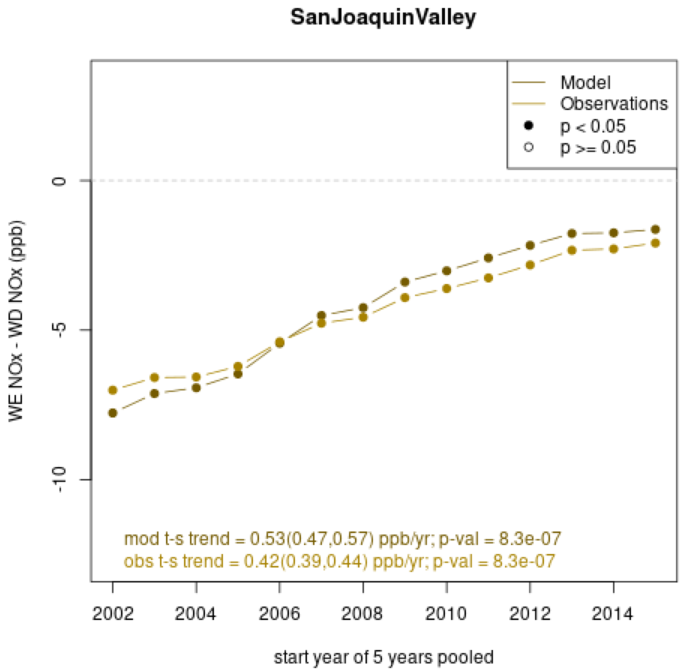


Figure S22. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the San Joaquin Valley nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

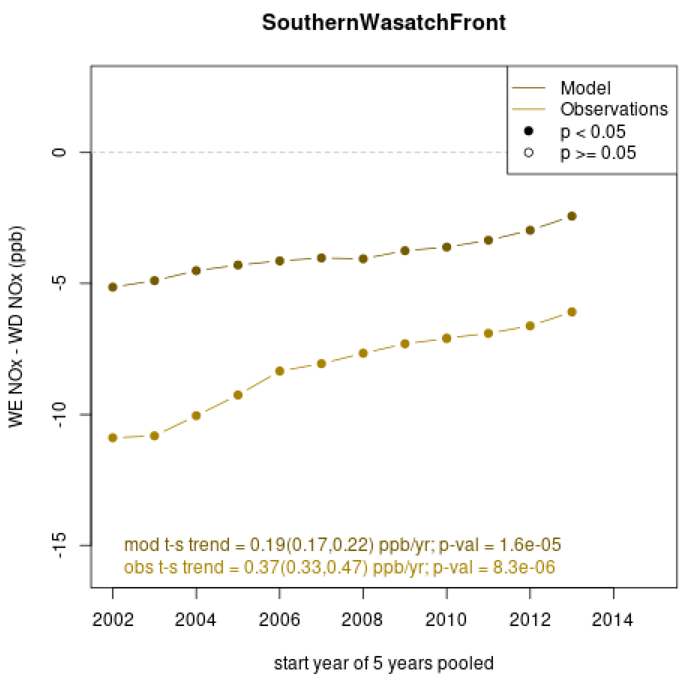


Figure S23. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Southern Wasatch Front nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

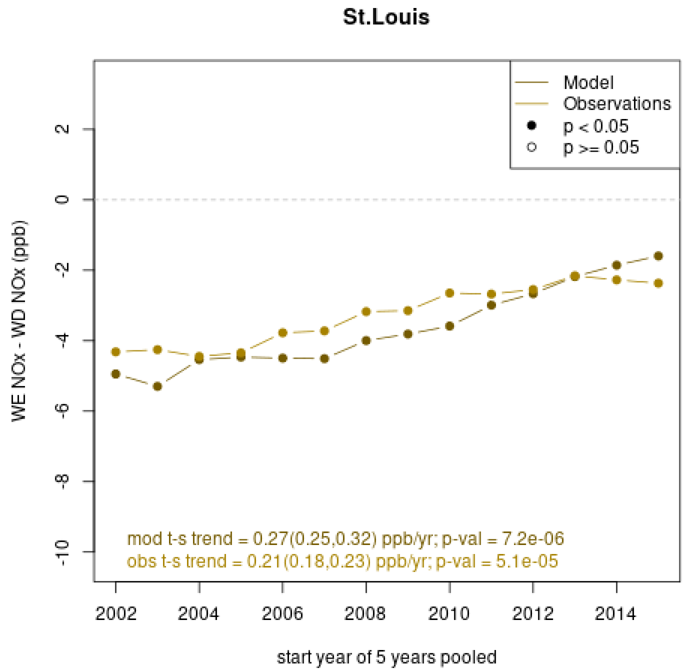


Figure S24. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the St. Louis nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

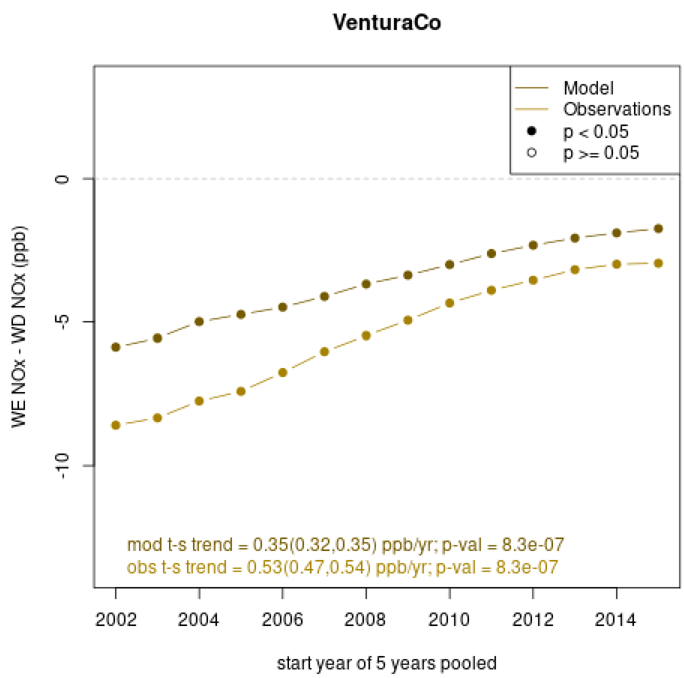


Figure S25. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Ventura County nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

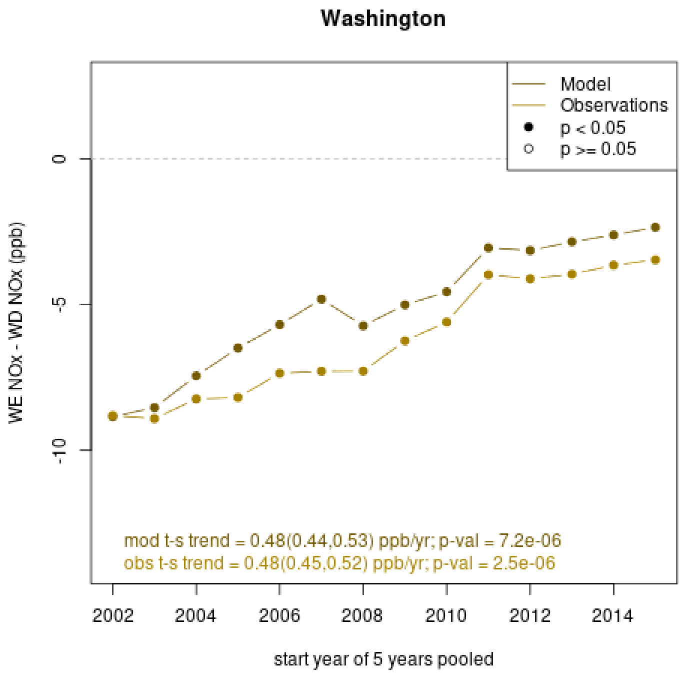


Figure S26. Observed and modeled May-Sep trends in mean NO_x day of week differences across NO_x monitoring locations in the Washington D.C. nonattainment area for 2002-2019 plotted as 5-year rolling periods. P-values denoted by open and filled dots refer to the t-test results comparing mean weekend and weekday values for each 5-year period.

Extra figures showing area-specific observed and modeled ozone distributions, modeled NO_X distributions, modeled formaldehyde distributions and trends in $\Delta\overline{O_{3,DOW}}$

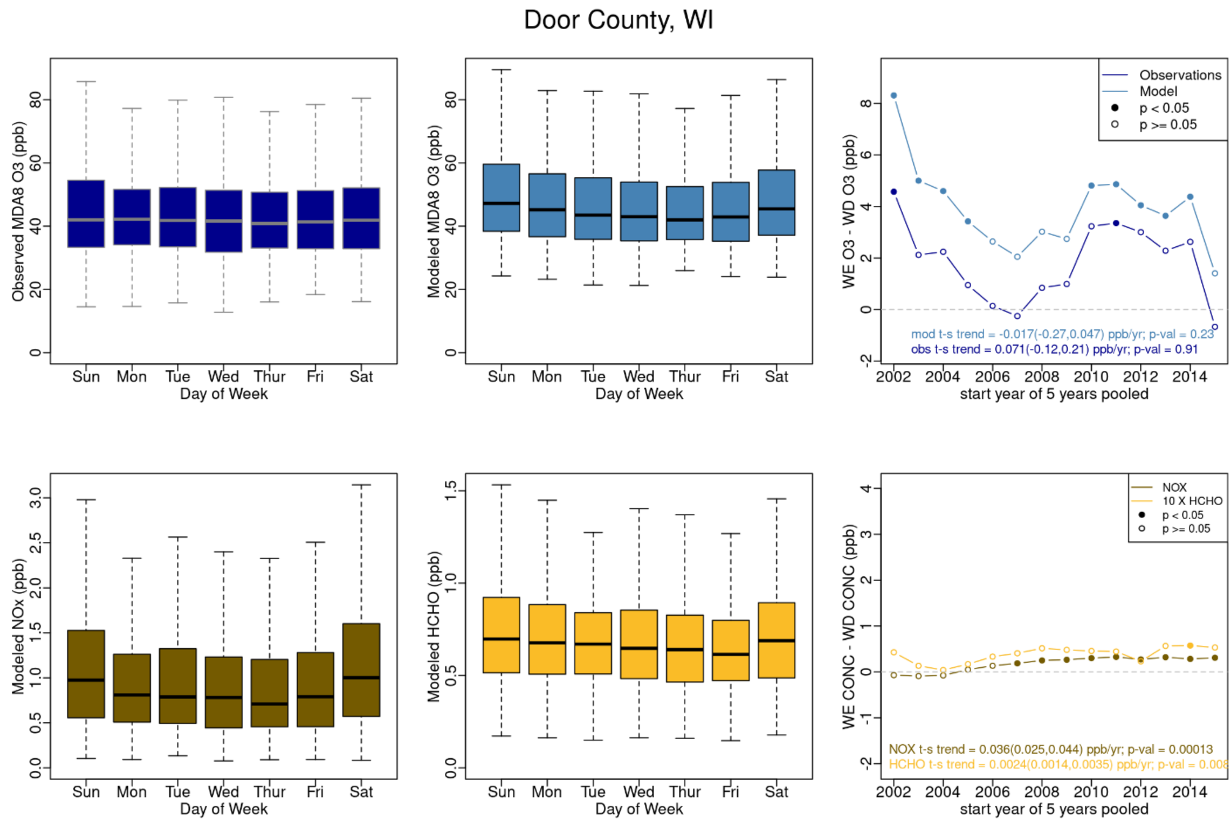


Figure S27. Door County, WI nonattianment area 2002-2019 May-Sep: observed (top left) and modeled (top center) MDA8 ozone distribution by day of week; modeled NO_X (bottom left) and modeled formaldehyde (bottom center) distribution by day of week; observed and modeled trends in $\Delta\overline{O_{3,DOW}}$ (top right); modeled trends in WE-WD NO_X and formaldehyde differences (bottom right). The distributions by day of the week are for the entire 18 years with each box representing the 25th to 75th percentile for that day of the week across all 18 years, the whiskers representing the 1.5 times the interquartile range, and the bold line inside the box representing the median. WE-WD differences (top and bottom right) are based on 5-year rolling periods.

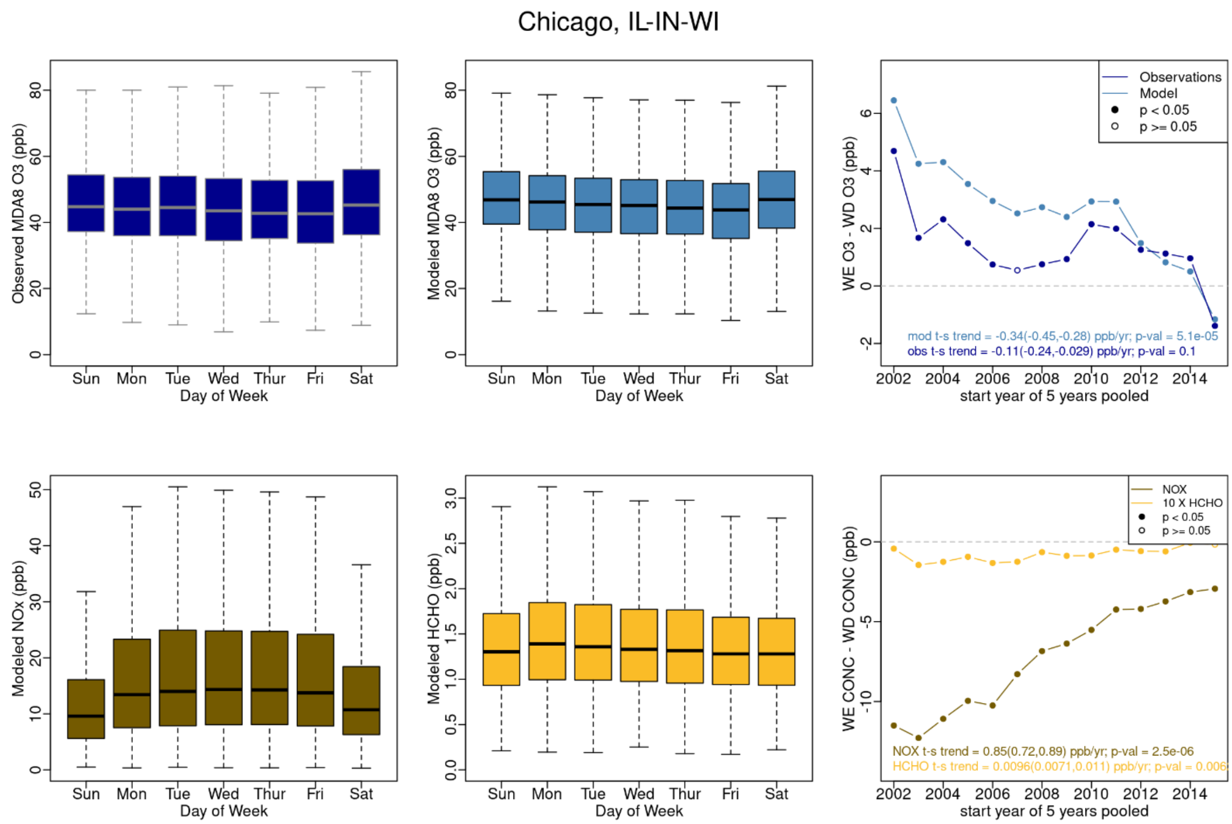


Figure S28. Chicago area 2002-2019 May-Sep: observed (top left) and modeled (top center) MDA8 ozone distribution by day of week; modeled NO_X (bottom left) and modeled formaldehyde (bottom center) distribution by day of week; observed and modeled trends in $\Delta\overline{O_{3,DOW}}$ (top right); modeled trends in WE-WD NO_X and formaldehyde differences (bottom right). The distributions by day of the week are for the entire 18 years with each box representing the 25th to 75th percentile for that day of the week across all 18 years, the whiskers representing the 1.5 times the interquartile range, and the bold line inside the box representing the median. WE-WD differences (top and bottom right) are based on 5-year rolling periods.

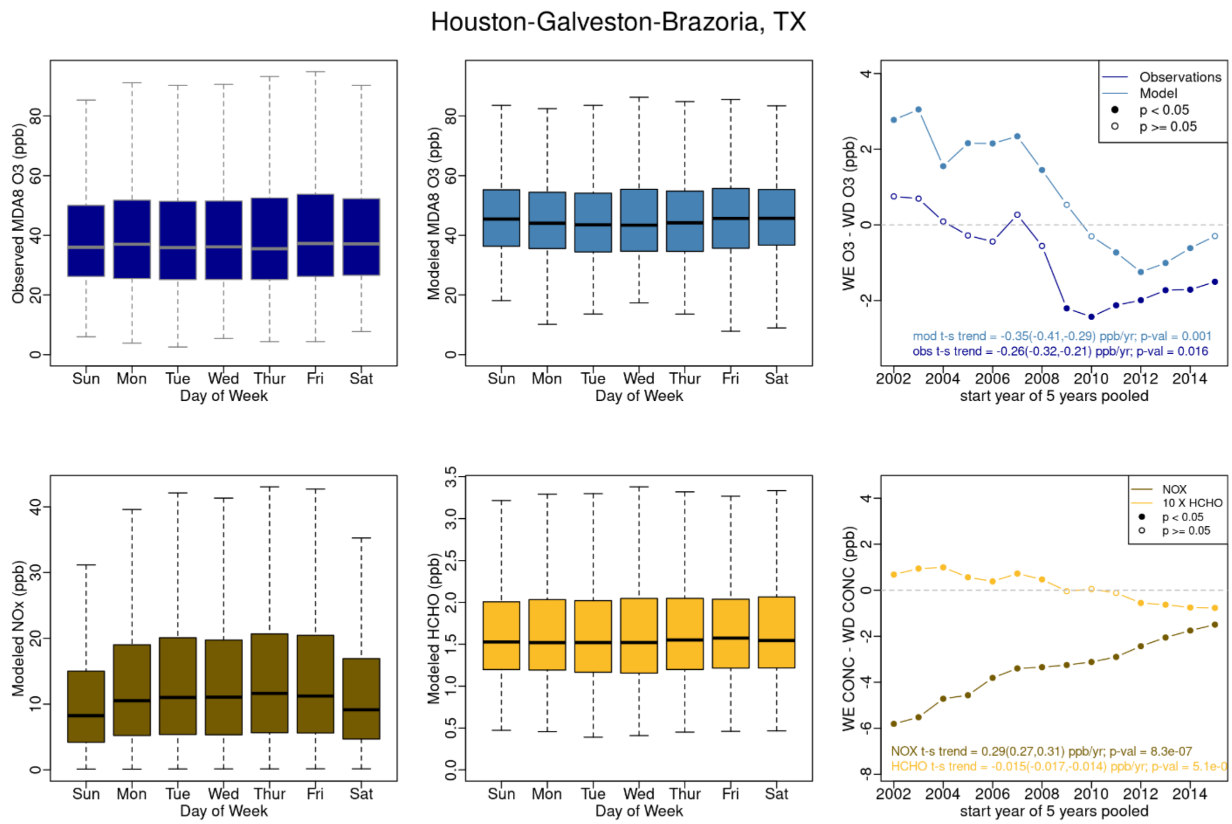


Figure S29. Houston area 2002-2019 May-Sep: observed (top left) and modeled (top center) MDA8 ozone distribution by day of week; modeled NO_X (bottom left) and modeled formaldehyde (bottom center) distribution by day of week; observed and modeled trends in $\Delta\overline{O_{3,DOW}}$ (top right); modeled trends in WE-WD NO_X and formaldehyde differences (bottom right). The distributions by day of the week are for the entire 18 years with each box representing the 25th to 75th percentile for that day of the week across all 18 years, the whiskers representing the 1.5 times the interquartile range, and the bold line inside the box representing the median. WE-WD differences (top and bottom right) are based on 5-year rolling periods.

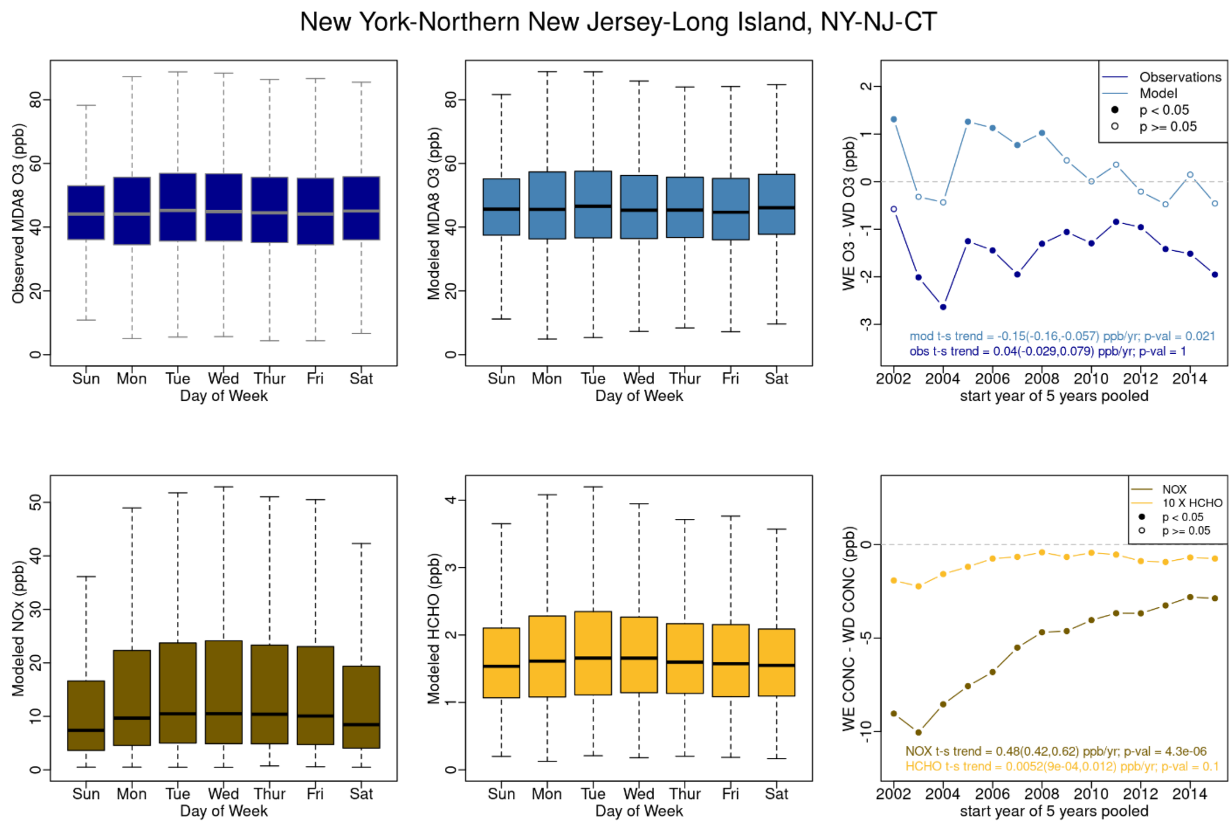
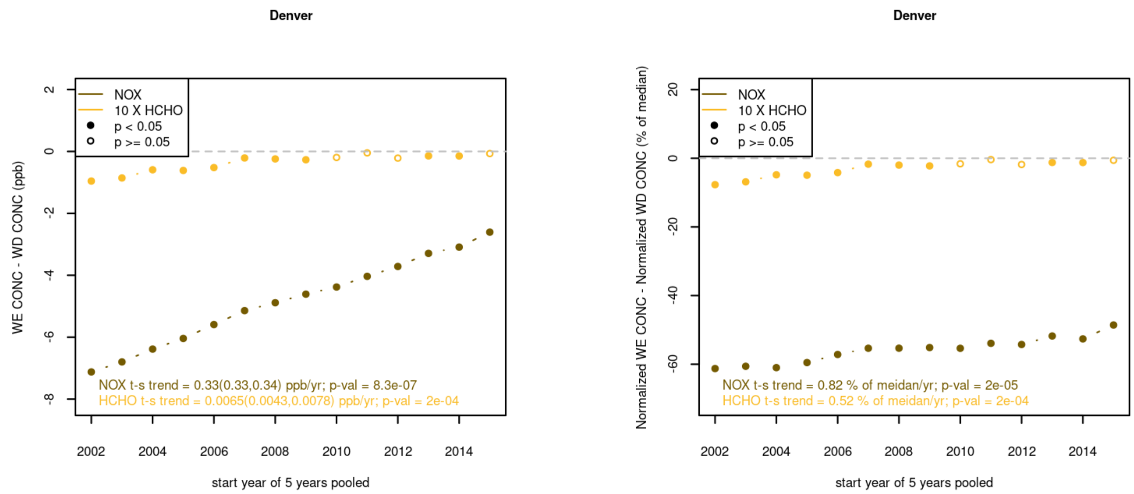


Figure S30. New York City nonattainment area 2002-2019 May-Sep: observed (top left) and modeled (top center) MDA8 ozone distribution by day of week; modeled NO_X (bottom left) and modeled formaldehyde (bottom center) distribution by day of week; observed and modeled trends in $\Delta\overline{O_{3,DOW}}$ (top right); modeled trends in WE-WD NO_X and formaldehyde differences (bottom right). The distributions by day of the week are for the entire 18 years with each box representing the 25th to 75th percentile for that day of the week across all 18 years, the whiskers representing the 1.5 times the interquartile range, and the bold line inside the box representing the median. WE-WD differences (top and bottom right) are based on 5-year rolling periods.

Extra figures showing absolute and relative trends in WE-WD differences for modeled NO_X and formaldhyde.



Figures S31. Denver area May-Sep 2002-2019 modeled absolute trends in WE-WD NO_X and formaldehyde differences (left) and modeled relative trends in WE-WD NO_X and formaldehyde differences (right)

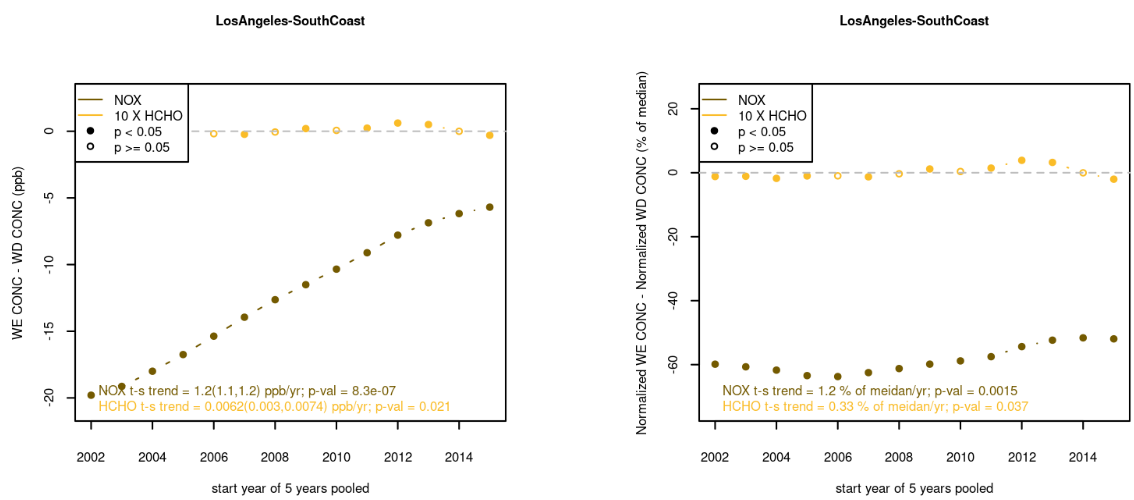
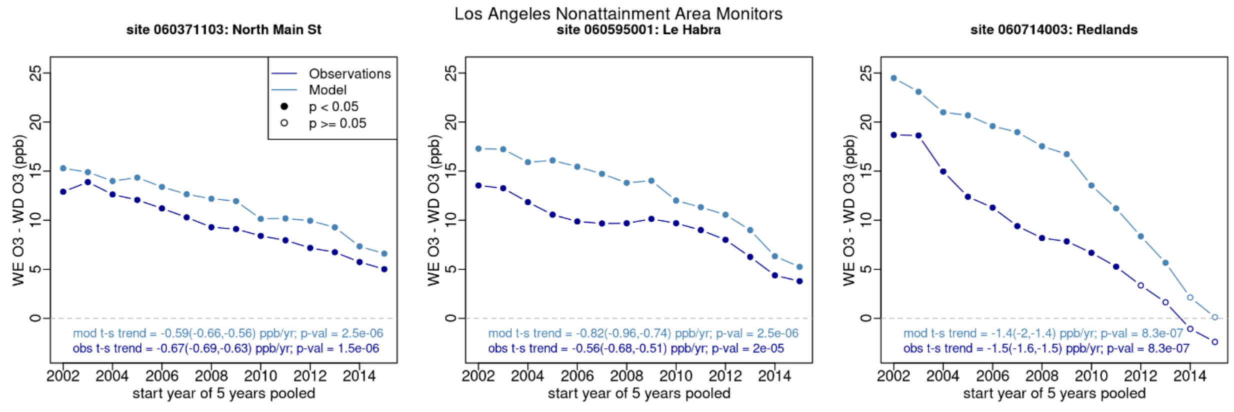


Figure S32. Los Angeles area May-Sep 2002-2019 modeled absolute trends in WE-WD NO_X and formaldehyde differences (left) and modeled relative trends in WE-WD NO_X and formaldehyde differences (right)

Extra figures showing monitor-level trends in $\Delta\overline{O_{3,DOW}}$



Figures S33. Observed and modeled May-Sep trends in $\Delta\overline{O_{3,DOW}}$ at 3 Los Angeles area monitoring locations for 2002-2019.

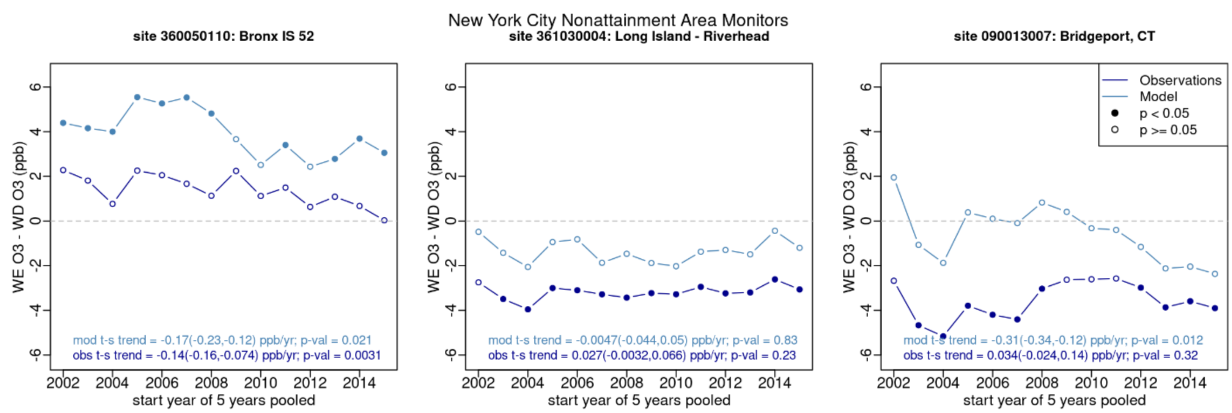


Figure S34. Observed and modeled May-Sep trends in $\Delta\overline{O_{3,DOW}}$ at 3 New York City area monitoring locations for 2002-2019.

Extra figures showing area-specific percentage of days exceeding the NAAQS on weekends and weekdays and trends in $\Delta O_{3,DOW,\%>70}$

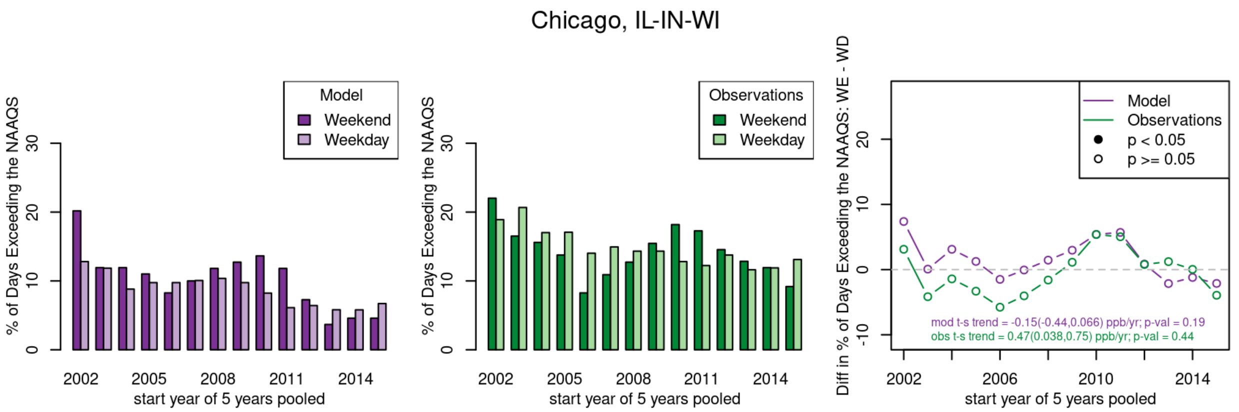


Figure S35. Modeled (left) and observed (center) percent of days with MDA8 ozone exceeding 70 ppb at any monitor within the Chicago nonattainment area during May-Sep on weekends and weekdays for 5-year rolling periods between 2002-2019; Observed and modeled trends in May-Sep $\Delta O_{3,DOW,\%>70}$ at Chicago area monitors for 5-year rolling periods between 2002-2019 (right).

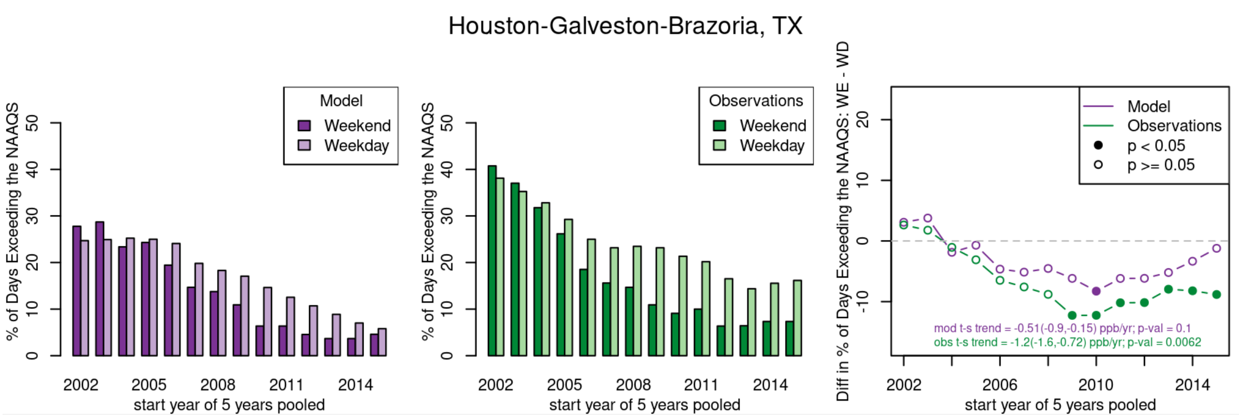


Figure S36. Modeled (left) and observed (center) percent of days with MDA8 ozone exceeding 70 ppb at any monitor within the Houston nonattainment area during May-Sep on weekends and weekdays for 5-year rolling periods between 2002-2019; Observed and modeled trends in May-Sep $\Delta O_{3,DOW,\%>70}$ at Houston area monitors for 5-year rolling periods between 2002-2019 (right).

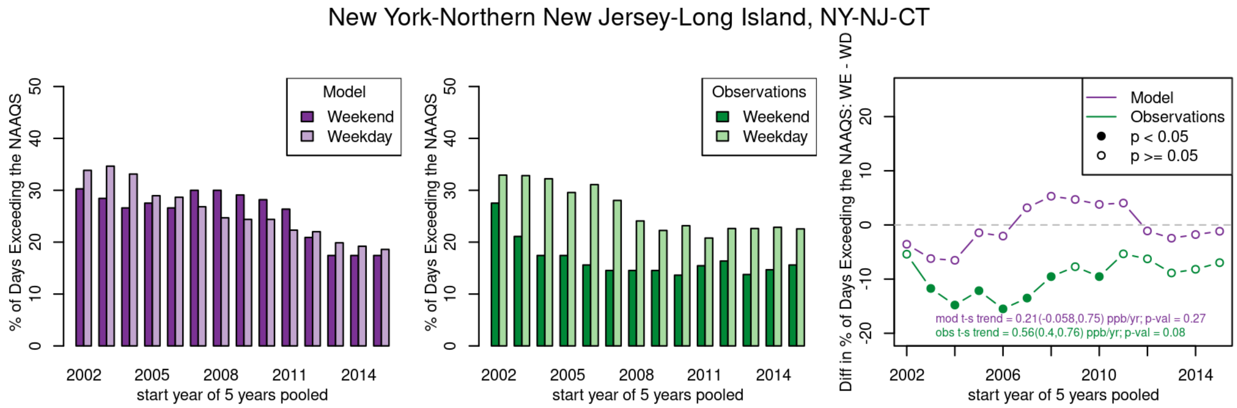


Figure S37. Modeled (left) and observed (center) percent of days with MDA8 ozone exceeding 70 ppb at any monitor within the New York City nonattainment area during May-Sep on weekends and weekdays for 5-year rolling periods between 2002-2019; Observed and modeled trends in May-Sep $\Delta O_{3,DOW,\%>70}$ at New York City area monitors for 5-year rolling periods between 2002-2019 (right).

Extra figures showing relationships between WE-WD patterns in meteorology and $\Delta\overline{O_{3,DOW}}$

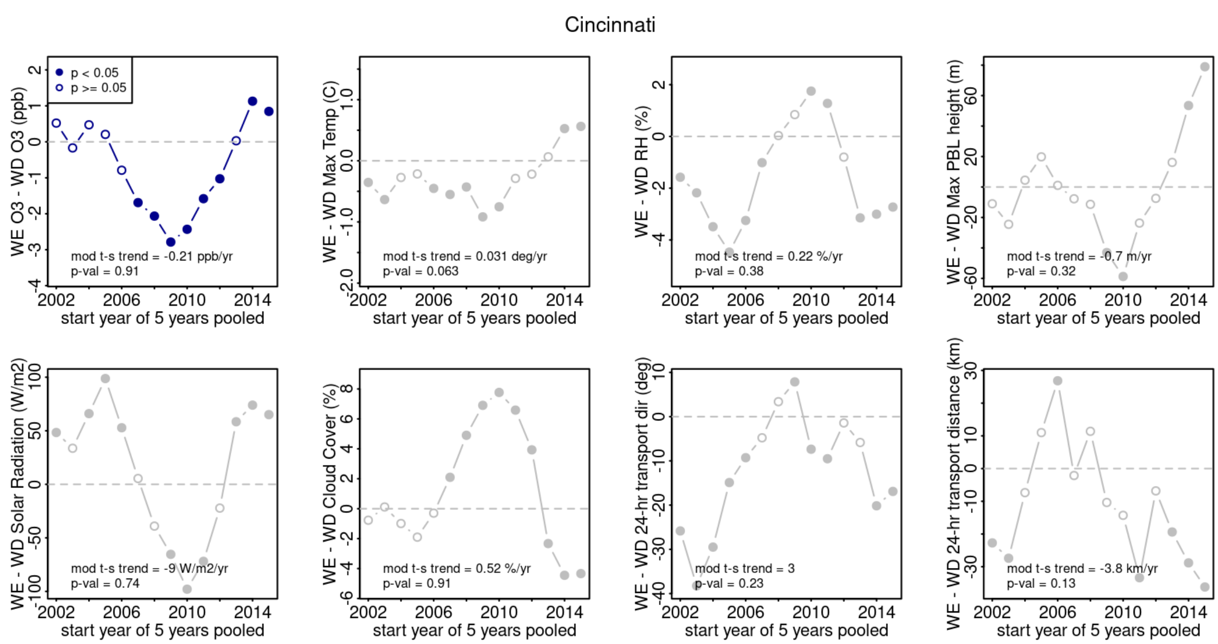
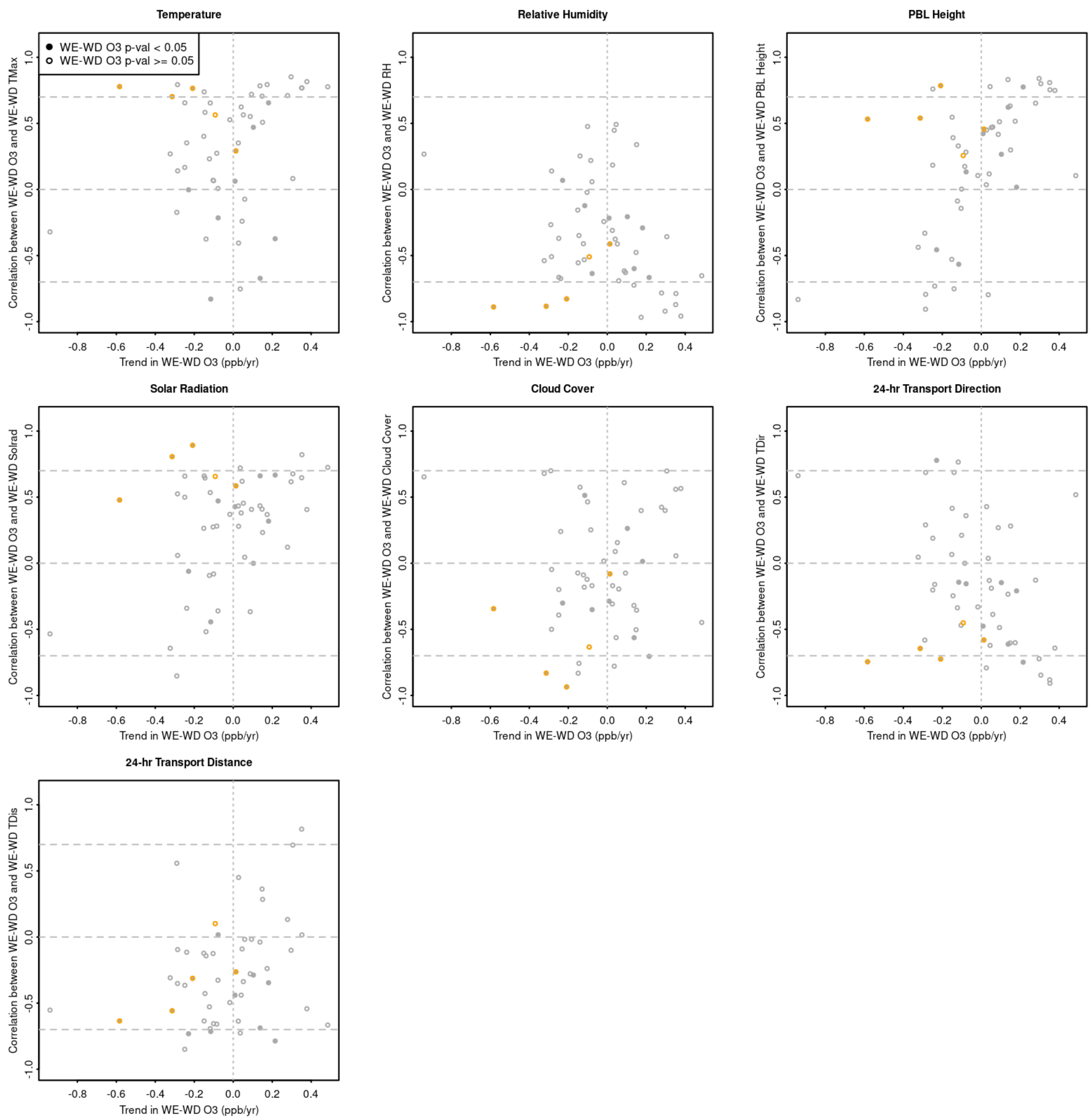


Figure S38. Cincinnati $\Delta\overline{O_{3,DOW}}$ shown in blue and WE-WD patterns in seven meteorological variables shown in gray (daily maximum temperature, daily average relative humidity, maximum planetary boundary layer height, solar radiation, cloud cover percentage, 24-hr transport direction, 24-hour transport distance).



S39. Nonattainment areas plotted by correlation coefficient between $\Delta\overline{O_{3,DOW}}$ and WE-WD differences in daily meteorology variables (y-axis) and trends in WE-WD mean ozone differences. Cincinnati, Louisville, Columbus, St. Louis, and Atlanta nonattainment areas shown in orange. All other nonattainment areas shown in gray. Solid circles indicate areas with statistically significant $\Delta\overline{O_{3,DOW}}$ trends and open circles indicate areas with non-significant trends. Top and bottom dashed lines show correlation coefficients of ±0.7 ($r^2 = 0.49$) such that points falling above and below these lines indicate areas for which the variation in WE-WD meteorology differences could explain 49% or more of the variations in WE-WD ozone differences.

Extra figures showing CMAQ MDA8 O_3 Normalized Mean Bias by season, region, and year

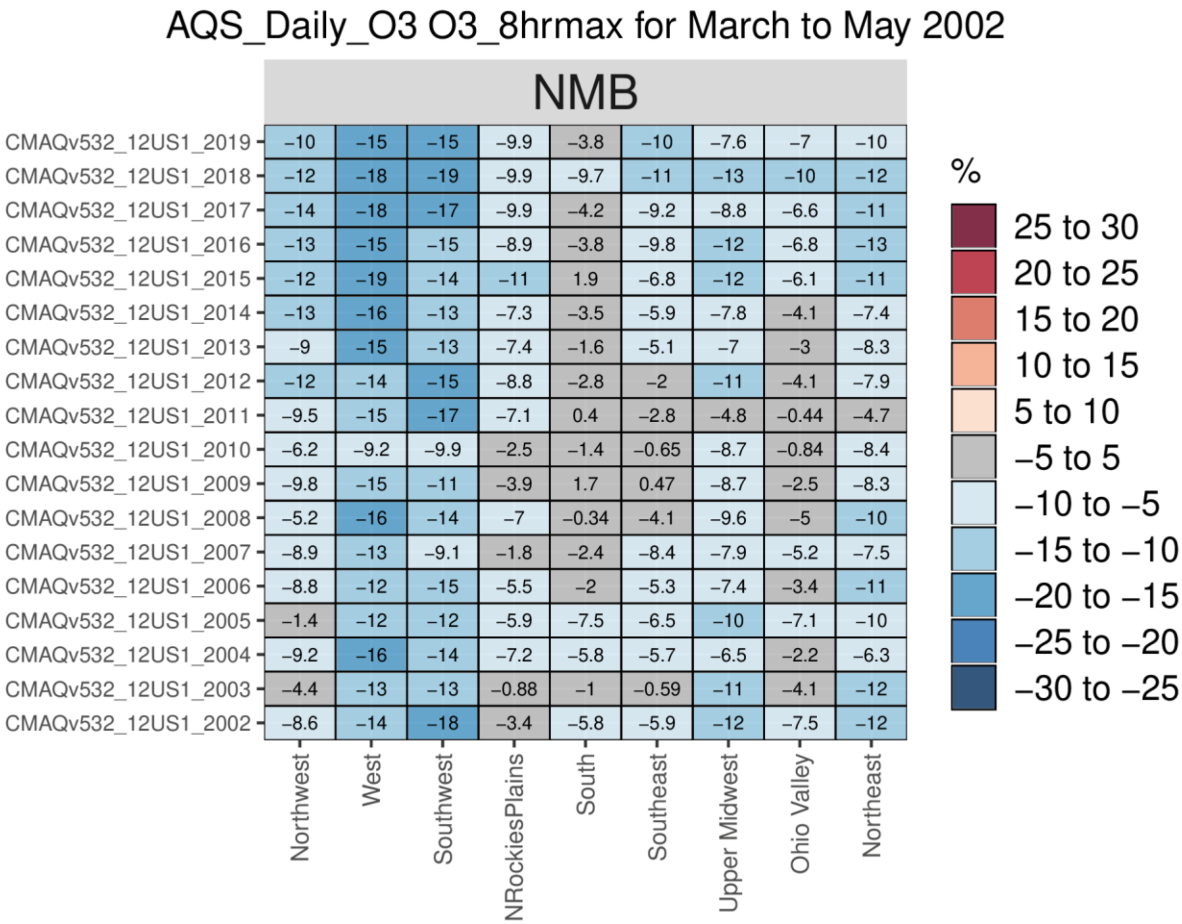


Figure S40. EQUATES Mar-May MDA8 O_3 Normalized Mean Bias (%) by year and NOAA climate region.

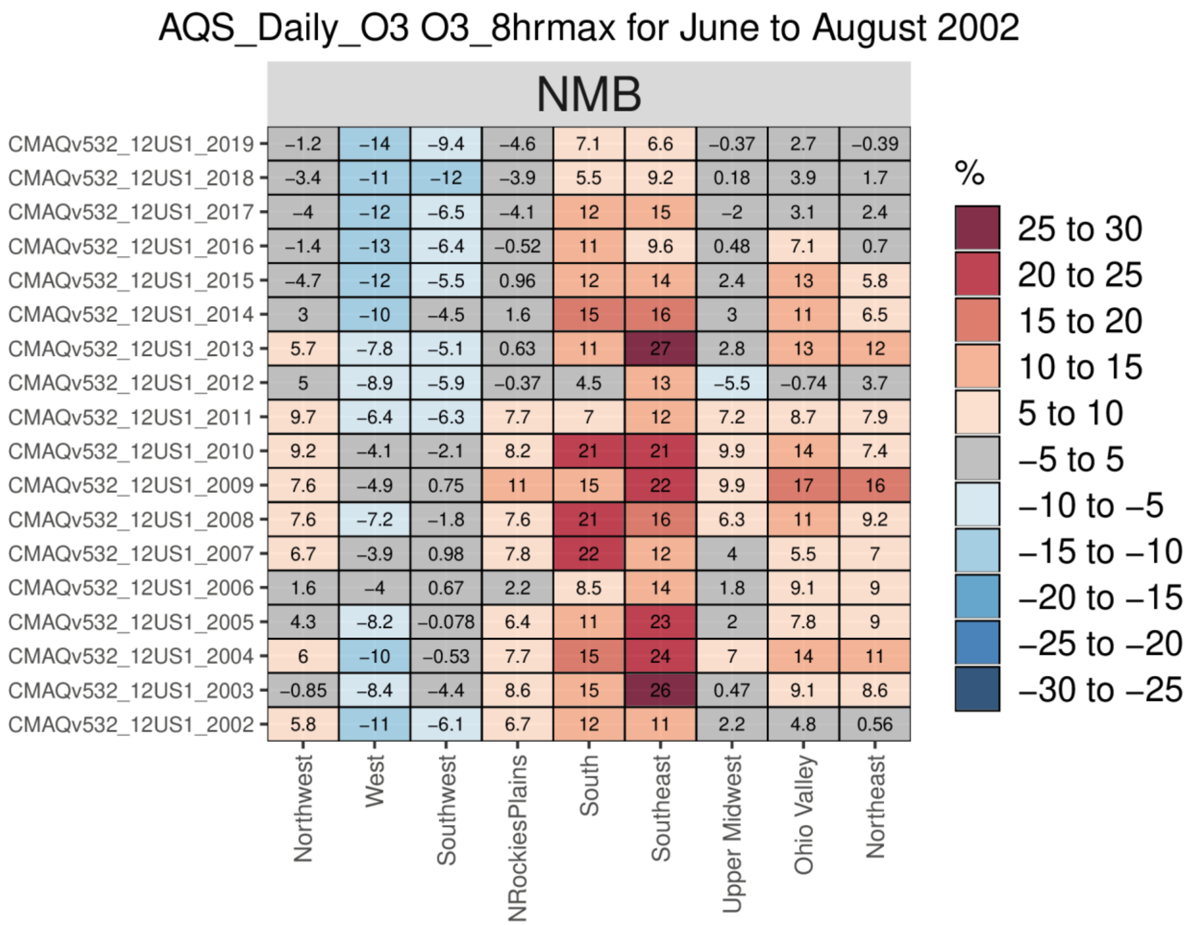


Figure S41. EQUATES Jun-Aug MDA8 O_3 Normalized Mean Bias (%) by year and NOAA climate region.

Tables of results for each nonattainment area included in this analysis

Table S1. Mean WE-WD MDA8 O_3 difference ($\Delta\overline{O_{3,DOW}}$) and trends in each US nonattainment area

region	Nonattainment area	Observed trends (95% CI)	Modeled trends (95% CI)	Observed $\Delta\overline{O_{3,DOW}}$		Modeled $\Delta\overline{O_{3,DOW}}$	
				2002-2006	2015-2019	2002-2006	2015-2019
Northeast	Greater Connecticut, CT	0.179 (0.052,0.197) p-val = 0.101	-0.155 (-0.175,-0.034) p-val = 0.08	-2.44	-3.11	0.54	-1.71
	Washington, DC-MD-VA	-0.016 (-0.109,0.12) p-val = 0.743	0.029 (-0.035,0.066) p-val = 0.381	-2.18	-2.34	-2.36	-1.12
	Baltimore, MD	0.129 (0.073,0.159) p-val = 0.006	0.085 (0.023,0.134) p-val = 0.125	-3.00	-2.79	-2.59	-1.29
	New York-Northern New Jersey-Long Island, NY-NJ-CT	0.04 (-0.029,0.079) p-val = 1	-0.15 (-0.16,-0.057) p-val = 0.021	-0.58	-1.95	1.31	-0.46
	Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE	0.185 (0.128,0.225) p-val = 0.001	-0.009 (-0.067,0.064) p-val = 0.743	-2.35	-2.02	-1.64	-1.01
Upper Midwest	Allegan County, MI	0.066 (-0.089,0.191) p-val = 0.743	-0.178 (-0.292,-0.143) p-val = 0.006	2.59	-2.89	3.67	-2.00
	Berrien County, MI	-0.007 (-0.162,0.084) p-val = 0.381	-0.156 (-0.232,-0.091) p-val = 0.004	2.27	-3.35	3.11	-1.79

	Detroit, MI	0.137 (-0.072,0.252) p-val = 0.913	-0.257 (-0.339,-0.125) p-val = 0.006	3.81	-1.48	5.64	-1.41
	Muskegon County, MI	0.123 (-0.092,0.212) p-val = 1	-0.17 (-0.29,-0.092) p-val = 0.009	3.67	-2.11	5.31	-1.32
	Door County, WI	0.071 (-0.116,0.214) p-val = 0.913	-0.017 (-0.271,0.047) p-val = 0.228	4.57	-0.67	8.31	1.41
	Manitowoc County, WI	-0.099 (-0.253,-0.017) p-val = 0.08	-0.387 (-0.597,-0.233) p-val = 0.002	5.73	-0.56	8.96	0.69
	Milwaukee, WI	-0.302 (-0.435,-0.212) p-val = 0.001	-0.416 (-0.486,-0.345) p-val < 0.001	6.08	-0.90	6.84	0.20
	Sheboygan County, WI	0.016 (-0.205,0.105) p-val = 0.443	-0.179 (-0.325,-0.099) p-val = 0.004	6.71	-0.65	5.38	-0.52
Ohio Valley	Chicago, IL-IN-WI	-0.112 (-0.239,-0.029) p-val = 0.101	-0.341 (-0.446,-0.284) p-val < 0.001	4.69	-1.39	6.45	-1.16
	Louisville, KY-IN	-0.31 (-0.469,-0.118) p-val = 0.189	-0.349 (-0.444,-0.051) p-val = 0.125	0.45	-0.44	1.03	-0.92
	St. Louis, MO-IL	-0.633 (-0.811,0.02) p-val = 0.274	-0.18 (-0.296,-0.075) p-val = 0.049	2.13	-1.68	2.18	-0.49
	Cleveland, OH	0.077 (-0.064,0.126) p-val = 0.511	0 (-0.117,0.044) p-val = 0.324	2.09	-1.44	2.81	-0.71
	Columbus, OH	-0.068 (-0.132,0.018) p-val = 0.443	0.085 (0.027,0.132) p-val = 0.274	0.89	-0.32	0.99	-0.44
	Cincinnati, OH-KY	-0.218 (-0.283,0.057) p-val = 0.913	-0.163 (-0.288,-0.015) p-val = 0.189	0.60	0.84	1.83	-0.80
South and Southeast	Atlanta, GA	0.047 (-0.063,0.149) p-val = 0.274	-0.186 (-0.261,-0.063) p-val = 0.155	-5.06	-2.74	-3.02	-3.66
	Dallas-Fort Worth, TX	-0.086 (-0.116,-0.015) p-val = 0.155	-0.142 (-0.207,-0.092) p-val = 0.001	-1.64	-2.48	0.91	-1.28
	Houston-Galveston-Brazoria, TX	-0.262 (-0.316,-0.213) p-val = 0.016	-0.348 (-0.412,-0.288) p-val = 0.001	0.75	-1.50	2.77	-0.30
	San Antonio, TX	-0.155 (-0.196,-0.116) p-val = 0.101	-0.159 (-0.186,-0.121) p-val = 0.001	-1.60	-1.87	0.09	-1.82
Southwest	Phoenix-Mesa, AZ	-0.147 (-0.173,-0.1) p-val < 0.001	-0.223 (-0.358,-0.152) p-val < 0.001	0.80	-1.81	1.76	-1.87
	Yuma, AZ	0.025 (-0.059,0.06) p-val = 1	0.006 (-0.073,0.028) p-val = 0.902	NA	-1.00	NA	-0.84
	Denver Metro/North Front Range, CO	-0.226 (-0.306,-0.173) p-val < 0.001	-0.286 (-0.297,-0.268) p-val < 0.001	3.59	-1.22	2.96	-0.51
	Dona Ana County (Sunland Park), NM	0.128 (0.083,0.152) p-val = 0.029	0.138 (0.079,0.196) p-val = 0.08	0.19	1.48	-0.53	0.26
	Northern Wasatch Front, UT	-0.158 (-0.185,-0.145) p-val < 0.001	-0.131 (-0.173,-0.125) p-val < 0.001	2.48	-0.12	2.87	0.21
	Southern Wasatch Front, UT	-0.154 (-0.189,-0.131) p-val < 0.001	-0.187 (-0.202,-0.145) p-val < 0.001	2.45	-0.44	2.40	0.05
West	Amador County, CA	0.354 (0.214,0.415) p-val = 0.003	0.286 (0.24,0.319) p-val < 0.001	-4.48	-2.13	-5.00	-2.66
	Butte County, CA	0.145 (0.097,0.165) p-val = 0.004	0.134 (0.122,0.152) p-val = 0.001	-3.24	-2.74	-4.68	-3.29
	Calaveras County, CA	0.302 (0.217,0.337) p-val < 0.001	0.256 (0.206,0.283) p-val < 0.001	-5.69	-2.31	-4.27	-2.44
	Imperial County, CA	-0.167 (-0.224,-0.124) p-val < 0.001	-0.054 (-0.089,0) p-val = 0.274	0.33	-3.06	-0.94	-2.81
	Kern County (Eastern Kern), CA	0.059 (0.037,0.072) p-val = 0.003	0.176 (0.127,0.216) p-val = 0.001	-3.20	-2.76	-3.16	-2.24
	Los Angeles-San Bernardino Counties (West Mojave Desert), CA	-0.284 (-0.341,-0.276) p-val < 0.001	-0.36 (-0.422,-0.322) p-val < 0.001	1.62	-3.26	3.02	-3.14
	Los Angeles-South Coast Air Basin, CA	-0.928 (-0.976,-0.856) p-val < 0.001	-0.83 (-1.005,-0.775) p-val < 0.001	13.07	0.41	15.23	2.07
	Mariposa County, CA	0.185 (0.152,0.227) p-val = 0.001	0.221 (0.198,0.25) p-val < 0.001	-3.85	-0.50	-3.55	-0.38
	Morongo Band of Mission Indians, CA	-0.127 (-0.374,-0.04) p-val = 0.107	-0.396 (-0.433,-0.302) p-val < 0.001	NA	-4.57	NA	-4.64
	Nevada County (Western part), CA	0.31 (0.254,0.352) p-val < 0.001	0.249 (0.21,0.256) p-val < 0.001	-5.02	-1.91	-5.17	-2.53
	Pechanga Band of Luiseno Mission Indians, CA	-0.251 (-0.315,0.215) p-val = 0.902	-0.136 (-0.387,0.088) p-val = 0.266	NA	NA	NA	NA

	Riverside County (Coachella Valley), CA	-0.247 (-0.384,-0.218) p-val < 0.001	0.018 (-0.122,0.041) p-val = 0.913	2.31	-3.53	-0.35	-3.00
	Sacramento Metro, CA	0.082 (-0.06,0.124) p-val = 0.743	-0.038 (-0.056,-0.013) p-val = 0.08	-1.56	-2.43	-1.75	-2.43
	San Diego County, CA	-0.361 (-0.407,-0.324) p-val < 0.001	-0.44 (-0.503,-0.356) p-val < 0.001	5.27	-0.32	9.39	1.84
	San Francisco Bay Area, CA	-0.067 (-0.172,-0.05) p-val = 0.016	-0.08 (-0.103,-0.029) p-val = 0.063	3.85	1.05	2.69	1.21
	San Joaquin Valley, CA	0.185 (0.037,0.241) p-val = 0.189	0.102 (0.029,0.143) p-val = 0.381	-2.26	-1.81	-1.44	-2.10
	San Luis Obispo (Eastern part), CA	0.433 (0.363,0.483) p-val = 0.001	0.327 (0.228,0.367) p-val = 0.001	NA	-0.79	NA	-0.44
	Sutter Buttes, CA	0.261 (0.157,0.312) p-val = 0.009	0.109 (0.076,0.153) p-val = 0.009	-3.13	-2.81	-4.02	-2.91
	Tuolumne County, CA	0.356 (0.269,0.394) p-val < 0.001	0.353 (0.319,0.381) p-val < 0.001	-4.07	-0.96	-5.14	-1.53
	Tuscan Buttes, CA	0.14 (0.051,0.164) p-val = 0.063	0.14 (0.067,0.23) p-val = 0.016	-2.47	-2.68	-4.88	-2.56
	Ventura County, CA	-0.137 (-0.19,-0.119) p-val < 0.001	0.008 (-0.035,0.083) p-val = 1	0.71	-1.62	0.28	-0.81
	Las Vegas, NV	-0.284 (-0.456,-0.222) p-val < 0.001	-0.106 (-0.138,-0.076) p-val = 0.001	4.44	-1.21	1.58	-0.95

Table S2. WE-WD differences percent of days with MDA8 ozone exceeding 70 ppb ($\Delta O_{3,DOW,\%>70}$) and trends in each US nonattainment area

region	Nonattainment area	Observed trends (95% CI)	Modeled trends (95% CI)	Observed $\Delta O_{3,DOW,\%>70}$		Modeled $\Delta O_{3,DOW,\%>70}$	
				2002-2006	2015-2019	2002-2006	2015-2019
Northeast	Greater Connecticut, CT	0.009 (-0.172,0.203) p-val = 1	-0.373 (-0.442,-0.236) p-val = 0.029	-5.13	-6.39	5.27	0.63
	Washington, DC-MD-VA	1.14 (0.637,1.303) p-val = 0.004	1.119 (0.945,1.242) p-val < 0.001	-12.12	-10.36	-13.01	-3.64
	Baltimore, MD	0.615 (0.442,0.922) p-val = 0.004	1.505 (1.351,1.683) p-val < 0.001	-11.83	-10.36	-16.69	-0.59
	New York-Northern New Jersey-Long Island, NY-NJ-CT	0.562 (0.4,0.764) p-val = 0.08	0.212 (-0.058,0.749) p-val = 0.274	-5.40	-6.96	-3.57	-1.17
	Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE	1.018 (0.535,1.237) p-val = 0.004	0.796 (0.525,1.058) p-val = 0.009	-9.06	-6.98	-8.75	2.77
Upper Midwest	Allegan County, MI	0.797 (0.5,0.97) p-val = 0.012	-0.044 (-0.076,0.068) p-val = 0.351	0.15	0.63	3.47	0.00
	Berrien County, MI	0.644 (0.397,0.701) p-val = 0.016	-0.233 (-0.441,-0.066) p-val = 0.063	0.48	0.28	2.98	-0.62
	Detroit, MI	0.642 (0.28,0.774) p-val = 0.155	-0.061 (-0.419,0.259) p-val = 0.411	5.20	0.94	9.79	-1.83
	Muskegon County, MI	0.081 (-0.235,0.291) p-val = 1	-0.652 (-0.858,-0.519) p-val = 0.001	7.27	3.43	7.90	1.26
	Door County, WI	0.014 (-0.072,0.153) p-val = 1	-0.461 (-0.609,-0.328) p-val = 0.001	4.15	0.68	16.10	1.61
	Manitowoc County, WI	-0.203 (-0.431,-0.107) p-val = 0.037	-0.232 (-0.288,-0.094) p-val = 0.037	7.67	1.28	12.74	1.28
	Milwaukee, WI	0.04 (-0.233,0.197) p-val = 0.661	-0.205 (-0.348,-0.018) p-val = 0.125	7.68	0.32	9.81	1.23
	Sheboygan County, WI	0.114 (-0.177,0.251) p-val = 0.913	-0.146 (-0.401,-0.034) p-val = 0.101	9.21	1.02	4.90	-0.31
Ohio Valley	Chicago, IL-IN-WI	0.466 (0.038,0.747) p-val = 0.443	-0.153 (-0.443,0.066) p-val = 0.189	3.12	-3.94	7.38	-2.12
	Louisville, KY-IN	0.198 (-0.65,0.621) p-val = 0.324	-0.104 (-0.551,0.031) p-val = 0.124	2.52	-2.74	6.82	-1.82
	St. Louis, MO-IL	-0.61 (-1.416,0.066) p-val = 0.155	0.105 (-0.189,0.299) p-val = 0.913	3.15	-7.92	3.74	-1.52
	Cleveland, OH	0.687 (0.325,0.951) p-val = 0.063	0.7 (0.497,0.797) p-val = 0.002	4.67	0.02	0.39	4.90
	Columbus, OH	0.006 (-0.157,0.215) p-val = 0.956	0.544 (0.508,0.668) p-val = 0.002	3.44	-2.74	-1.47	0.92

	Cincinnati, OH-KY	0.074 (-0.207,0.216) p-val = 0.913	-0.013 (-0.154,0.107) p-val = 0.913	1.92	-4.86	1.01	-2.43
South and Southeast	Atlanta, GA	-0.411 (-0.53,0.14) p-val = 0.743	-1.689 (-1.992,-0.564) p-val = 0.08	-8.76	-6.76	-3.22	-11.38
	Dallas-Fort Worth, TX	-1.025 (-1.235,-0.302) p-val = 0.08	-1.396 (-1.497,-0.61) p-val = 0.009	-5.38	-10.34	7.14	-3.95
	Houston-Galveston-Brazoria, TX	-1.222 (-1.613,-0.719) p-val = 0.006	-0.505 (-0.904,-0.146) p-val = 0.101	2.63	-8.82	3.08	-1.21
	San Antonio, TX	0.402 (0.241,0.545) p-val = 0.009	0.307 (0.134,0.346) p-val = 0.014	-8.81	-0.88	-1.80	0.01
Southwest	Phoenix-Mesa, AZ	-0.227 (-0.308,-0.011) p-val = 0.155	-0.334 (-0.49,-0.115) p-val = 0.08	-9.65	-10.92	1.31	-2.44
	Yuma, AZ	1.554 (1.246,1.593) p-val = 0.002	0.108 (0.098,0.133) p-val = 0.003	NA	1.86	NA	0.00
	Denver Metro/North Front Range, CO	-0.926 (-1.066,-0.755) p-val < 0.001	-0.427 (-0.561,-0.37) p-val = 0.002	0.41	-10.62	3.44	-3.34
	Dona Ana County (Sunland Park), NM	-0.187 (-0.229,-0.062) p-val = 0.032	0.304 (0.183,0.377) p-val = 0.005	0.96	-0.89	-0.59	0.00
	Northern Wasatch Front, UT	-0.825 (-1.034,-0.685) p-val < 0.001	0.072 (-0.136,0.147) p-val = 1	7.71	-6.06	2.46	-0.61
	Southern Wasatch Front, UT	-0.207 (-0.365,0.077) p-val = 0.443	-0.161 (-0.202,-0.006) p-val = 0.048	0.34	-4.56	0.93	-0.61
West	Amador County, CA	0.768 (0.583,1.27) p-val = 0.016	0.925 (0.732,0.959) p-val < 0.001	-8.01	-3.18	-10.14	-0.96
	Butte County, CA	0.923 (0.79,1.013) p-val = 0.001	1.132 (0.903,1.193) p-val < 0.001	-14.88	-5.54	-13.40	-3.07
	Calaveras County, CA	0.972 (0.633,1.251) p-val = 0.029	0.653 (0.524,0.729) p-val < 0.001	-17.60	-11.20	-8.74	-1.56
	Imperial County, CA	-0.364 (-0.5,-0.276) p-val = 0.012	0.438 (0.267,0.463) p-val = 0.001	-3.89	-10.66	-2.73	-0.61
	Kern County (Eastern Kern), CA	0.288 (-0.234,0.454) p-val = 0.443	0.969 (0.915,1.138) p-val < 0.001	-5.35	-6.62	-11.35	-0.94
	Los Angeles-San Bernardino Counties (West Mojave Desert), CA	-1.251 (-1.336,-1.023) p-val < 0.001	-0.79 (-2.023,-0.33) p-val = 0.016	0.85	-16.63	16.03	-9.12
	Los Angeles-South Coast Air Basin, CA	-0.743 (-1.033,-0.54) p-val = 0.001	-0.457 (-2.067,0.043) p-val = 0.08	10.34	-4.06	24.90	0.11
	Mariposa County, CA	1.536 (1.207,1.713) p-val p-val < 0.001	0.025 (-0.031,0.093) p-val = 0.615	-18.96	-2.10	-1.83	-1.21
	Morongo Band of Mission Indians, CA	-1.007 (-1.216,-0.591) p-val = 0.007	-1.605 (-1.916,-1.258) p-val = 0.005	NA	-12.00	NA	-9.03
	Nevada County (Western part), CA	0.621 (0.373,0.731) p-val = 0.002	0.778 (0.654,0.874)p-val < 0.001	-14.21	-7.89	-12.18	-2.17
	Pechanga Band of Luiseno Mission Indians, CA	1.003 (0.291,1.176) p-val = 0.108	0.116 (-0.198,0.403) p-val = 0.902	NA	0.00	NA	-0.82
	Riverside County (Coachella Valley), CA	-1.846 (-2.041,-1.68) p-val = p-val < 0.001	0.663 (-0.152,0.754) p-val = 0.274	6.89	-14.86	-0.23	-3.05
	Sacramento Metro, CA	0.033 (-0.524,0.337) p-val = 1	0.167 (0.009,0.259) p-val = 0.063	-8.39	-13.67	-10.31	-6.09
	San Diego County, CA	-1.213 (-1.922,-0.665) p-val = 0.009	-2.214 (-2.521,-2.075) p-val < 0.001	20.26	-10.95	24.82	-3.96
	San Francisco Bay Area, CA	-0.317 (-0.626,-0.138) p-val = 0.049	0.02 (-0.463,0.149) p-val = 0.956	5.53	-2.43	6.74	1.23
	San Joaquin Valley, CA	-0.34 (-0.436,-0.144) p-val = 0.155	1.052 (0.458,1.288) p-val = 0.018	-5.85	-5.31	-9.94	-5.16
	San Luis Obispo (Eastern part), CA	0.936 (0.539,1.474) p-val = 0.02	0.006 (-0.024,0.199) p-val = 0.105	NA	-2.13	NA	-0.61
	Sutter Buttes, CA	0.633 (0.214,0.701) p-val = 0.189	0.095 (0.068,0.197) p-val = 0.025	-4.95	-5.73	-0.93	-0.40
	Tuolumne County, CA	1.22 (1.046,1.374) p-val = p-val < 0.001	0.292 (0.23,0.46) p-val = 0.005	-12.43	-0.62	-2.79	-0.31
	Tuscan Buttes, CA	0.466 (0.287,0.592) p-val = 0.063	0.745 (0.725,0.829) p-val < 0.001	-5.81	-6.84	-9.48	-1.36
	Ventura County, CA	-1.067 (-1.358,-0.94) p-val = p-val < 0.001	0.554 (0.388,0.661) p-val < 0.001	12.05	-6.09	-3.29	-0.61
	Las Vegas, NV	-1.931 (-2.467,-1.462) p-val = p-val < 0.001	-0.213 (-0.293,-0.03) p-val = 0.443	17.82	-10.34	0.66	-3.96