






Article

Influence of Cold Fronts on Variability of Daily Surface O₃ over the Houston-Galveston-Brazoria Area in Texas USA during 2003–2016 (Supplementary Materials)

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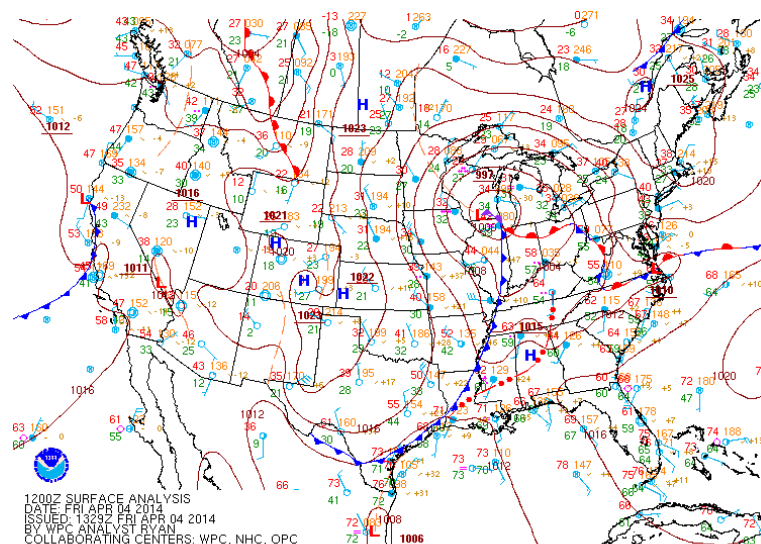


Figure S1. Sample weather map of the WPC surface analysis valid for 04/04/2014 at 12 UTC.

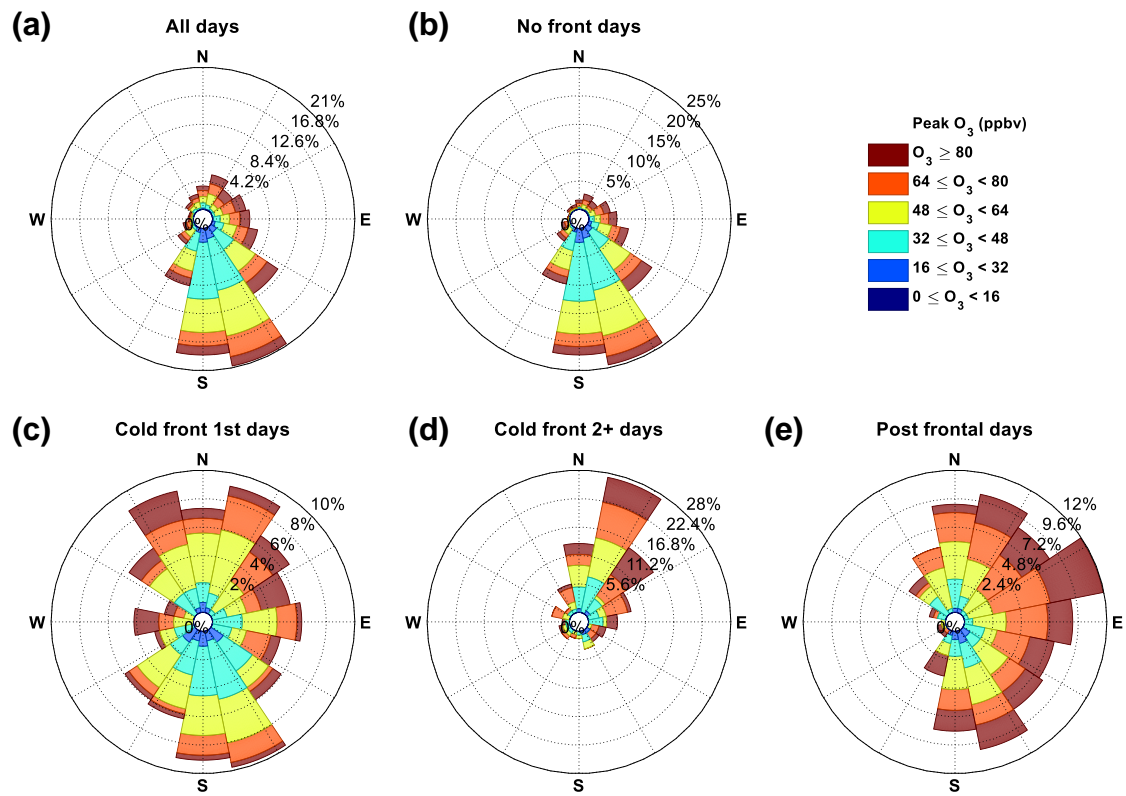


Figure S2. Peak O₃ rose during (a) all days, (b) no front days, (c) cold front 1st days, (d) cold front 2+ days, and (e) post frontal days.

Table S1. P values of Two-Sample t-Test of O₃ among each type of event days.

		All days	No front days	Cold front 1st days	Cold front 2+ days	Post frontal days
Peak O ₃	All days	1	3.25E-02*	6.86E-01	7.64E-03**	6.28E-10**
	No front days	3.25E-02*	1	5.79E-01	7.85E-04**	1.40E-12**
	Cold front 1st days	6.86E-01	5.79E-01	1	1.08E-02*	9.20E-07**
	Cold front 2+ days	7.64E-03**	7.85E-04**	1.08E-02*	1	1.46E-01
	Post frontal days	6.28E-10**	1.40E-12**	9.20E-07**	1.46E-01	1
Background O ₃	All days	1	2.22E-04**	7.15E-02	6.54E-06**	5.02E-17**
	No front days	2.22E-04**	1	5.73E-04**	1.59E-08**	6.10E-23**
	Cold front 1st days	7.15E-02	5.73E-04**	1	1.79E-03**	8.66E-08**
	Cold front 2+ days	6.54E-06**	1.59E-08**	1.79E-03**	1	1.75E-01
	Post frontal days	5.02E-17**	6.10E-23**	8.66E-08**	1.75E-01	1

* significant at 5% level

** significant at 1% level

Table S2. P values of Two-Sample t-Test of meteorology among each type of event days.

		All days	No front days	Cold front 1st days	Cold front 2+ days	Post frontal days	
Wind Speed	All days	1	4.36E-02*	2.84E-06**	6.43E-01	2.77E-02*	
	No front days	4.36E-02*	1	3.13E-08**	2.69E-01	2.00E-03**	
	Cold front 1st days	2.84E-06**	3.13E-08**	1	2.06E-02*	5.88E-02	
	Cold front 2+ days	6.43E-01	2.69E-01	2.06E-02*	1	3.47E-01	
	Post frontal days	2.77E-02*	2.00E-03**	5.88E-02	3.47E-01	1	
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	Precipitation	All days	1	4.95E-01	4.99E-10**	6.03E-01	6.44E-05**
No front days		4.95E-01	1.00E+00	6.11E-11**	7.52E-01	1.23E-04**	
Cold front 1st days		4.99E-10**	6.11E-11**	1	1.30E-03**	2.85E-11**	
Cold front 2+ days		6.03E-01	7.52E-01	1.30E-03**	1.00E+00	3.24E-03**	
Post frontal days		6.44E-05**	1.23E-04**	2.85E-11**	3.24E-03**	1	
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Temperature		All days	1	8.88E-10**	6.34E-03**	1.08E-13**	2.95E-37**
	No front days	8.88E-10**	1.00E+00	4.17E-09**	3.81E-24**	1.64E-58**	
	Cold front 1st days	6.34E-03**	4.17E-09**	1	7.45E-07**	1.82E-12**	
	Cold front 2+ days	1.08E-13**	3.81E-24**	7.45E-07**	1.00E+00	1.63E-01	
	Post frontal days	2.95E-37**	1.64E-58**	1.82E-12**	1.63E-01	1	
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	Cloud Cover	All days	1	4.71E-01	1.02E-05**	1.71E-02*	4.84E-04**
No front days		4.71E-01	1.00E+00	1.86E-06**	8.09E-03**	1.42E-03**	
Cold front 1st days		1.02E-05**	1.86E-06**	1	5.41E-01	1.84E-08**	
Cold front 2+ days		1.71E-02*	8.09E-03**	5.41E-01	1.00E+00	1.62E-04**	
Post frontal days		4.84E-04**	1.42E-03**	1.84E-08**	1.62E-04**	1	
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RH		All days	1	6.06E-02	9.79E-04**	3.68E-02*	2.26E-16**
	No front days	6.06E-02	1.00E+00	9.07E-03**	4.86E-03**	7.26E-21**	
	Cold front 1st days	9.79E-04**	9.07E-03**	1	7.24E-04**	2.56E-14**	
	Cold front 2+ days	3.68E-02*	4.86E-03**	7.24E-04**	1.00E+00	7.61E-03**	
	Post frontal days	2.26E-16**	7.26E-21**	2.56E-14**	7.61E-03**	1	

* significant at 5% level

** significant at 1% level

Table S3. Linear regression parameters of O₃ vs meteorological factors.

	Peak O ₃ (ppbv)			Background O ₃ (ppbv)		
	Slope	Intercept	R ²	Slope	Intercept	R ²
Wind speed (m/s)	-5.75 ± 0.33	80.93 ± 1.45	0.28	-1.92 ± 0.26	38.62 ± 1.12	0.07
Precipitation (mm)	-0.99 ± 0.12	60.74 ± 0.75	0.09	-0.55 ± 0.08	32.40 ± 0.52	0.06
Temperature (°C)	-0.25 ± 0.18	65.10 ± 5.01	0.002	-1.33 ± 0.11	67.15 ± 3.14	0.15
Cloud cover (%)	-0.22 ± 0.03	65.99 ± 1.20	0.07	-0.14 ± 0.02	35.99 ± 0.82	0.07
RH (%)	-1.00 ± 0.08	128.24 ± 5.42	0.18	-0.67 ± 0.05	78.26 ± 3.68	0.18

Linear regression function: $Y = aX + b$, where Y is O₃, X is meteorological factor, a is slope, b is intercept.

Numbers after "±" are 95% confidence intervals of slopes and intercepts.



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