Supporting Information for

Two Air Quality Regimes in Total Column NO₂ over the Gulf of Mexico in May 2019: Shipboard and Satellite Views

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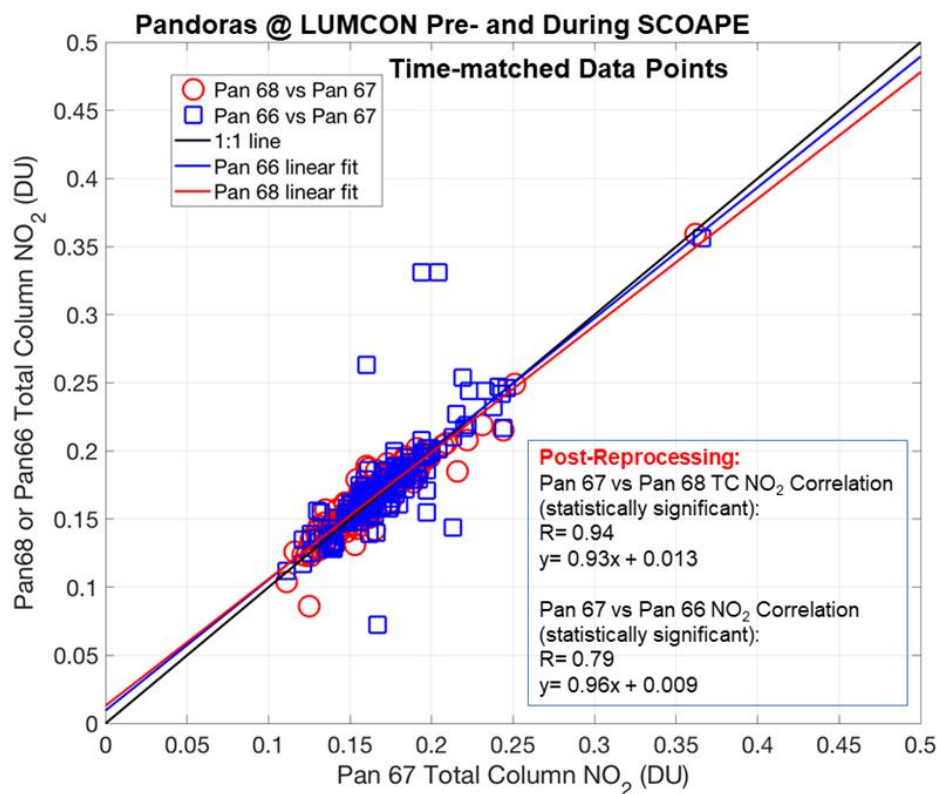[5]Univ. California-Irvine, Dept. of Chemistry, Irvine, CA, USA

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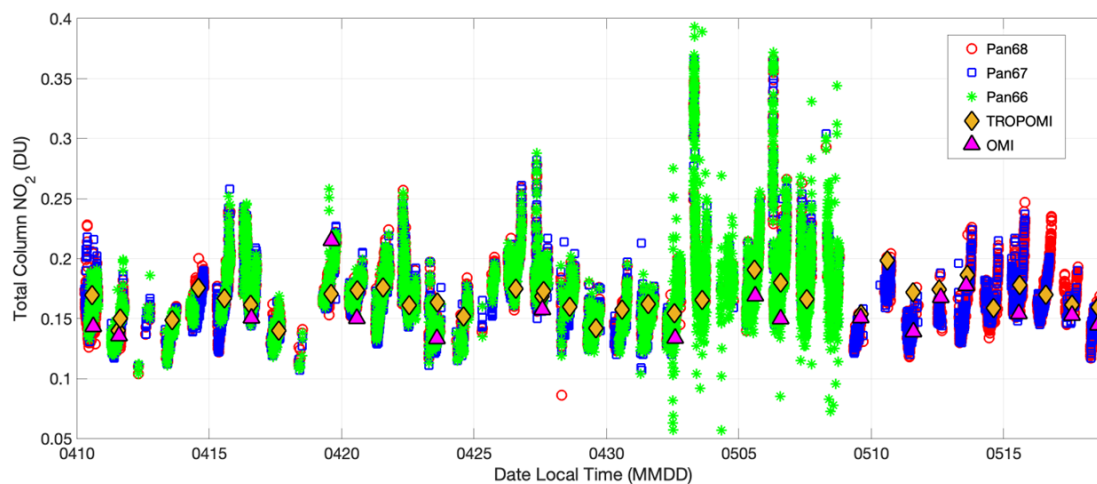

Figure S2. TC NO_2 as measured by Pandoras 66, 67, and 68 prior to the SCOAPE cruise, from 10 April through 8 May with TROPOMI overpass readings in gold diamonds and

OMI v4 data in magenta triangles. After Pandora 66 was installed on the *R/V Point Sur*; only Pandoras 67 and 68 recorded TC NO^2 at LUMCON. A summary of satellite offsets from Pandoras appears in Tables S1 and S2.
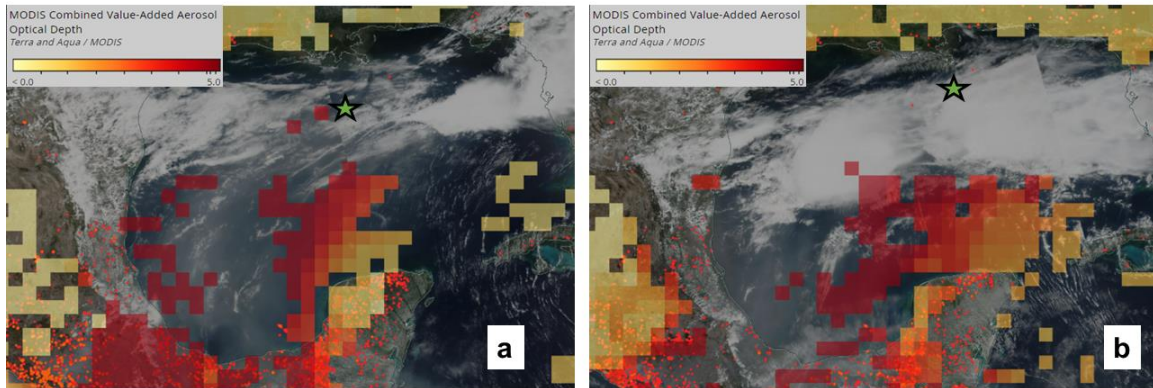
Figure S3. a) Moderate Resolution Imaging Spectrometer (MODIS) combined value-added aerosol optical depth shows smoke and elevated aerosol counts from Mexican fires during SCOAPE campaign on 13 May (a) and 14 May 2019 [See *Duncan* (2020)].(b). SNPP VIIRS and MODIS thermal anomalies/fires counts are marked in red and orange dots, respectively. Green star is the approximate *R/V Point Sur* location at the time of Aqua satellite overpass.
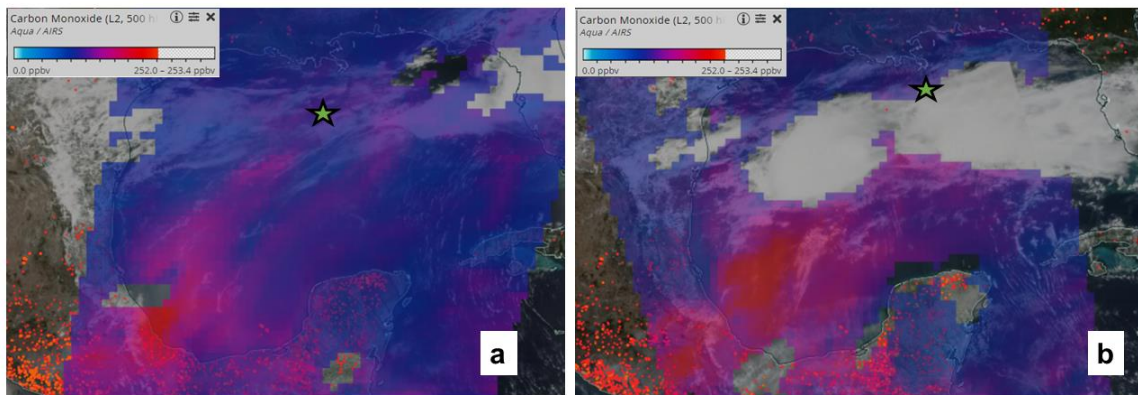
Figure S4. a) Atmospheric Infrared Sounder (AIRS) L2 carbon monoxide at 500 hPa shows influence from Mexican fires on SCOAPE region on 13 May (a; night) and 14 May 2019 (b; day). SNPP VIIRS and MODIS thermal anomalies/fires counts are marked in red and orange dots, respectively. Green star is the approximate *R/V Point Sur* location at the time of Aqua satellite overpass.
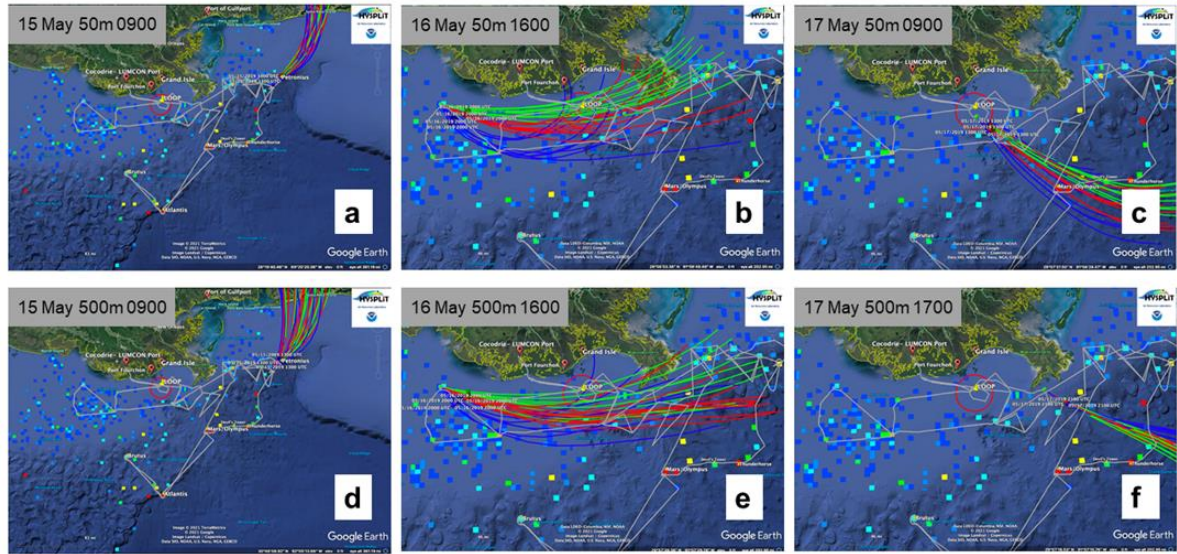
Figure S5. HYSPLIT 12-hour ensemble back trajectories released at 50m (top panels; a-c) and 500m (lower panels; d-f) at the local times listed in each (15-17 May) and driven by the NCEP Global Data Assimilation System (GDAS) at 0.5° resolution. Colors of the trajectories denote change in ensemble trajectories' release time (every 3 hours over 12-hour period).

Date	(P67 - TROPOMI) %	(P68 - TROPOMI) %	(P67 - OMI) %	(P68 - OMI) %
11 May 2019	-14.7	-13.9	1.5	2.9
12 May 2019	-10.3	-7.5	-1.6	-2.3
13 May 2019	-7.7	-6.5	-0.9	5.6
14 May 2019	-0.4	-3.7	---	---
15 May 2019	-4.2	-5.4	3.8	1.4
16 May 2019	0.7	1.3	---	---
17 May 2019	-0.4	-0.4	3.7	1.9

Table S1. Coastal satellite (TROPOMI and OMI v4) and Pandora (P67 and P68) comparisons during SCOAPE at Cocodrie, LA. Negative sign indicates that the satellite TC NO_2 value was higher than Pandora value.

Date	(P66 - TROPOMI) %	(P66 - OMI) %
11 May 2019	-5.0	2.2
12 May 2019	---	2.9
13 May 2019	-8.4	-0.2
15 May 2019	20.7	15.1
16 May 2019	21.5	---
17 May 2019	19.9	17.6

Table S2. Satellite (TROPOMI and OMI v4) and Pandora (P66) comparisons during SCOAPE over the *R/V Point Sur* locations.