Supplemental Information for Tirado et al. "Observations of Coastal Dynamics During Lake Breeze at a Shoreline Impacted by High Ozone"

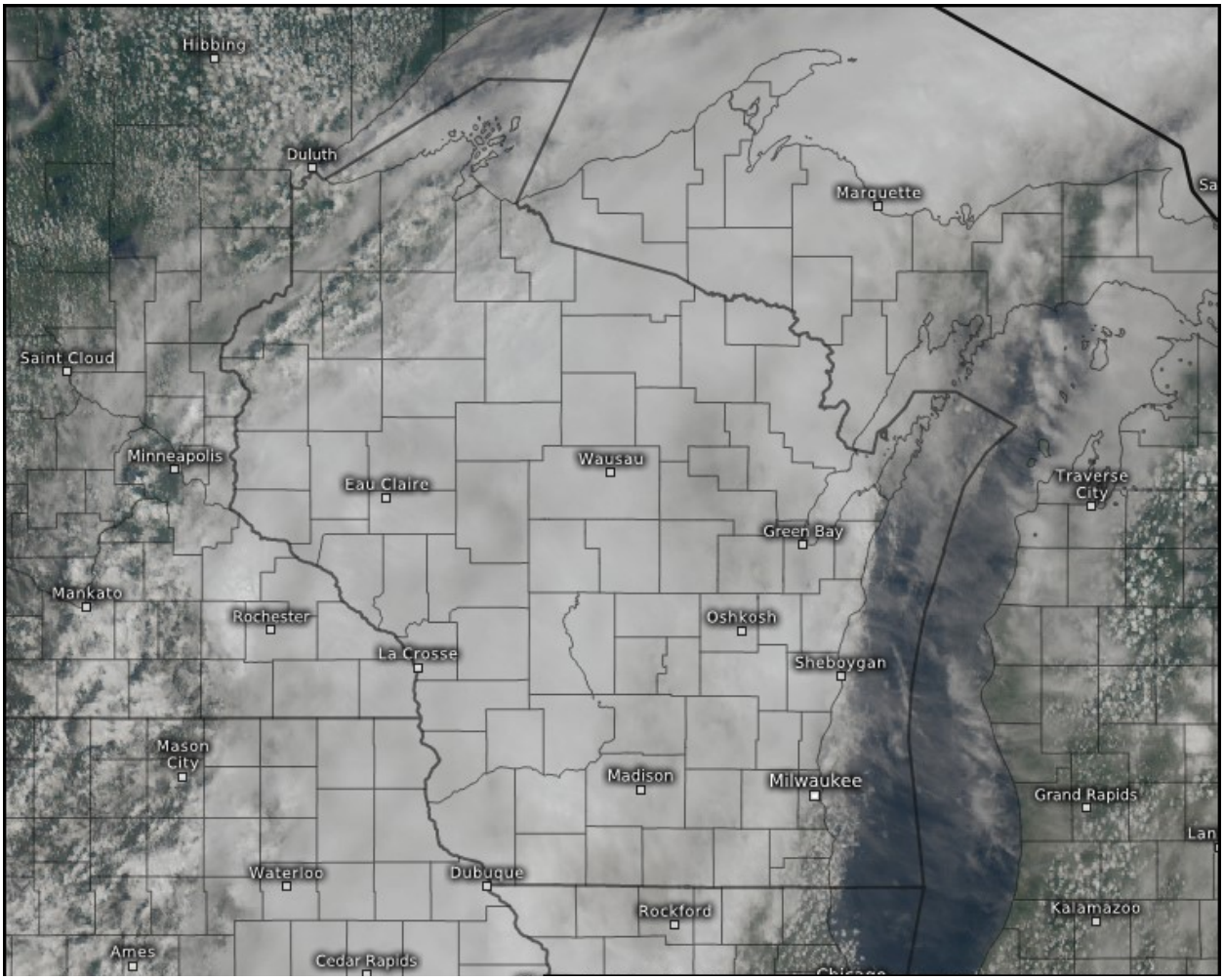

Figure S1: May 21, 2021 high definition color GOES-East satellite image of clouds over Wisconsin at 1400 UTC with a resolution of 1.0 km.

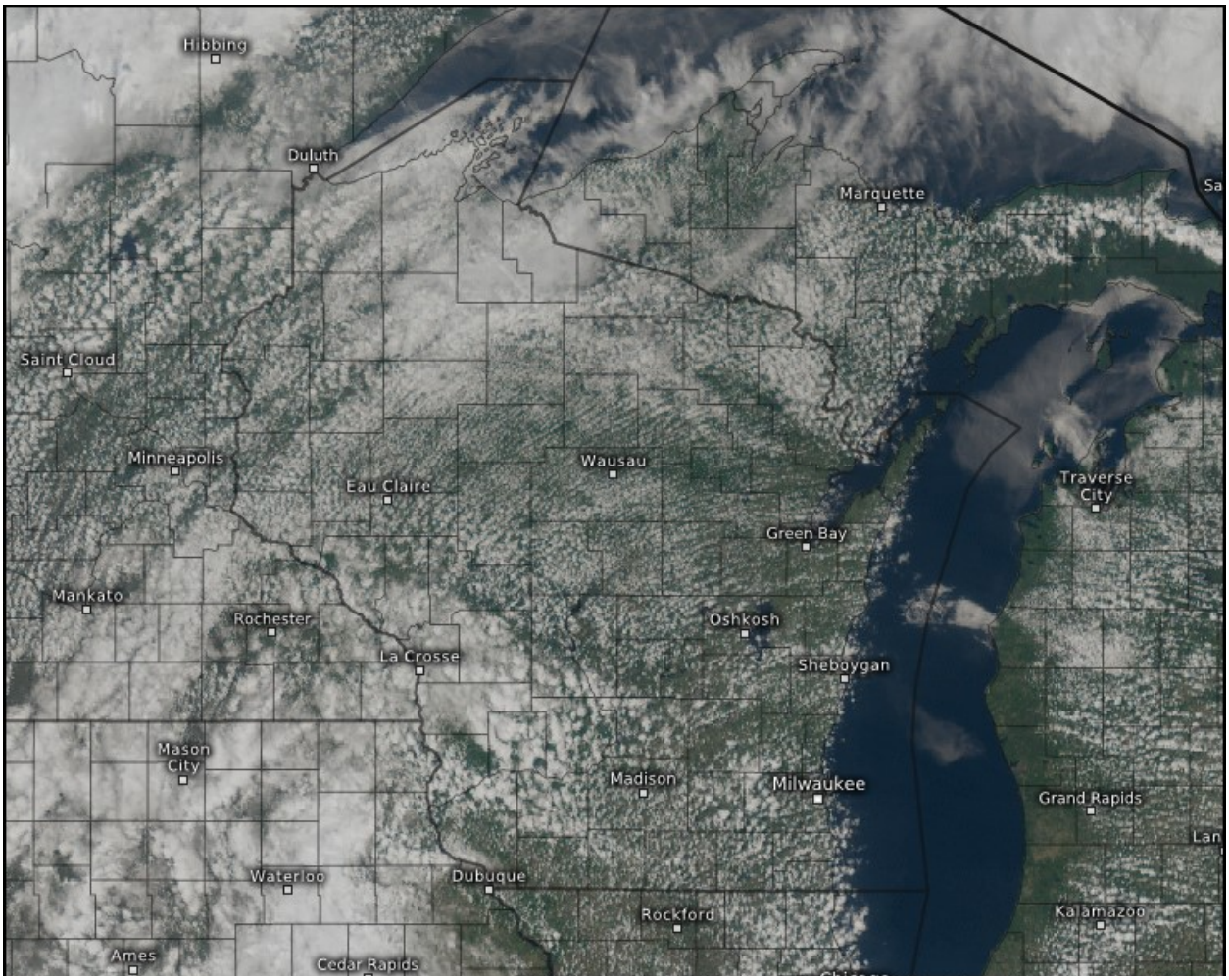

Figure S2: May 22, 2021 high definition color GOES-East satellite image of clouds over Wisconsin at 1400 UTC with a resolution of 1.0 km.

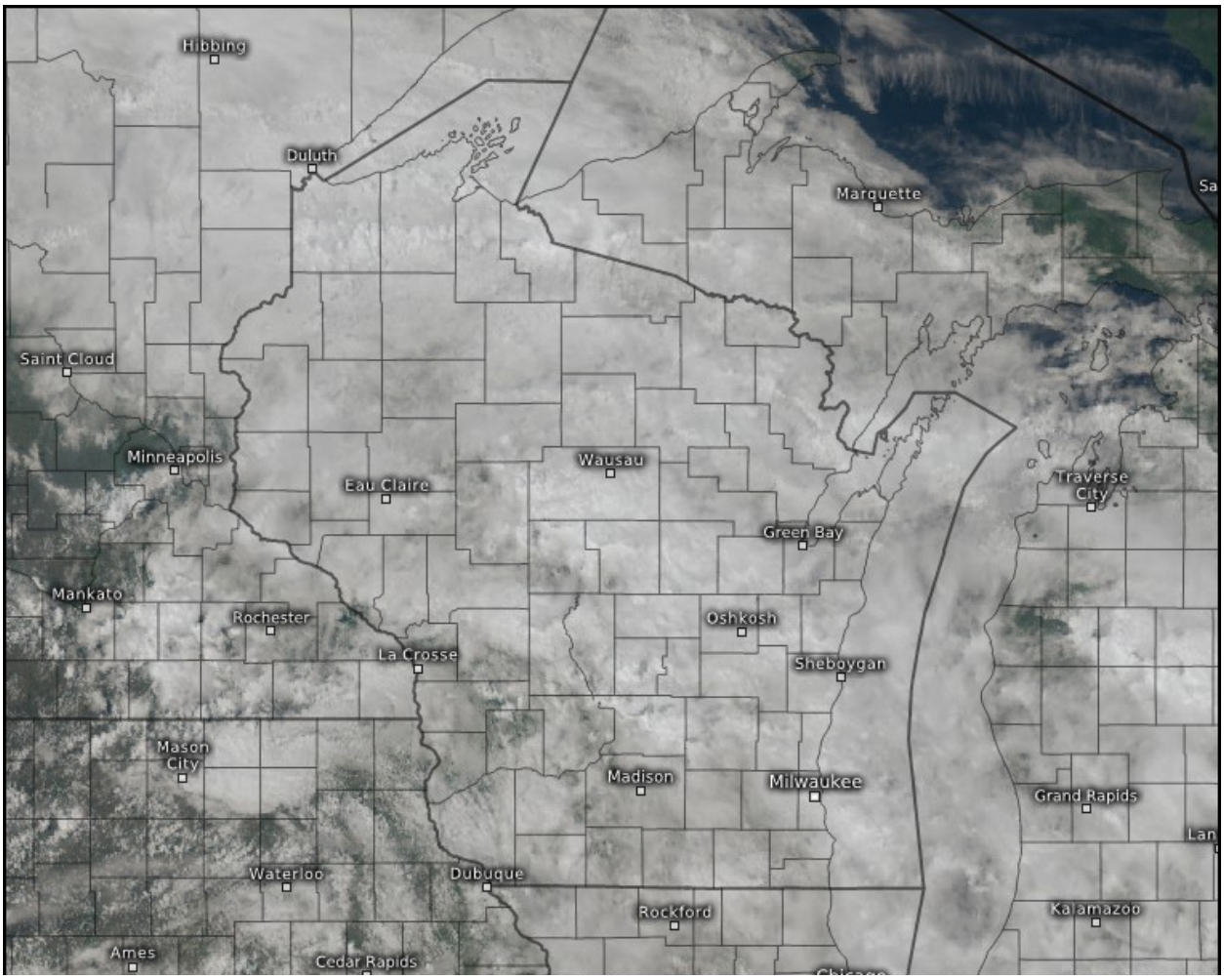

Figure S3: May 23, 2021 high definition color GOES-East satellite image of clouds over Wisconsin at 1400 UTC with a resolution of 1.0 km.

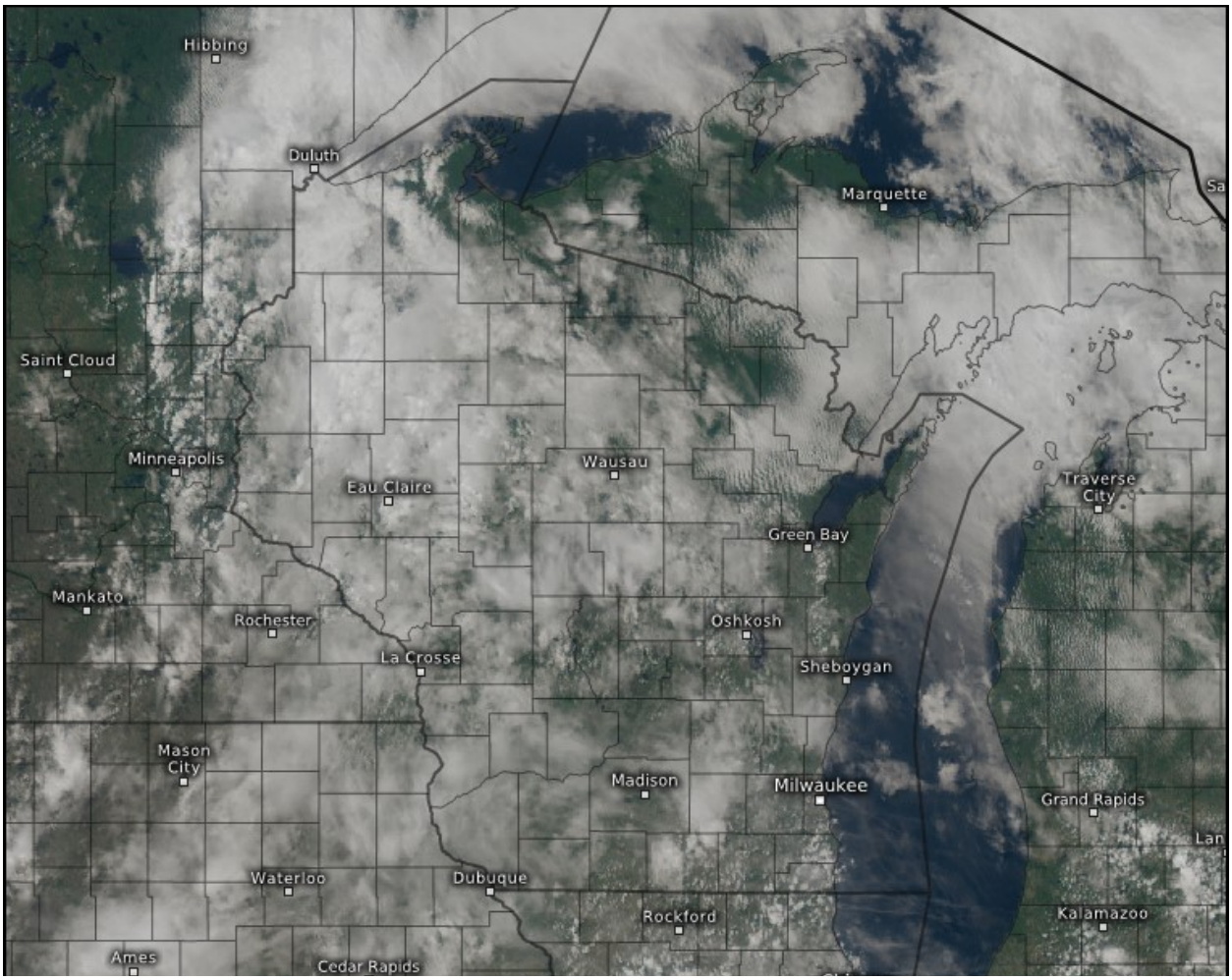

Figure S4: May 24, 2021 high definition color GOES-East satellite image of clouds over Wisconsin at 1400 UTC with a resolution of 1.0 km.

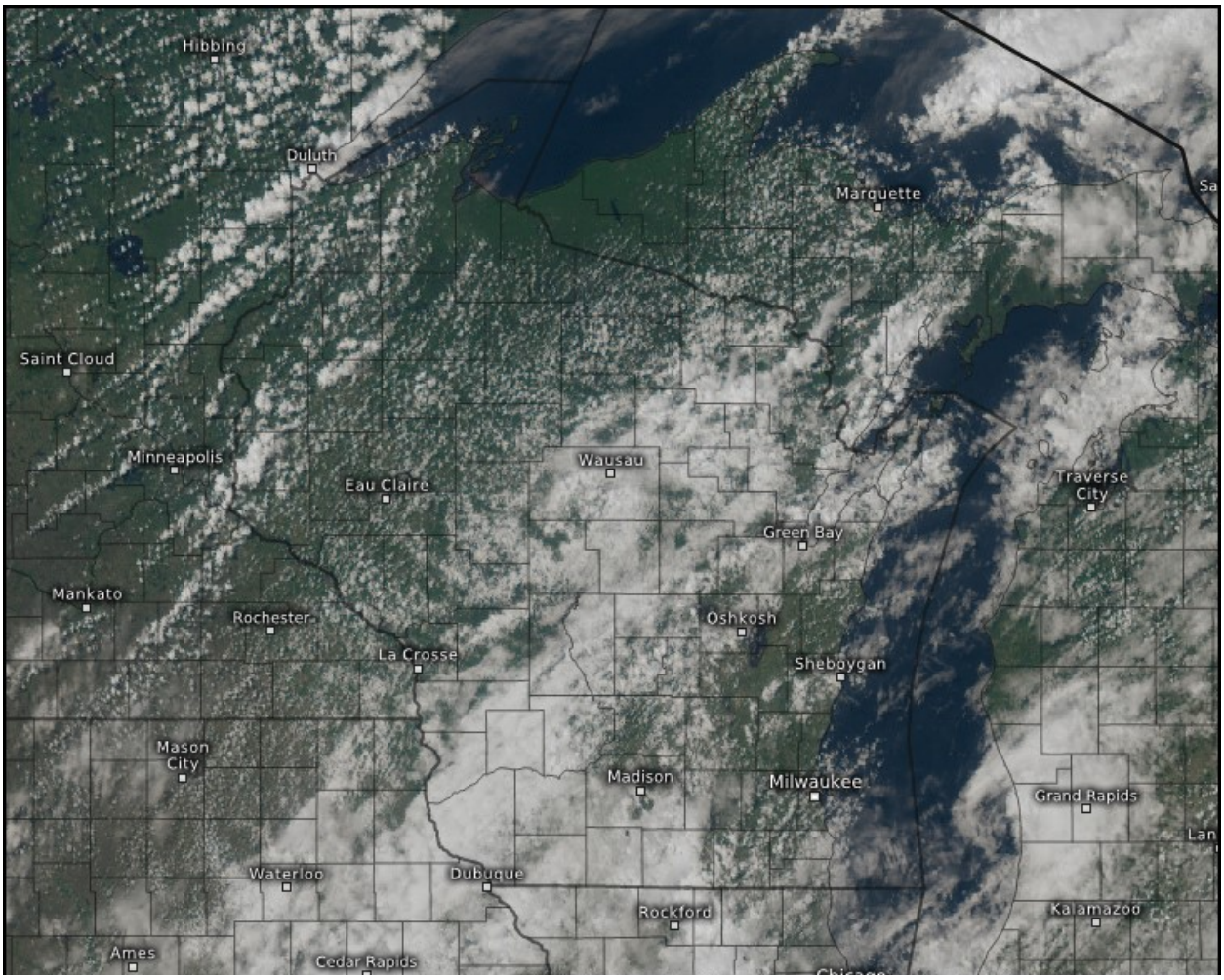

Figure S5: May 25, 2021 high definition color GOES-East satellite image of clouds over Wisconsin at 1400 UTC with a resolution of 1.0 km.

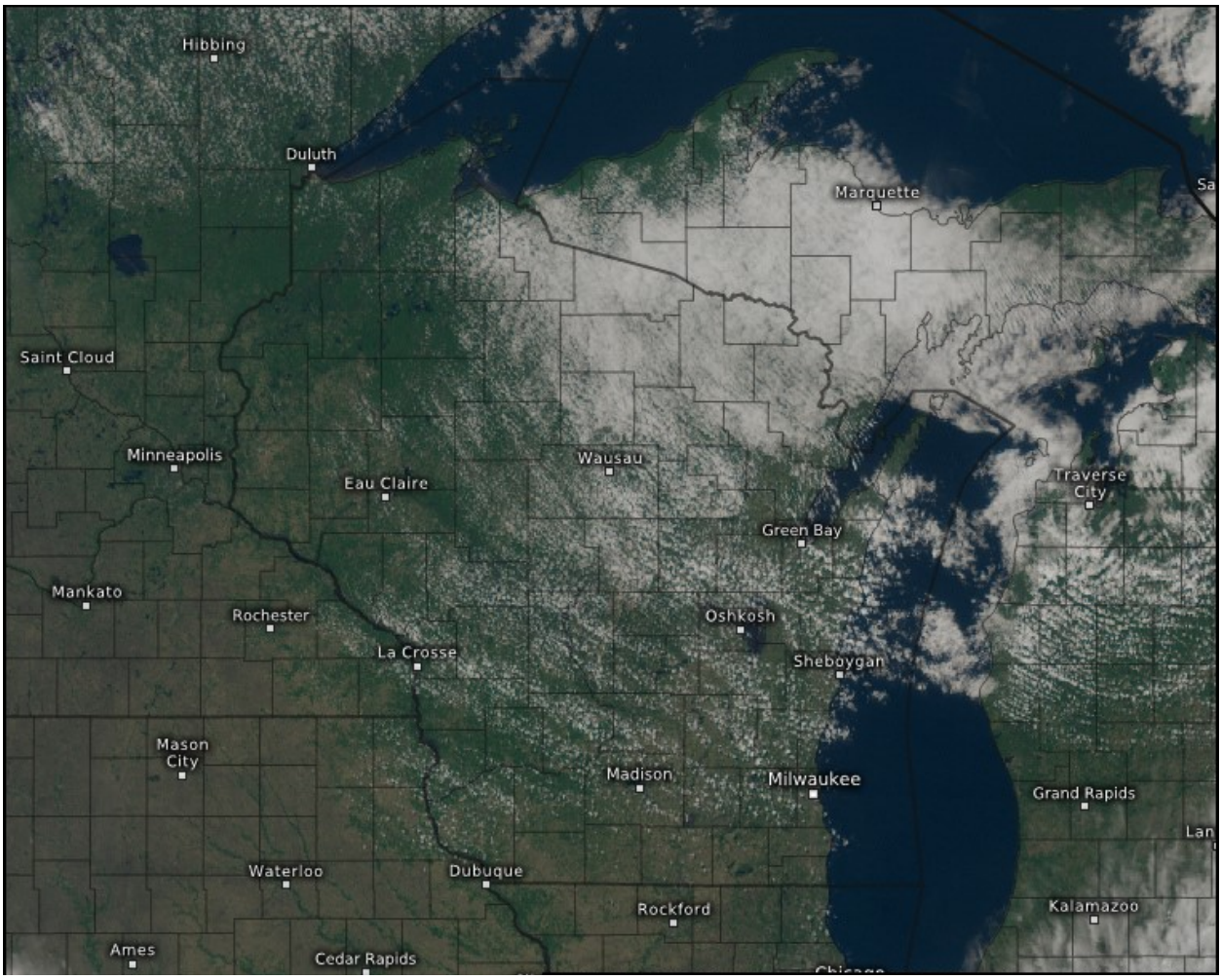

Figure S6: May 26, 2021 high definition color GOES-East satellite image of clouds over Wisconsin at 1400 UTC with a resolution of 1.0 km.

Table S1: Ground station observations of rapid change to easterly winds during WiscoDISCO-21

Date (2021)	Onset time (CST)	Duration (hours)
May 21 (i)	6:43	3.2
May 21 (ii)	13:23	1.3
May 21 (iii)	18:47	0.75
May 22	12:12	5.1
May 23	12:18	indeterminate
May 24	5:44	10.75
May 25	7:10	0.65
May 26	15:25	indeterminate

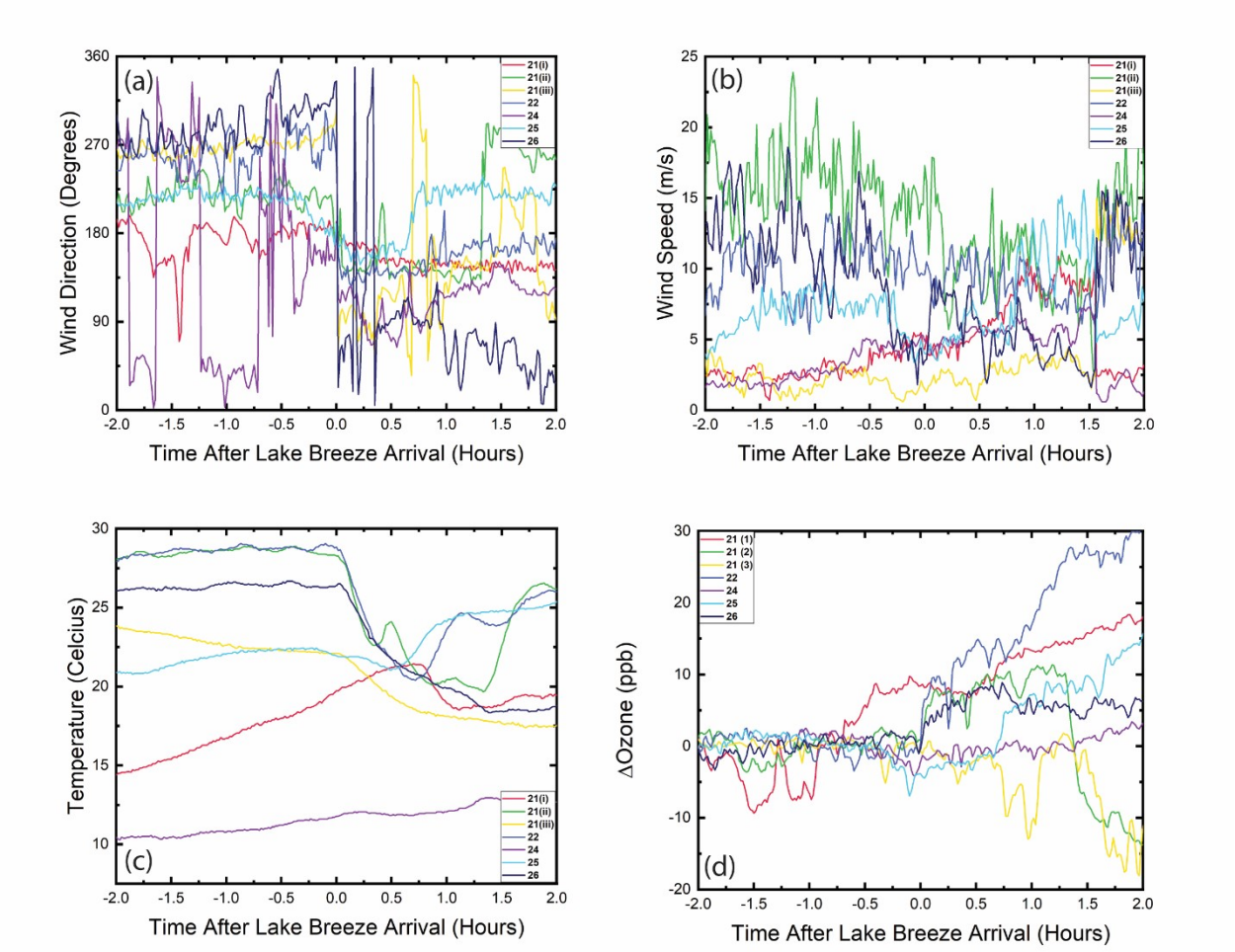

Figure S7: Ground station a) wind direction, b) wind speed (m/s) c) temperature (°C) and d) ΔO3 (ppb) during lake breeze onset time windows for May 21 (with 3 different onsets), 22, 24, 25, and 26, 2021. $\Delta O_3 = [O_3] - \text{mean}[O_3]$ from t = -2h to t = 0.

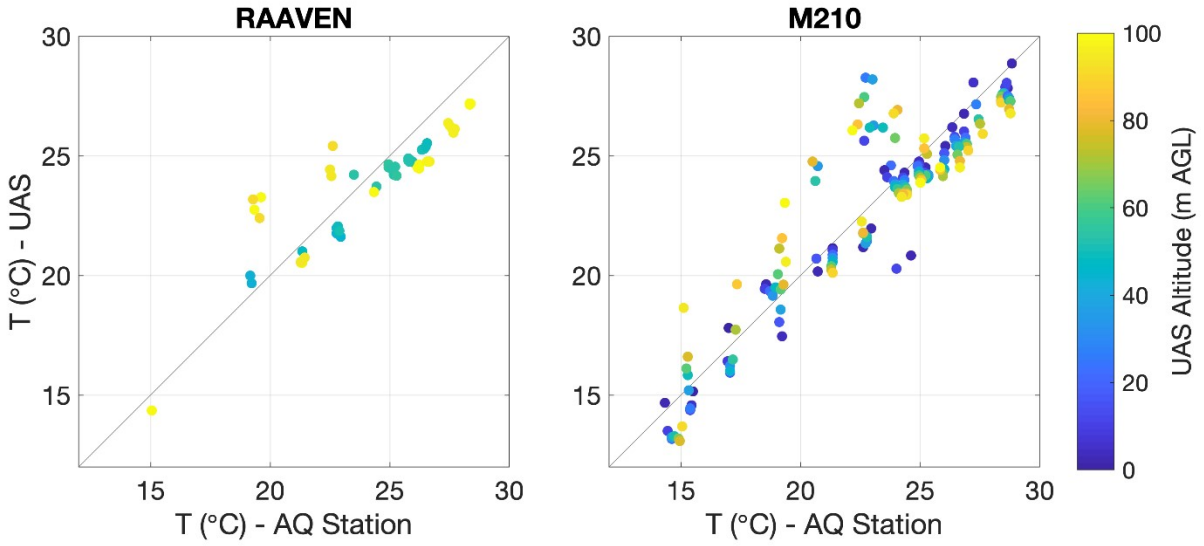

Figure S8: Comparison with RAAVEN and M210 temperature observations with observations at the ground station. Color indicates altitude of the UAS at the time of measurement. RAAVEN data were time averaged to match the 90 second averaging window of the M210. Temperature data from both UAS platforms were plotted against the most synchronous 1-minute average AQ station T data point.

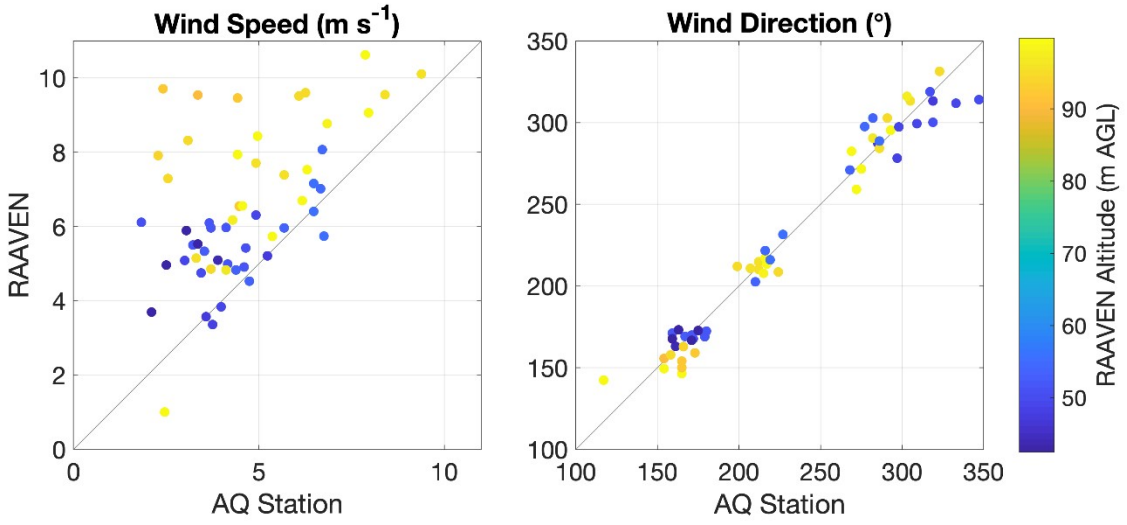

Figure S9: Comparison of wind speed and wind direction measured on the RAAVEN with the observations from the air quality station. Color indicates altitude of RAAVEN at the time of measurement. Data were selected when the RAAVEN was within 500 m of the Air Quality Station (mean distance of 300 m).

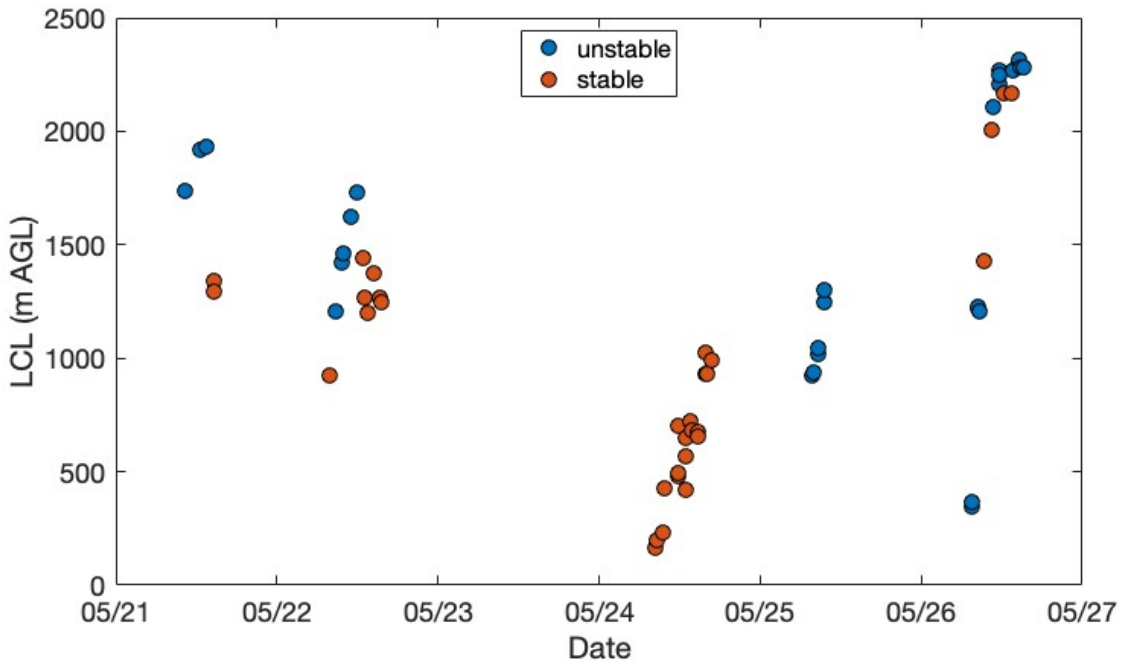

Figure S10: Computed LCL under stable (orange circles) and unstable (blue) conditions using relative humidity and temperature measurements from the RAAVEN platform from May 21, 2021 to May 26, 2021. Time is in UTC.