Explore CO-O3 relationship

Laura Pan and ShownHonmichl
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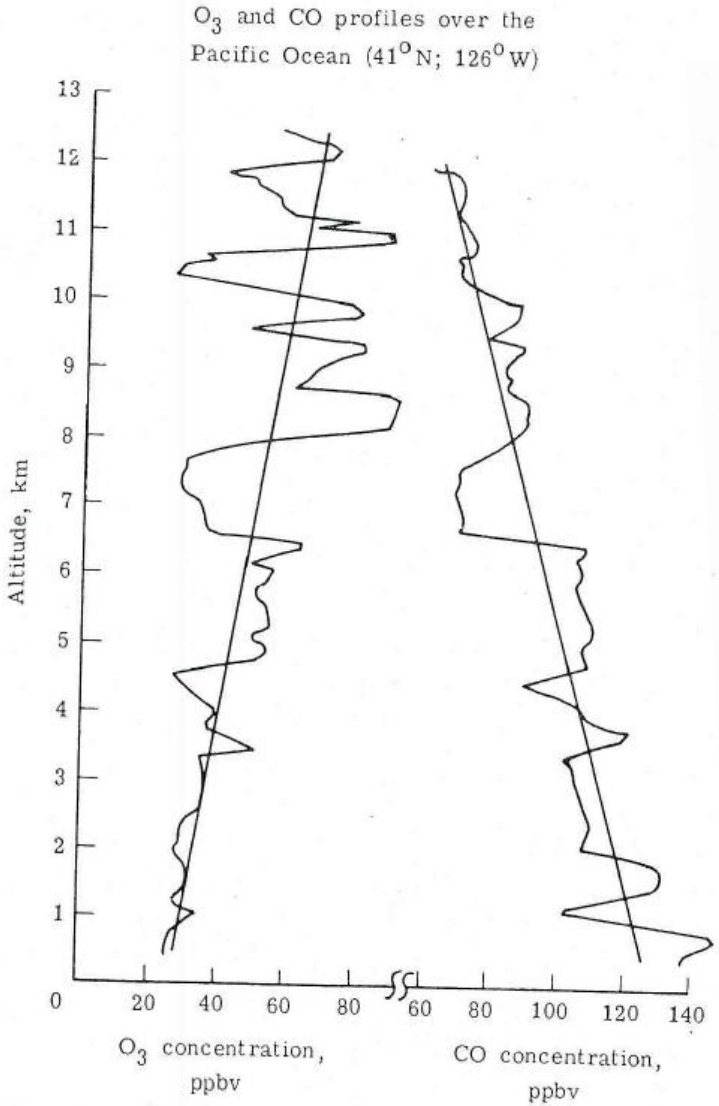
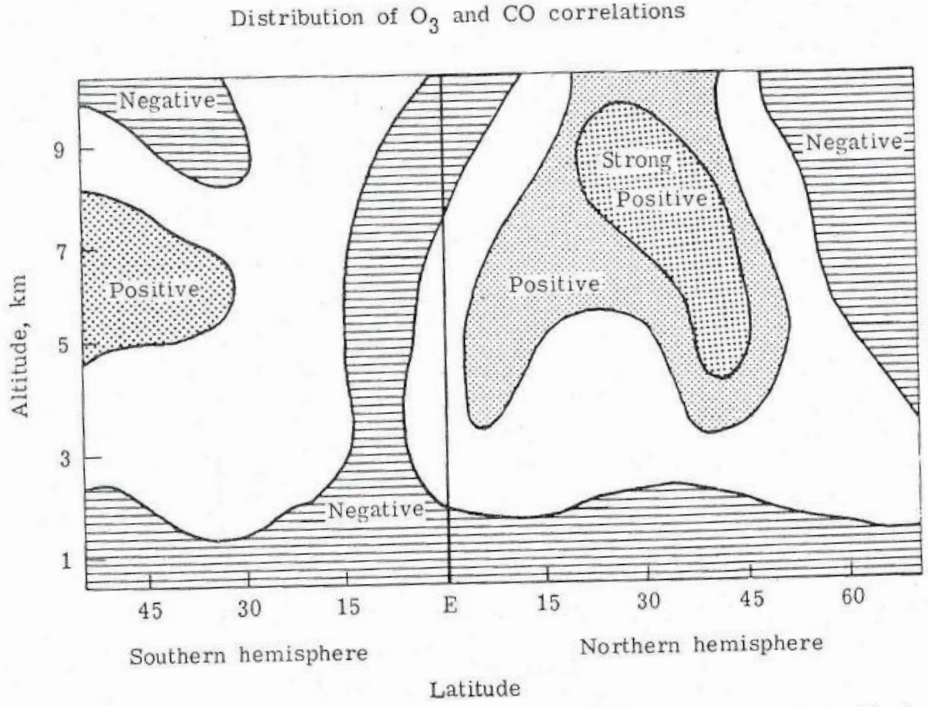


Fig. 1. O_3 and CO profiles measured over the Pacific Ocean off the California coast on July 27, 1974. The thin lines through each of the profiles indicate the best fit straight line through each profile.



...e latitude-altitude depiction of the regions where O_3 and CO variability was positively and negatively correlated.

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Relationships between ozone and carbon monoxide at surface sites in the North Atlantic region

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Abstract. As part of the North Atlantic Regional Experiment (NARE), measurements of O_3 and CO at five surface sites were made from July 1991 to January 1995. The investigation of the variabilities and correlation of O_3 and CO presented here indicates that the seasonal cycles of the medians and the means of O_3 and CO are qualitatively similar to the cycles observed at other northern midlatitude sites. The signature of O_3 produced from anthropogenic precursors is clearest in the spring at the Azores and in the summer at Sable Island. The influence of the natural stratospheric O_3 source is apparent at Sable Island, particularly in the spring. At all sites the variability of CO throughout the year is dominated by episodes of pollution transport. The slopes of the monthly O_3-CO correlations in the summer in Atlantic Canada and the spring in the Azores are quite uniform at 0.3 to 0.4. However, individual pollution transport events often have larger ($\leq$1.0) slopes, which indicate significantly different net O_3 production efficiencies between episodes. The average slope of O_3 versus CO at Sable Island in the winter for moderate pollution transport events (CO $\leq$ 180 ppbv) is -0.28, which indicates that the titration of

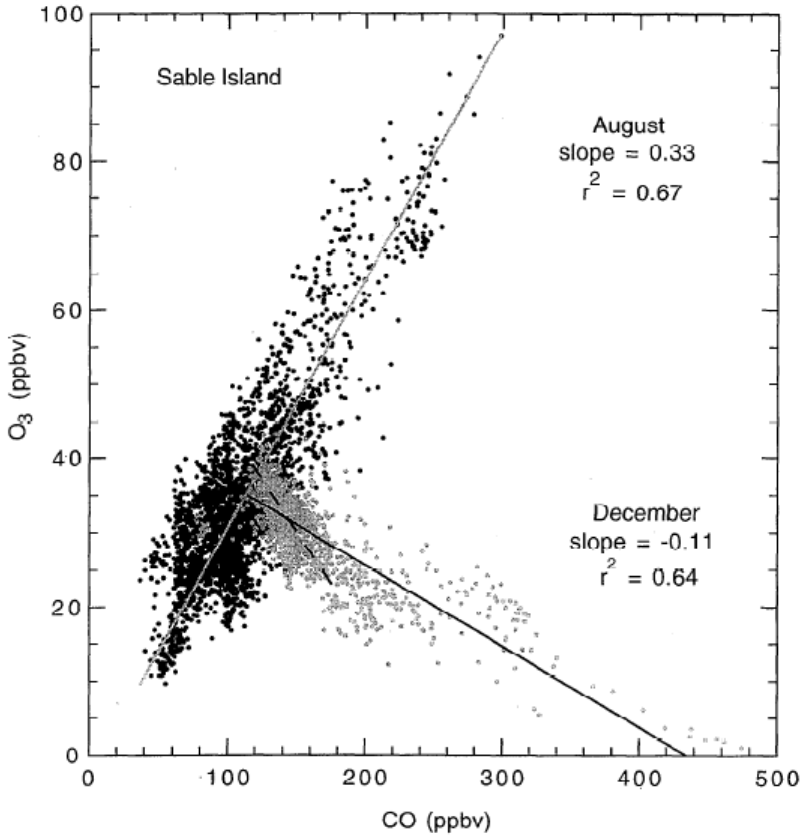


Figure 4. Correlation between O_3 and CO for August (dark symbols) and December (light symbols) at Sable Island. The data include all hourly averages from 1991-1994. For each month the values are given for the square of the correlation

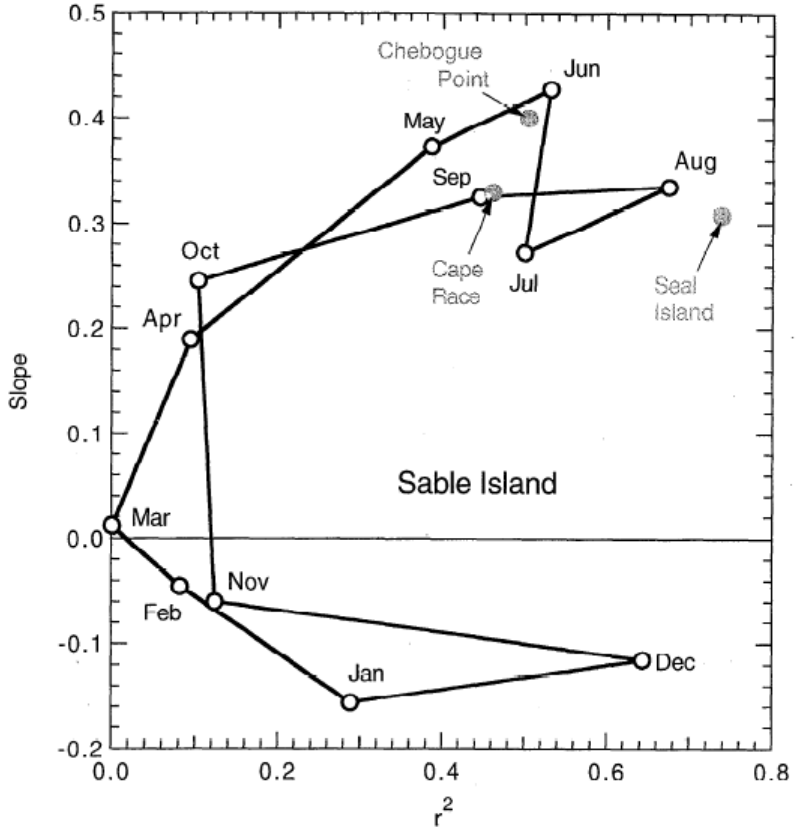
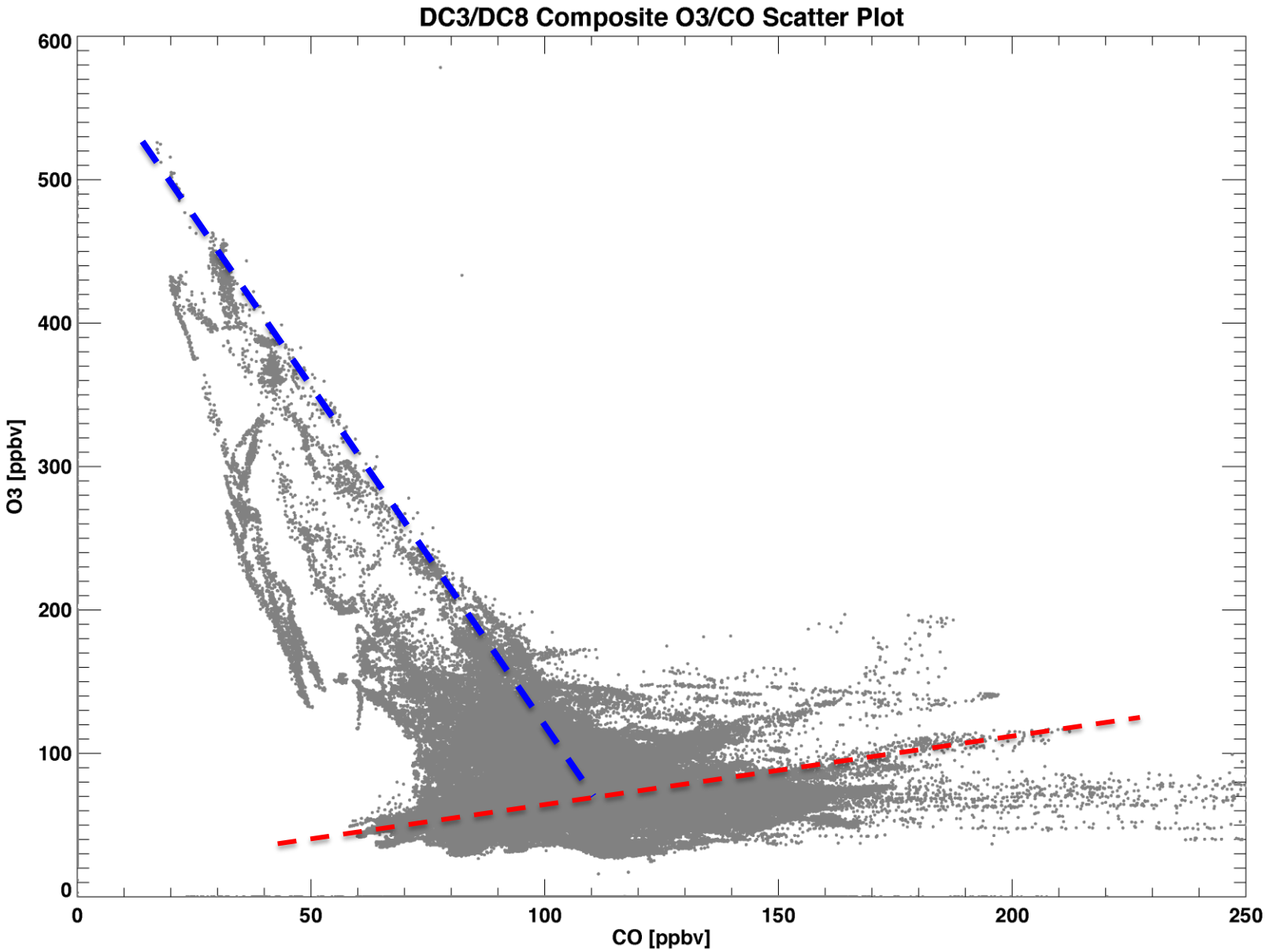


Figure 5. Relationship between the square of the correlation coefficient and the slope of the O_3-CO correlations for the Atlantic Canada sites. The results are presented as a function of month for Sable Island (dark open circles); the other sites


DC3/DC8 Composite O3/CO Scatter Plot
O3 [ppbv]
CO [ppbv]
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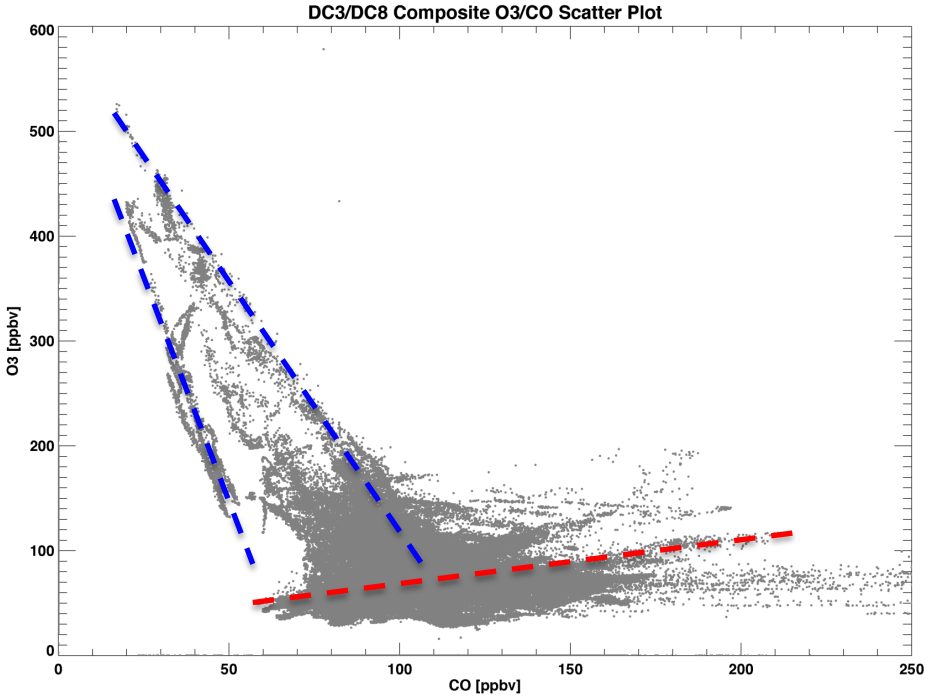
100
200
300
400
500
600
0
50
100
150
200
250

RF15


DC3/DC8 Composite O3/CO Scatter Plot
O3 [ppbv]
CO [ppbv]
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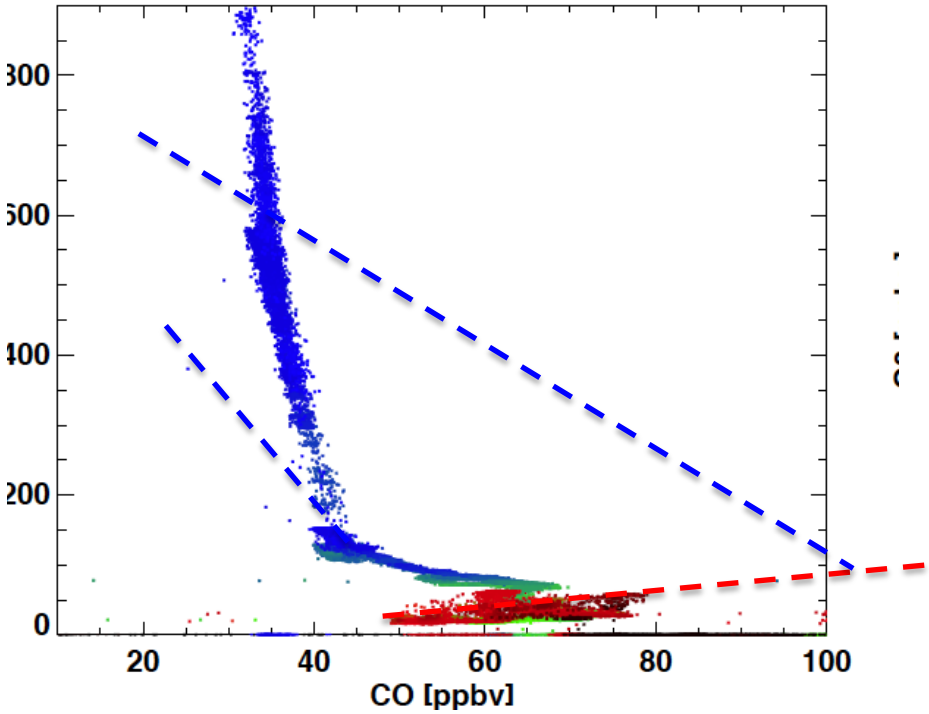
300
500
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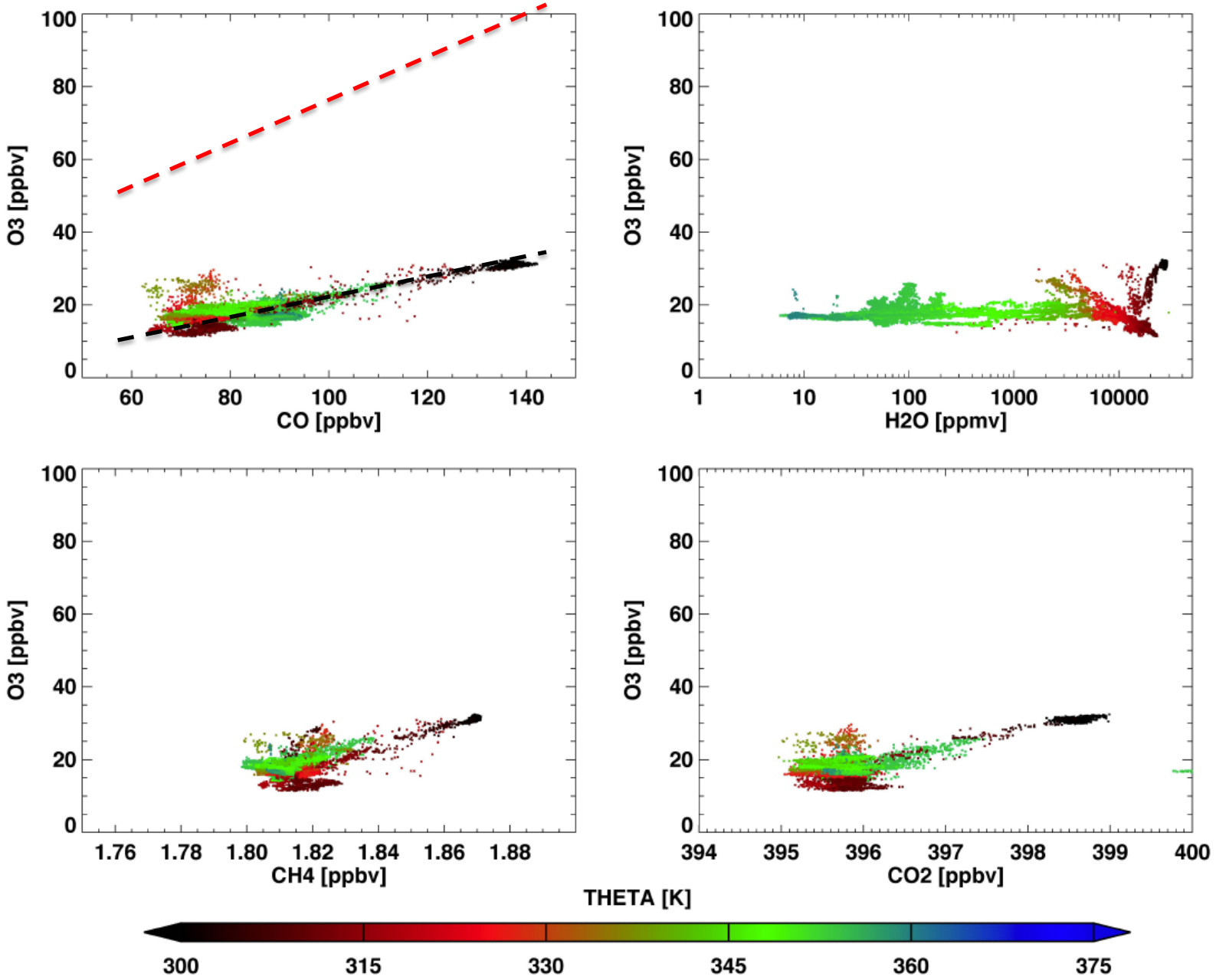
0
20
40
60
80
100
CO [ppbv]

GV CONTRAST rf05 01/22/2014



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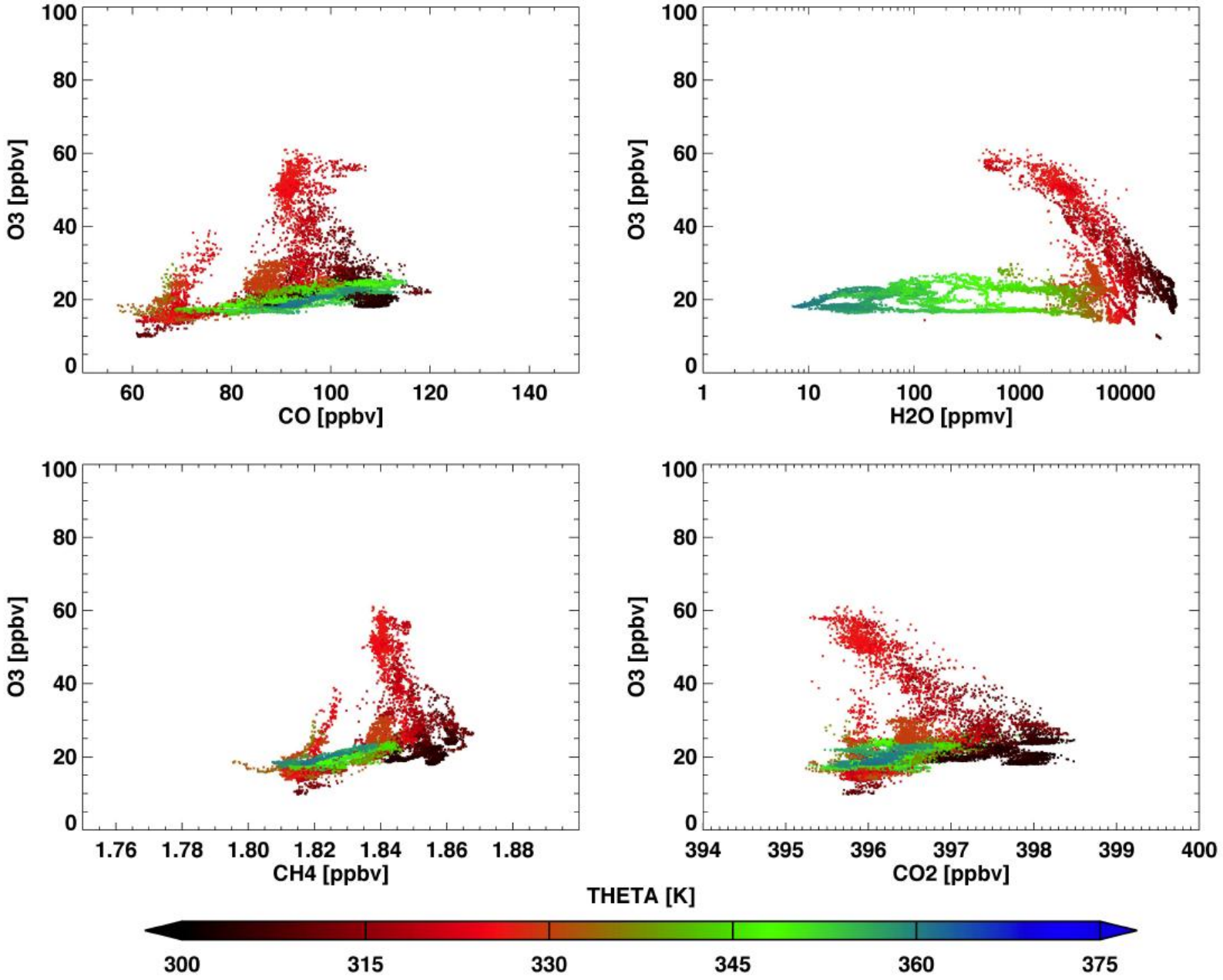

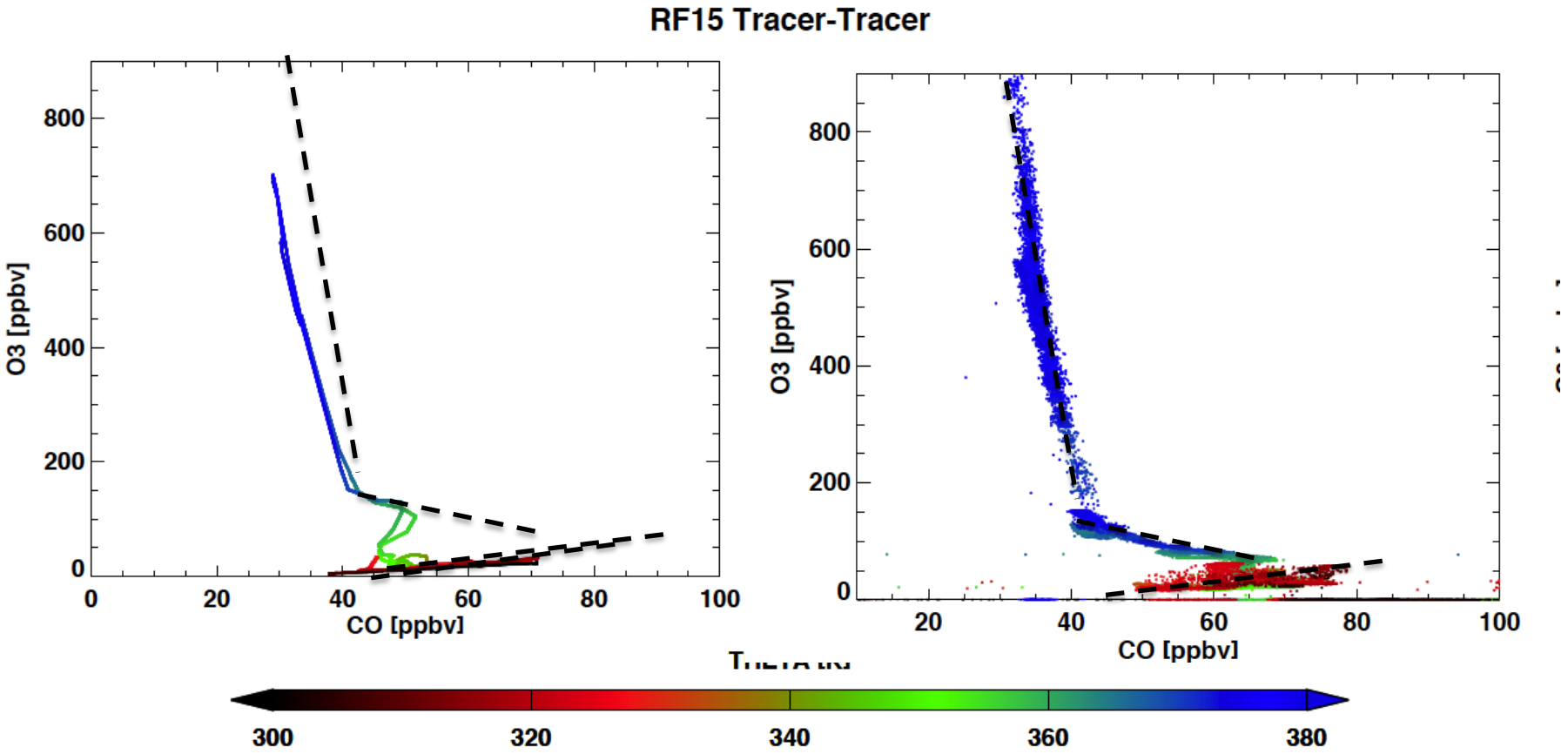
RF15 Tracer-Tracer
O3 [ppbv]
CO [ppbv]
0
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340
360
380