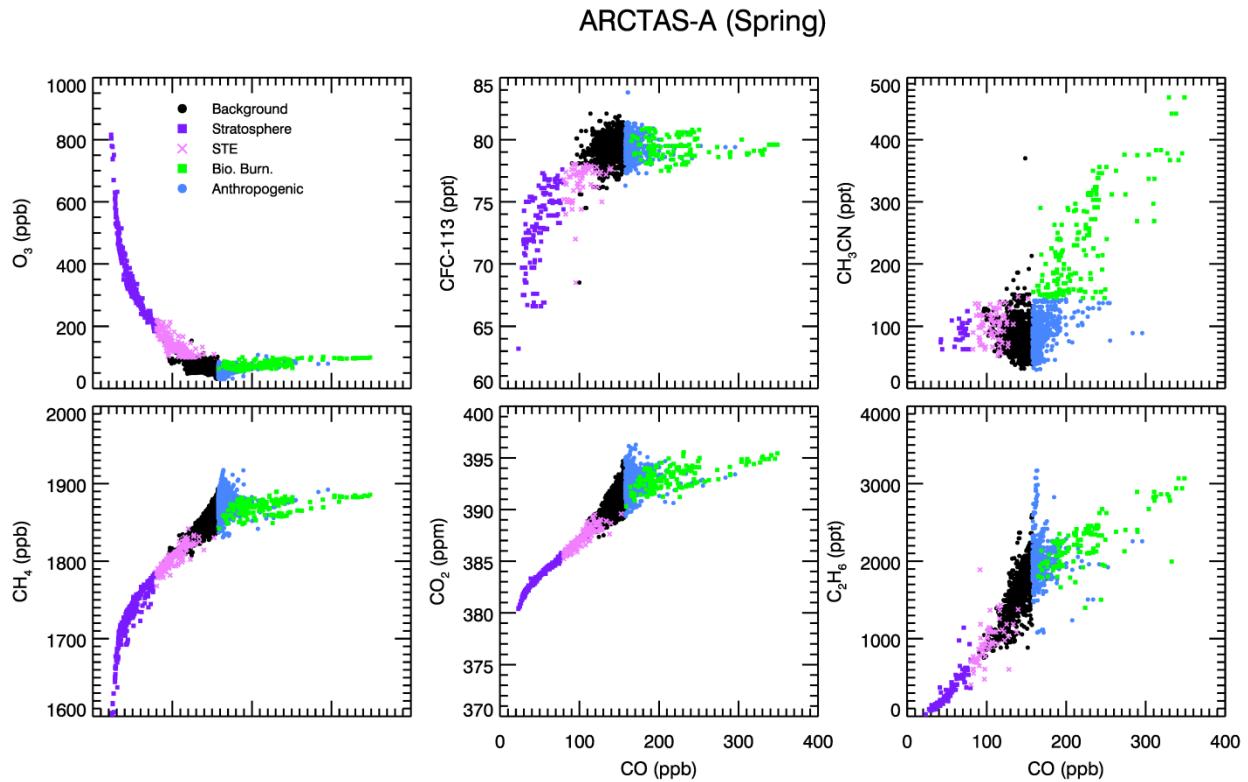


## APPENDIX: SUPPLEMENTARY FIGURES

**Figure S1.** Scatter plots of six trace gases ( $O_3$ , CFC-113,  $CH_3CN$ ,  $CH_4$ ,  $CO_2$ ,  $C_2H_6$ ) vs. CO during ARCTAS-A. The background air is shown in black and the individual air masses are highlighted in color: stratosphere (purple), STE (lilac), anthropogenic pollution (blue) and biomass burning (green). These scatter plots show that tracer-tracer correlations offer valuable information in determining the threshold levels of markers for distinguishing air in the stratosphere, air associated with recent STE, biomass burning and anthropogenic emissions. In particular, the anthropogenic pollution and biomass burning plumes have very different  $CH_4/CO$ ,  $CO_2/CO$ , and  $C_2H_6/CO$  ratio in addition to the differences in the  $CH_3CN$  mixing ratios.



**Figure S2.** Similar to Figure S1 but for ARCTAS-B.

