

C-130 SO<sub>2</sub> A

DMS OVERVI

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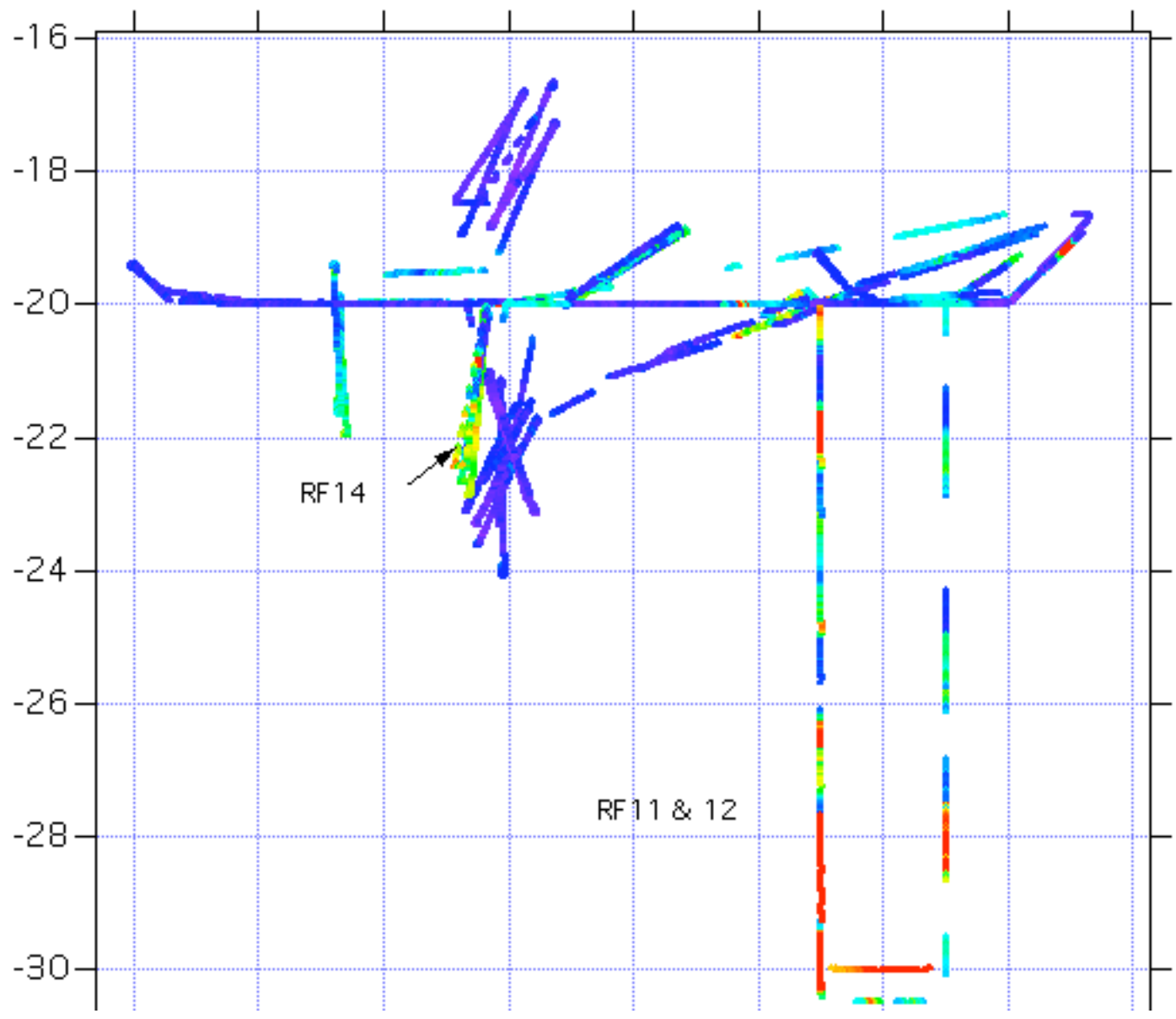
NENAD ZAGROAC, UC DAVIS

# FINAL DATA SET: C-

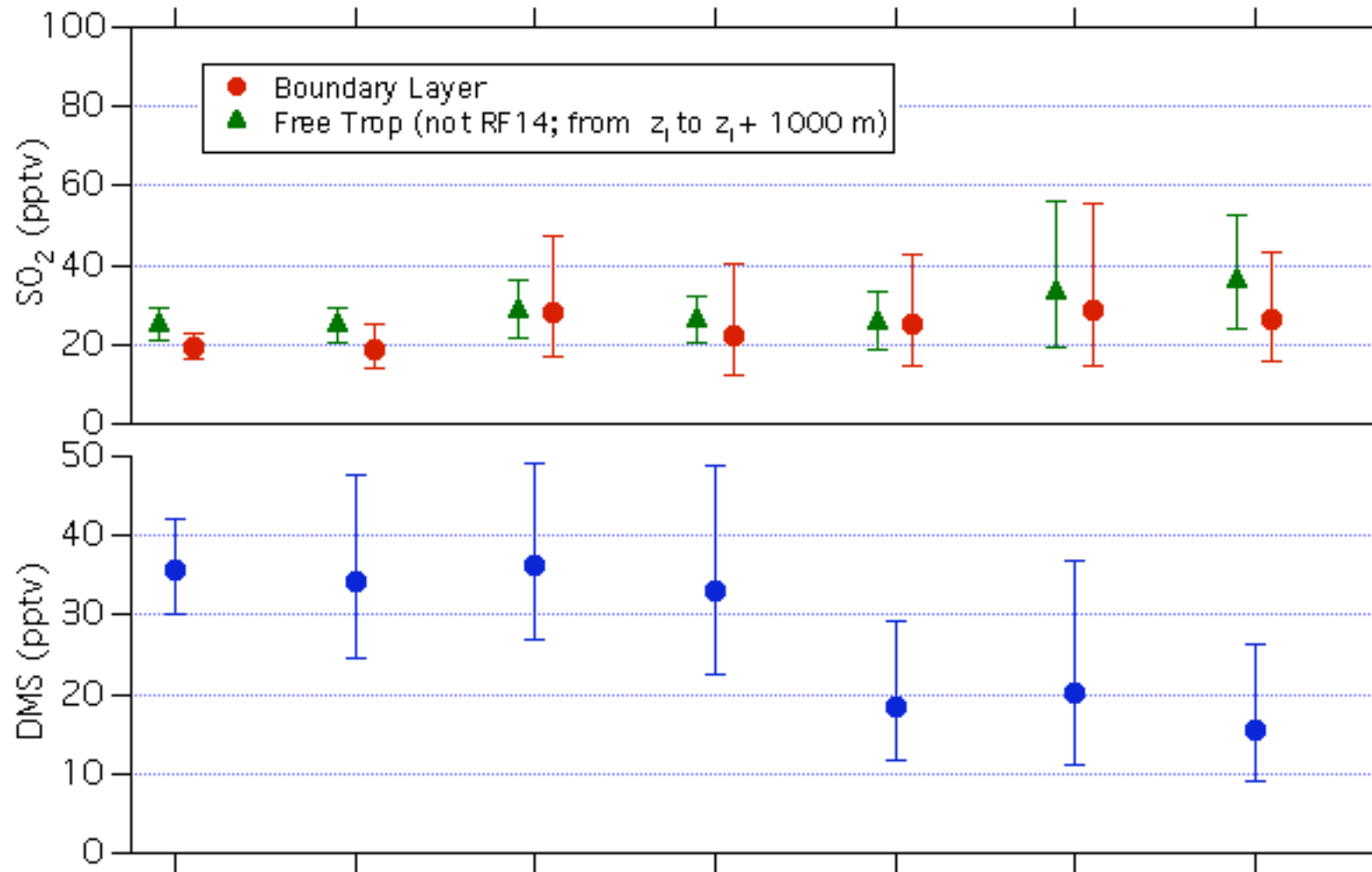
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- SO<sub>2</sub>: RF01-RF14 @ 1 Hz
- DMS: RF02-RF14 @ 10 sec
- Following post-mission calibration, concentrations revised upward from initial field-computed values.

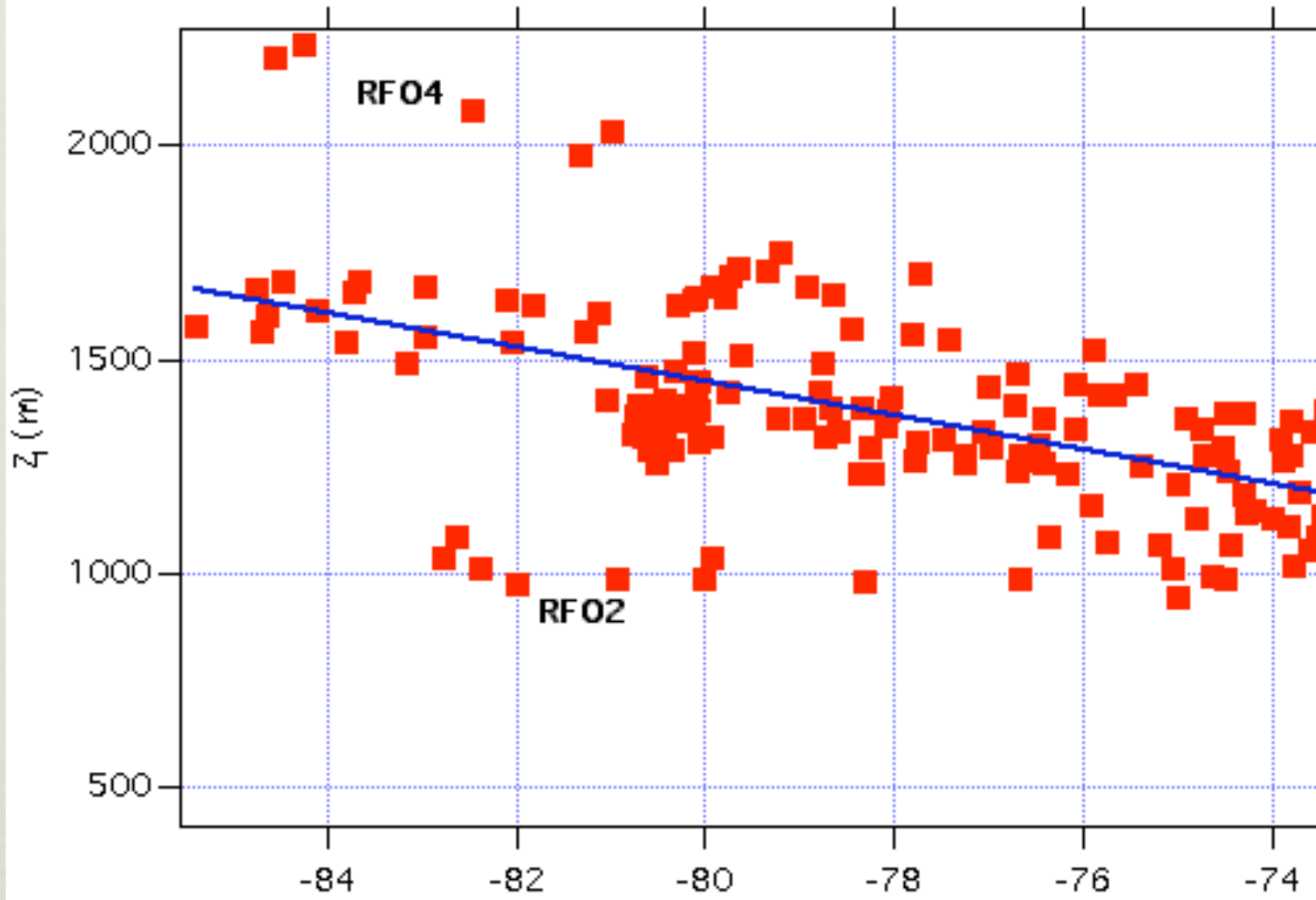




### Log Normal Mean S02 and DMS Along 20S

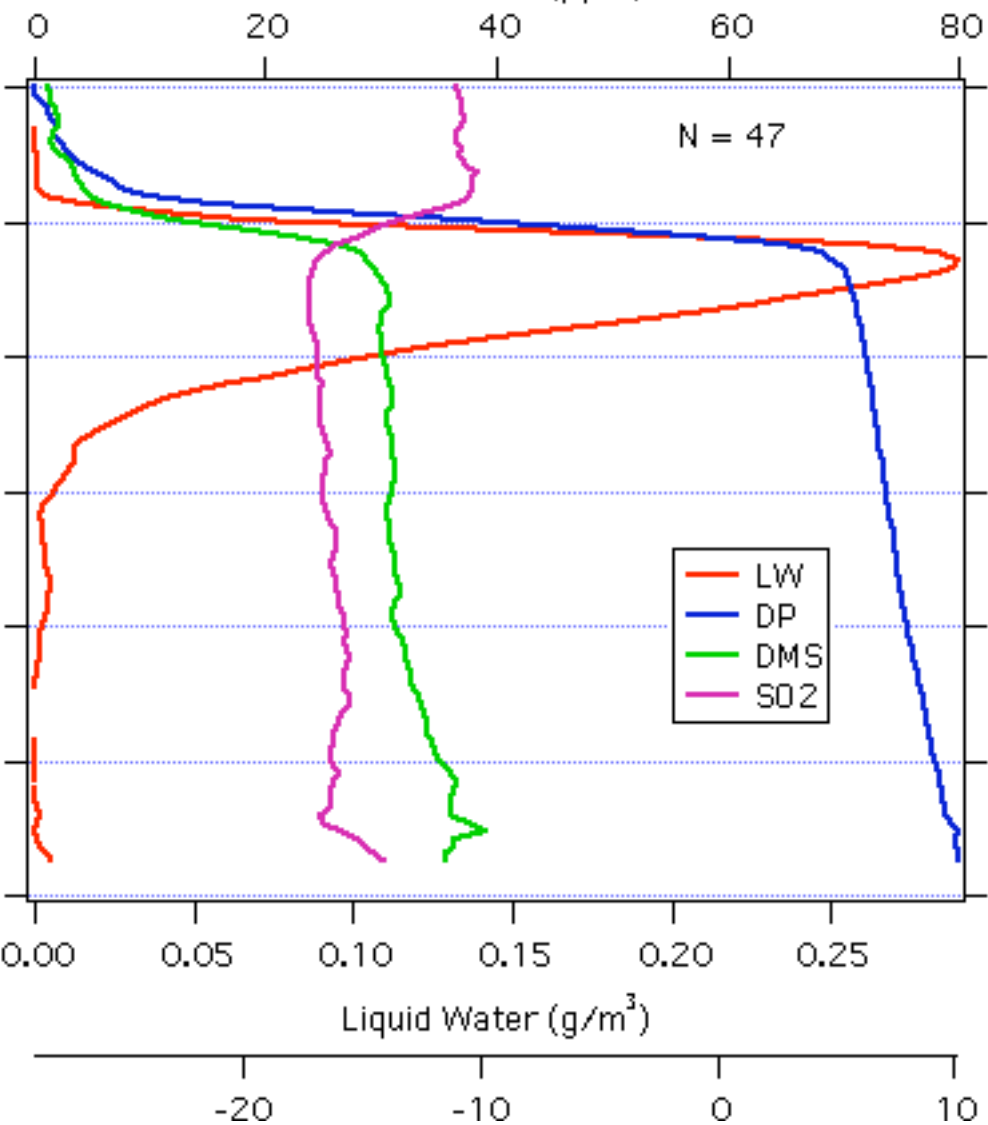


### Inversion Height Along 20S Transect



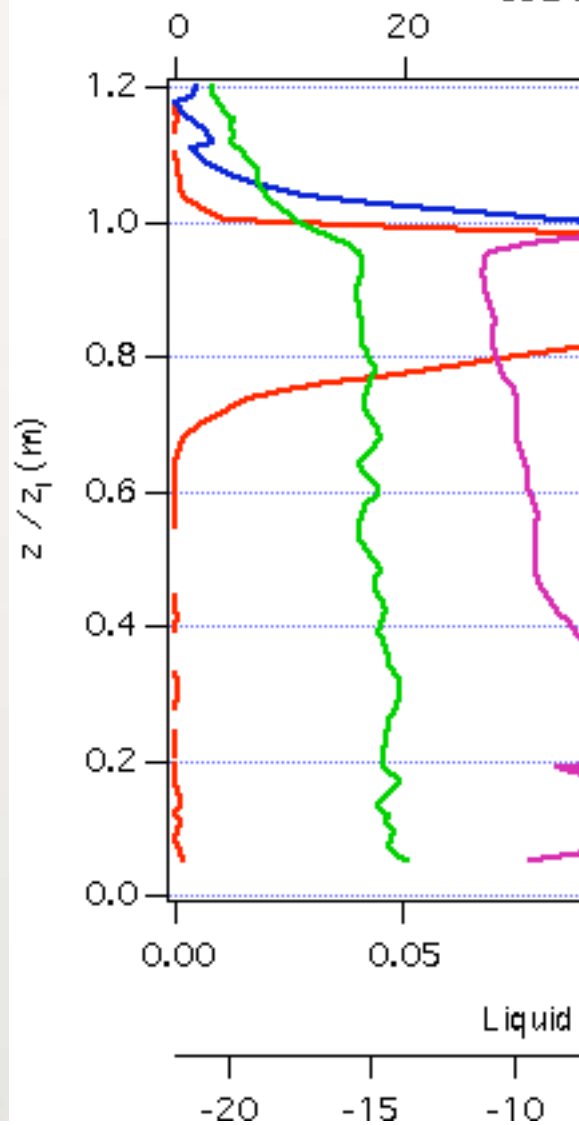
### All Full Profiles West of -74 (Except RF12,14)

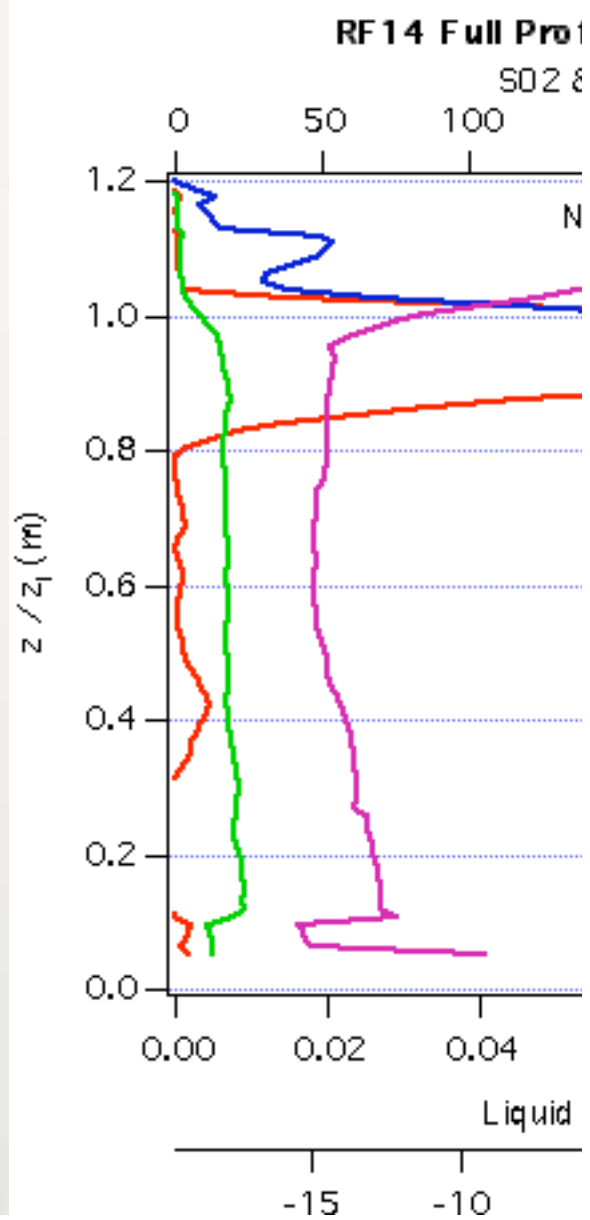
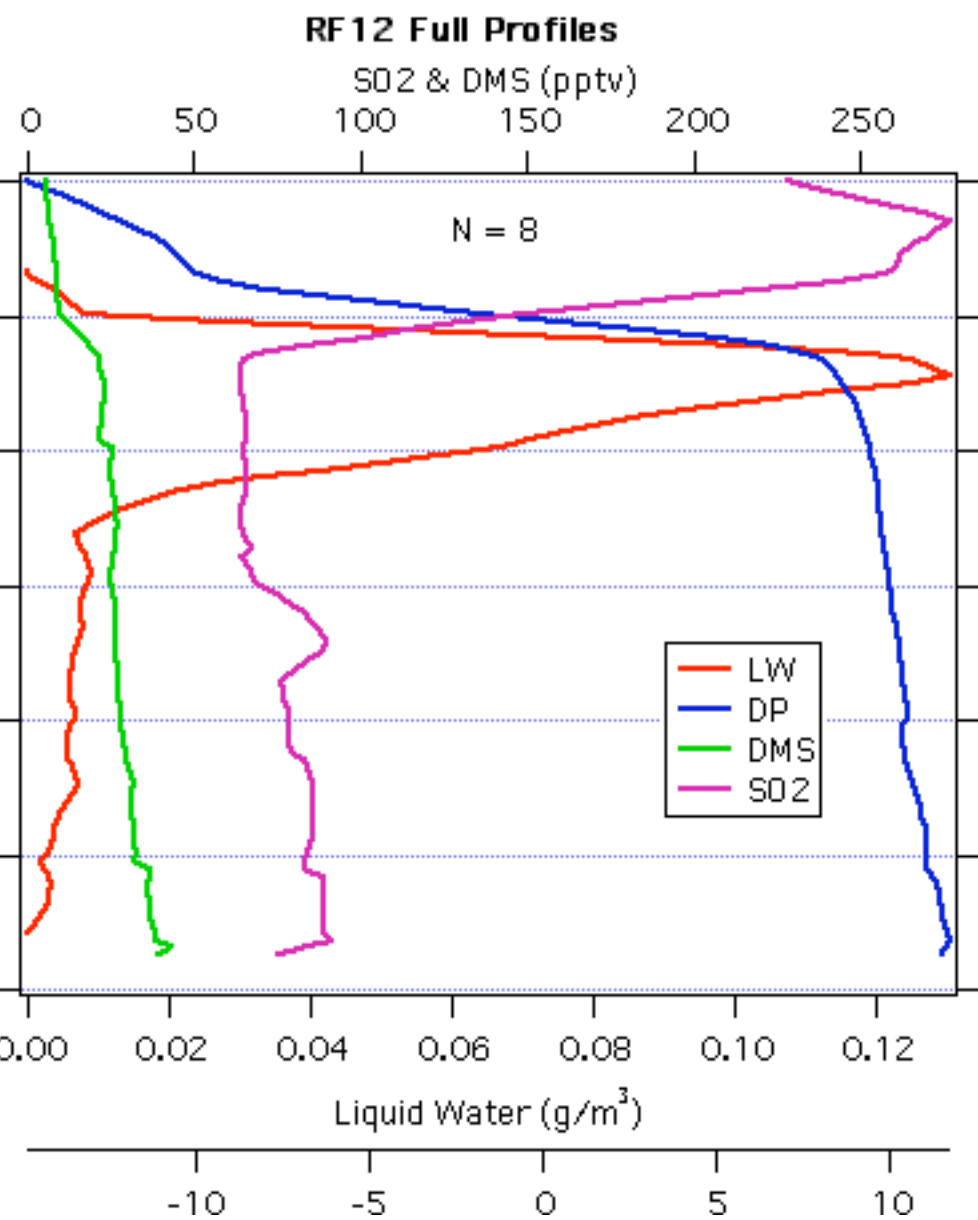
SO<sub>2</sub> & DMS (pptv)



### All Profiles

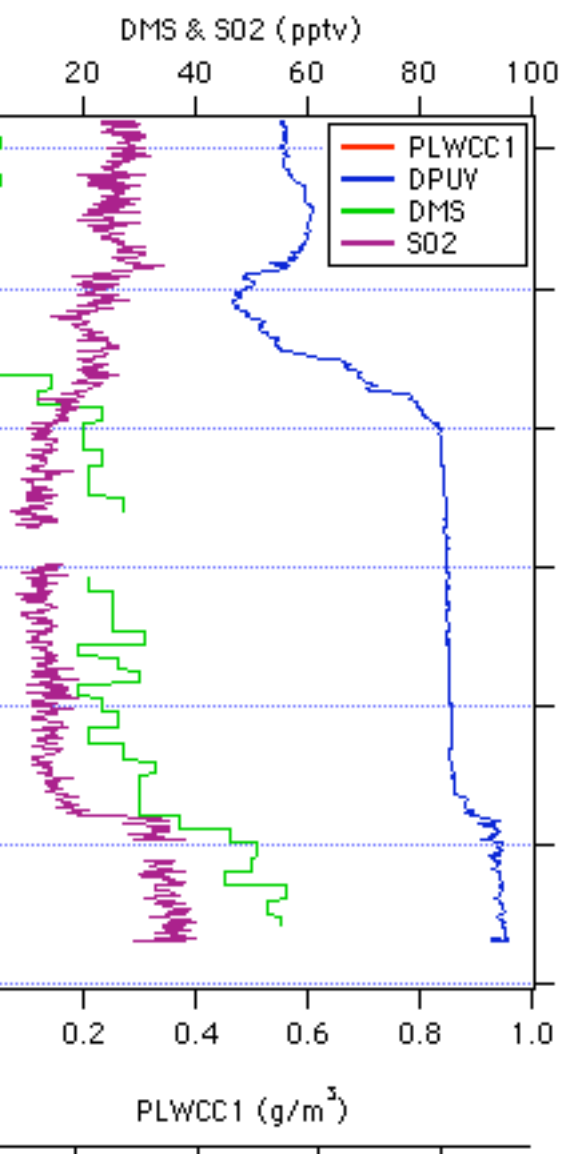
SO<sub>2</sub> &



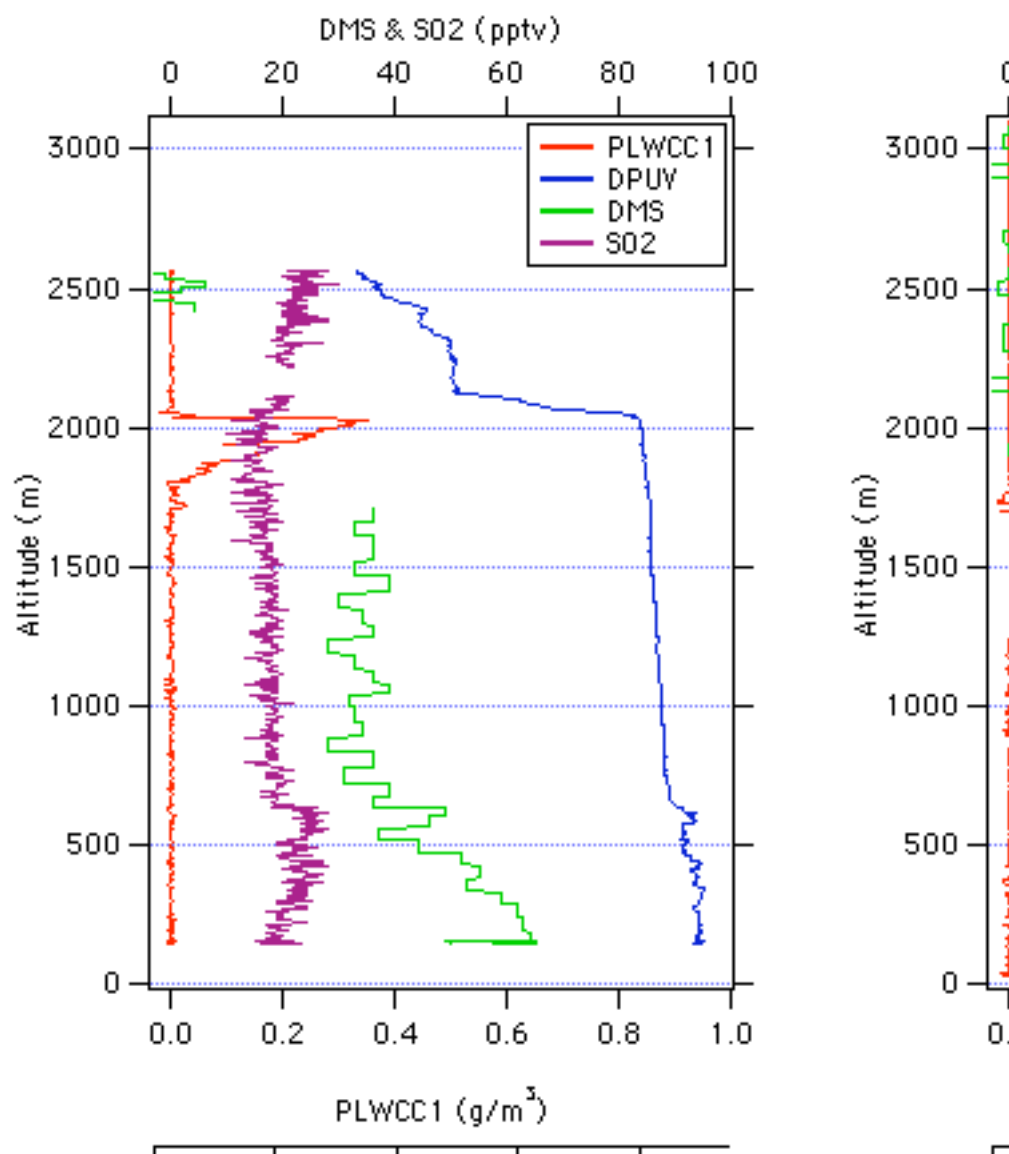




RF04: Lon: -84.2 Lat: -20.0

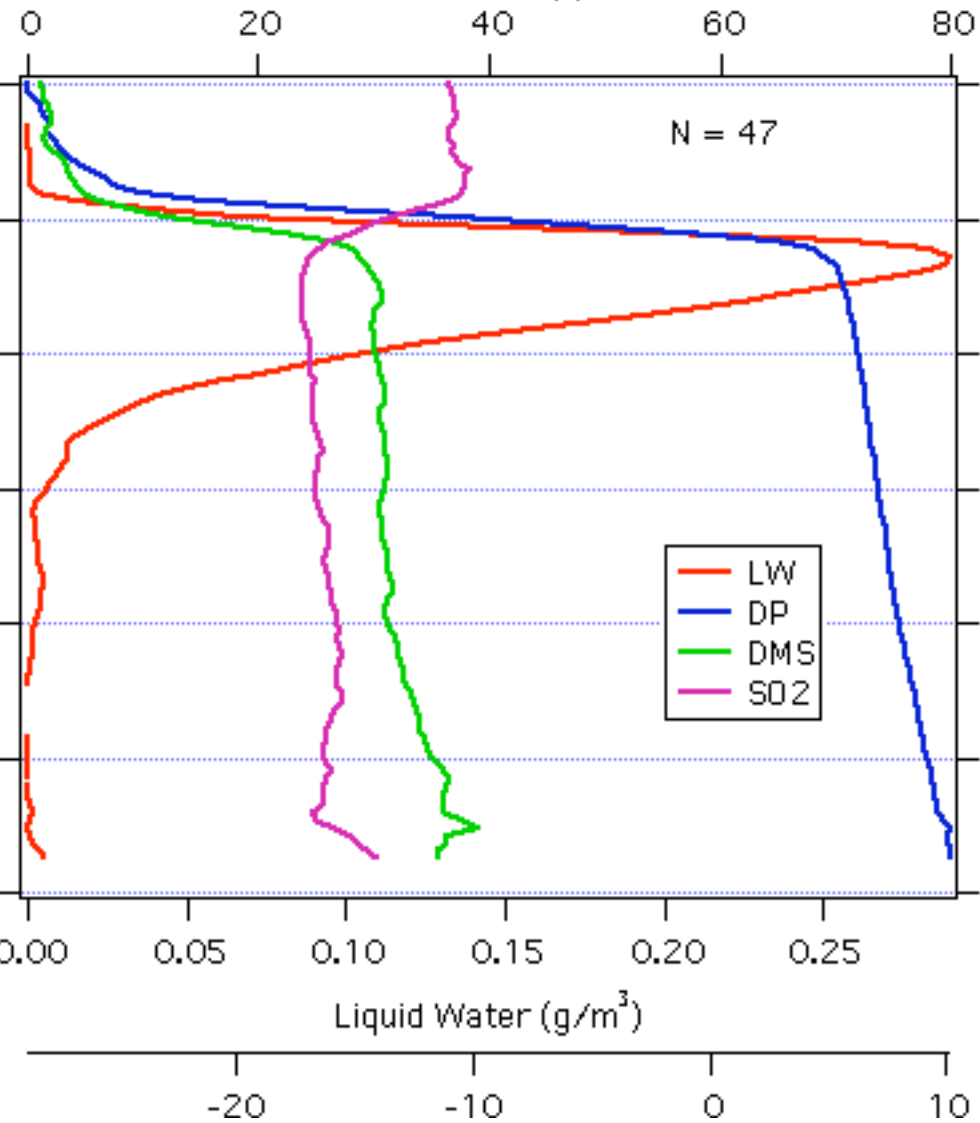


RF04: Lon: -82.5 Lat: -20.0



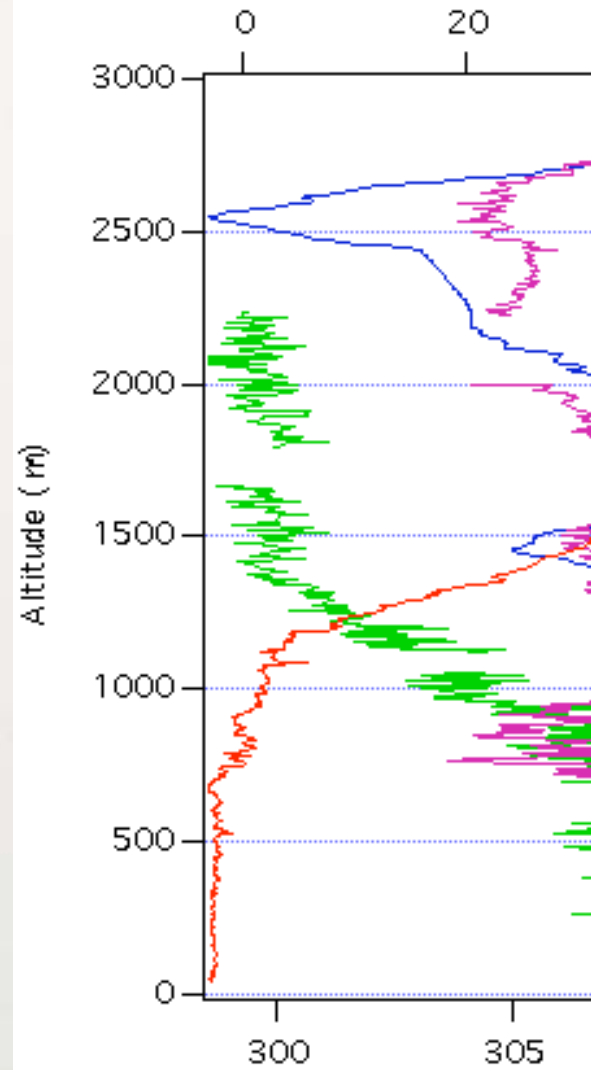
### All Full Profiles West of -74 (Except RF12,14)

SO<sub>2</sub> & DMS (pptv)

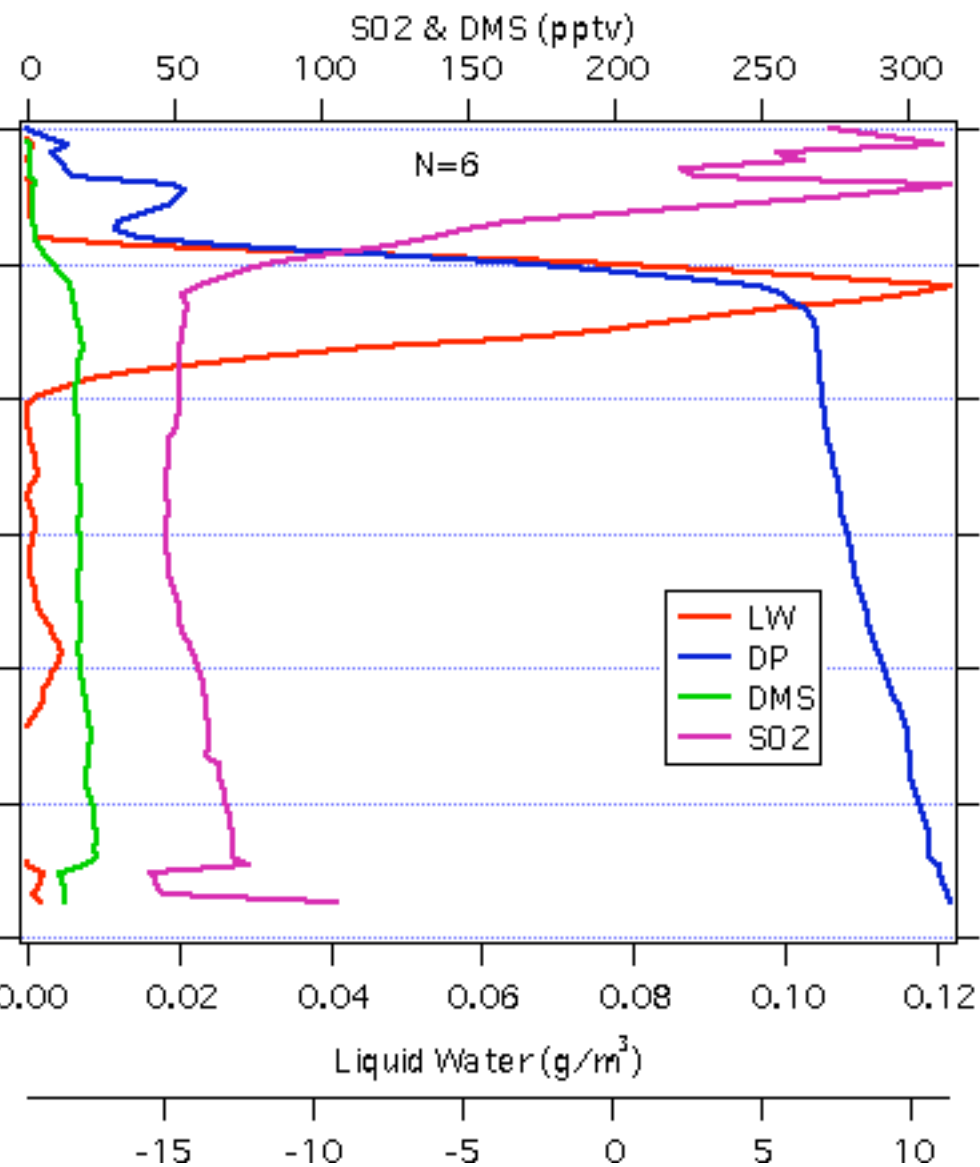


### Equatorial

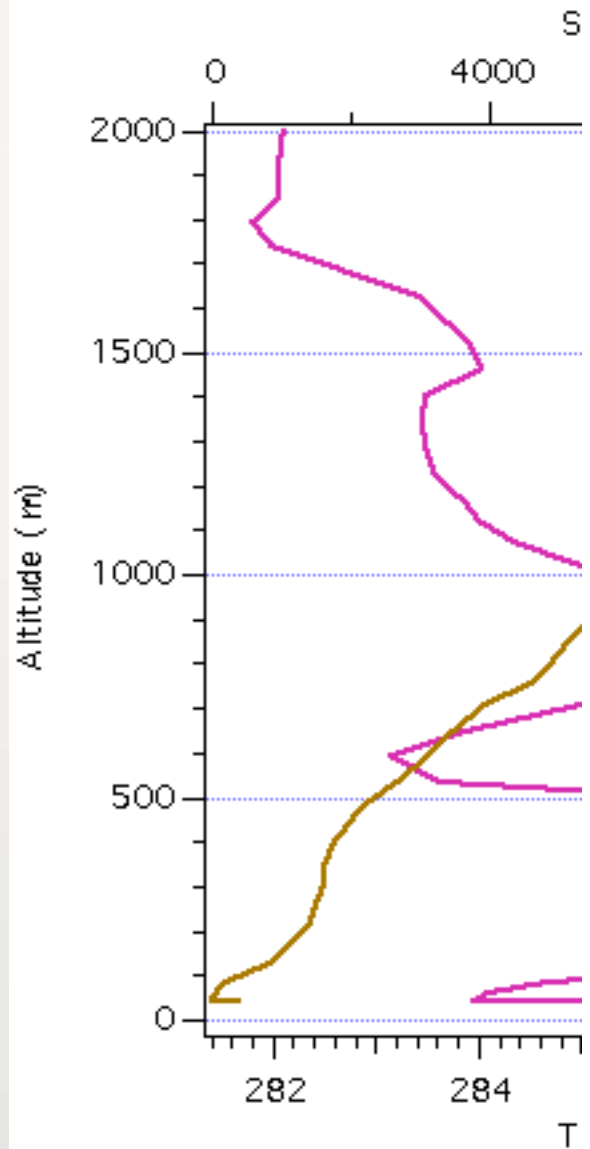
DMS



### RF14 Full Profiles West of -74



### Western Pacific (10°S)



# CONCLUSIONS

- DMS mixing ratio in the MBL decreases toward the coast and wind speed also decreases. Net flux of DMS to MBL is somewhat lower near the coast (ship measurements). Mean DMS mixing ratios are otherwise similar to equatorial levels.
- SO<sub>2</sub> mixing ratio in the MBL and FT increases near the coast due to the influence of anthropogenic & volcanic emissions. Pollution just above the inversion may travel quite far offshore (e.g., R/V R/V F14). In general, however, SO<sub>2</sub> concentrations in the western Pacific west of 174° are similar to remote equatorial Pacific levels.

# HYPOTHESIS:

- *Coupled Ocean-Atmosphere-Land Hypothesis #2: By physical and chemical properties of the upper ocean, upwelling has a systematic and noticeable effect on aerosol precursor gases and aerosol size distribution over the SEP.*
- Synthesis: DMS concentrations were not strongly elevated in the coastal upwelling zone. However, photochemical degradation of DMS seems to be dominant source of new sulfate far offshore. SO<sub>2</sub> entrainment from the free troposphere.
- Synthesis assessment still seems valid, but a careful analysis of two pollution events observed on RF12 and RF14 may

# ACKNOWLEDGEMENT

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- NSF-ATM for funding our part in VOCALS.
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- NCAR EOL Field Project Servi