TRACE-P CO_2 Measurements Aboard the DC-8 and P-3B

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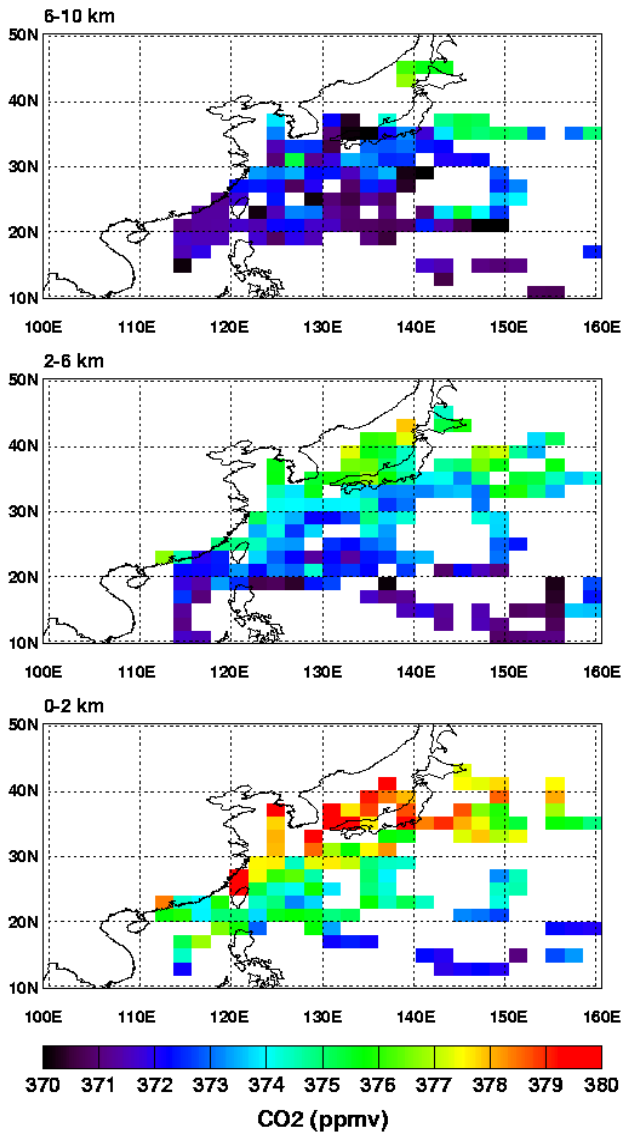
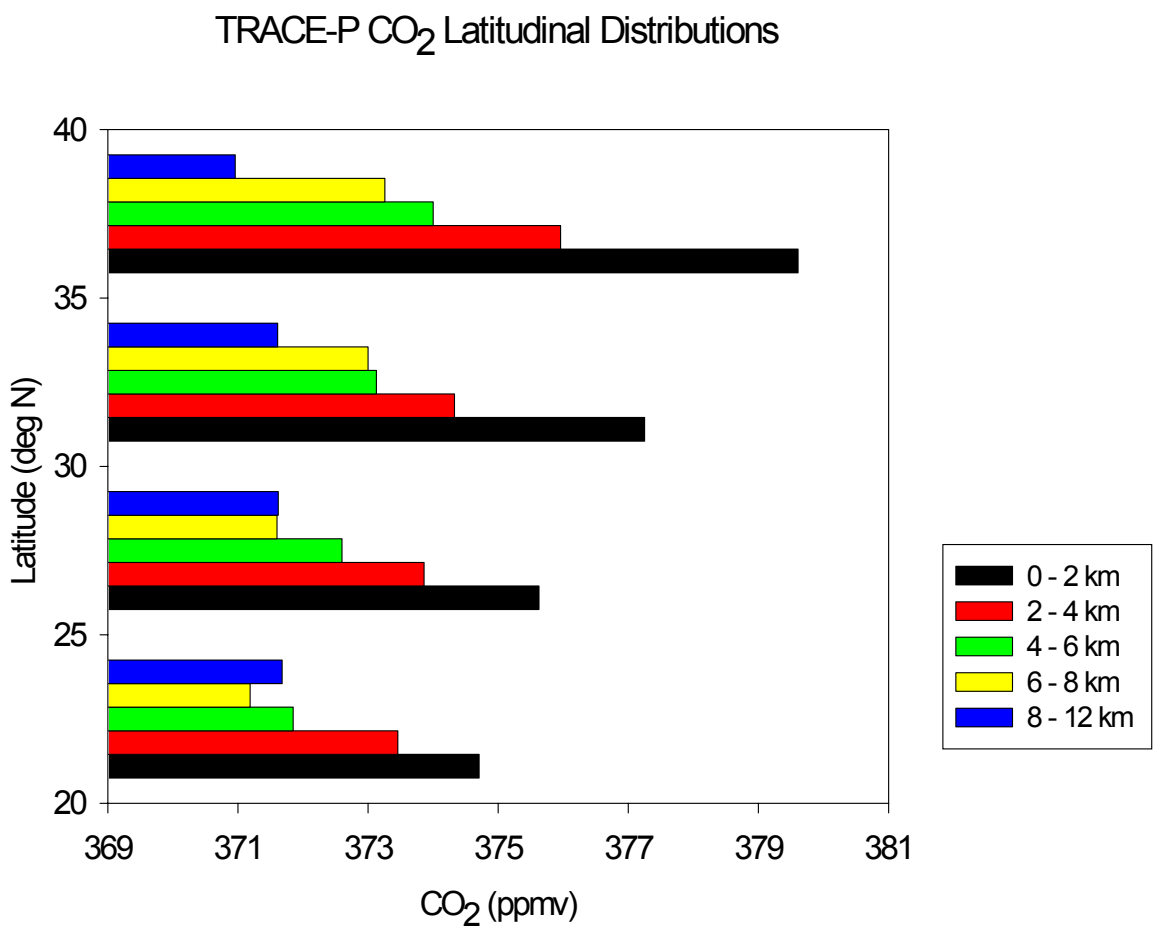
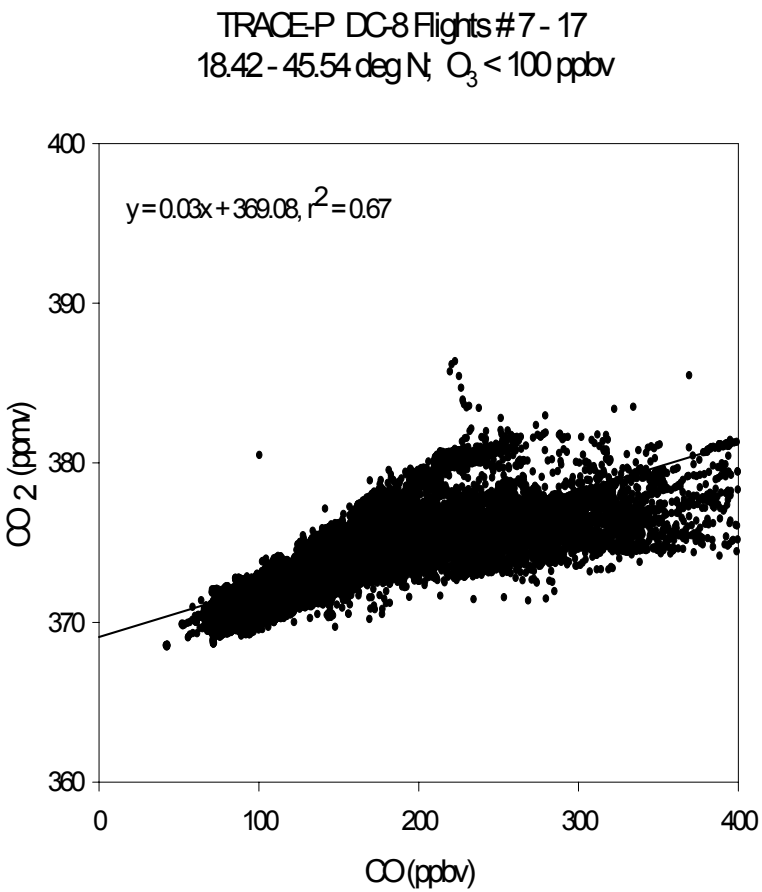
Lee Thornhill

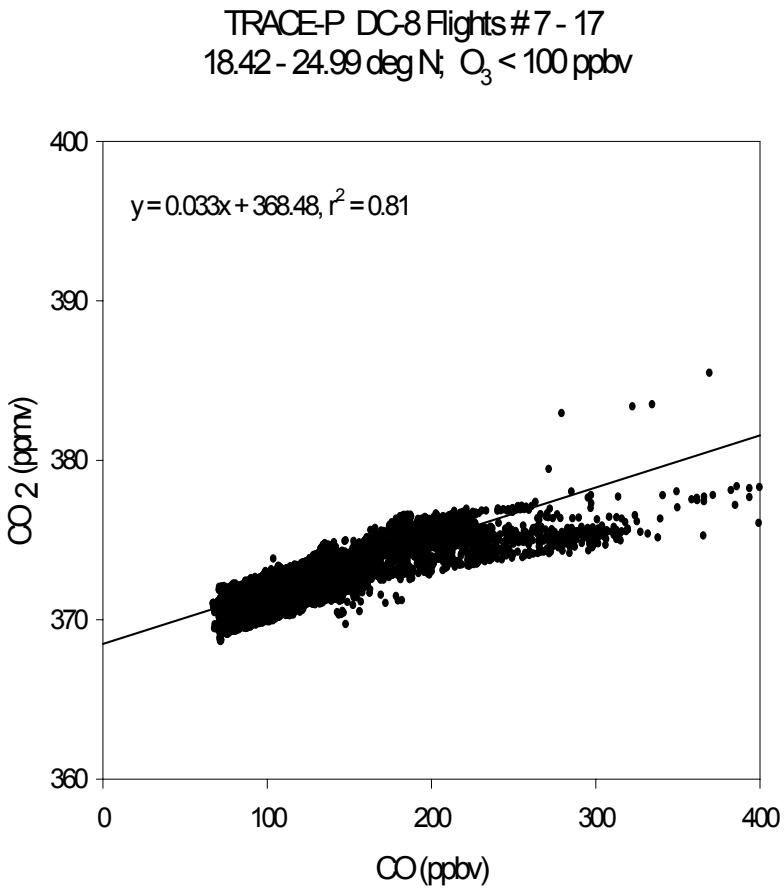
Spatial Variations of Atmospheric CO_2 over the western North Pacific

Vay, Anderson, Avery, Sachse, Mukai et al.


6-10 km
2-6 km
0-2 km
50N
40N
30N
20N
10N
100E
110E
120E
130E
140E
150E
160E
370
371
372
373
374
375
376
377
378
379
380
CO2 (ppmv)

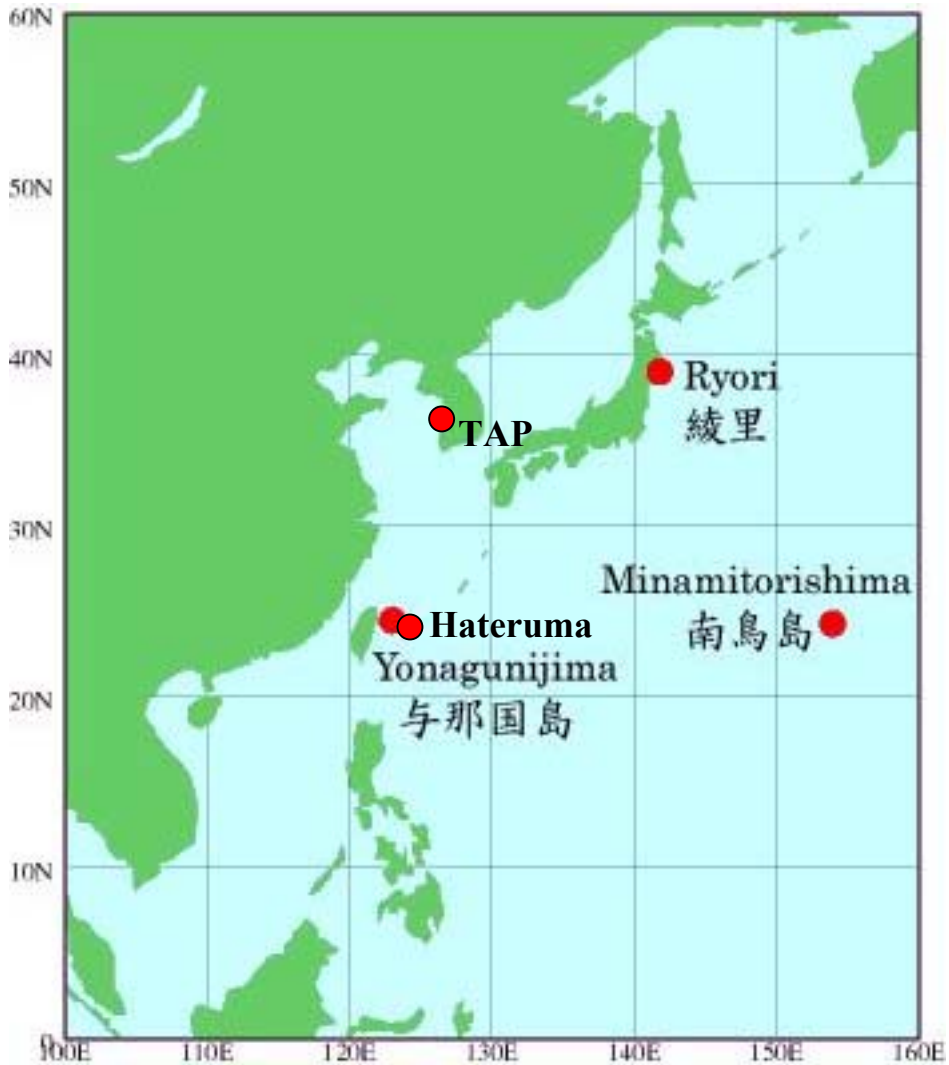

TRACE-P CO_2 Latitudinal Distributions
Latitude (deg N)
40
35
30
25
20
369
371
373
375
377
379
381
CO_2 (ppmv)
0 - 2 km
2 - 4 km
4 - 6 km
6 - 8 km
8 - 12 km

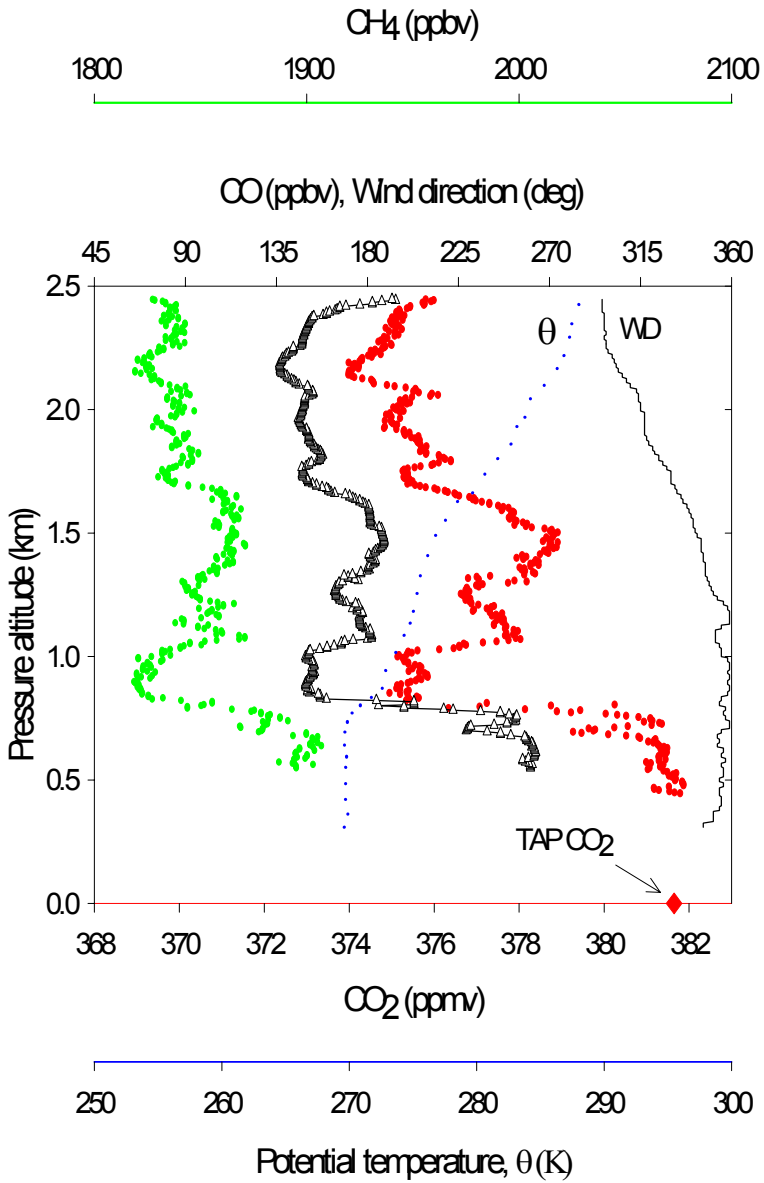




DC8mrg5sec.jnb

DC8mrg5sec.jnb

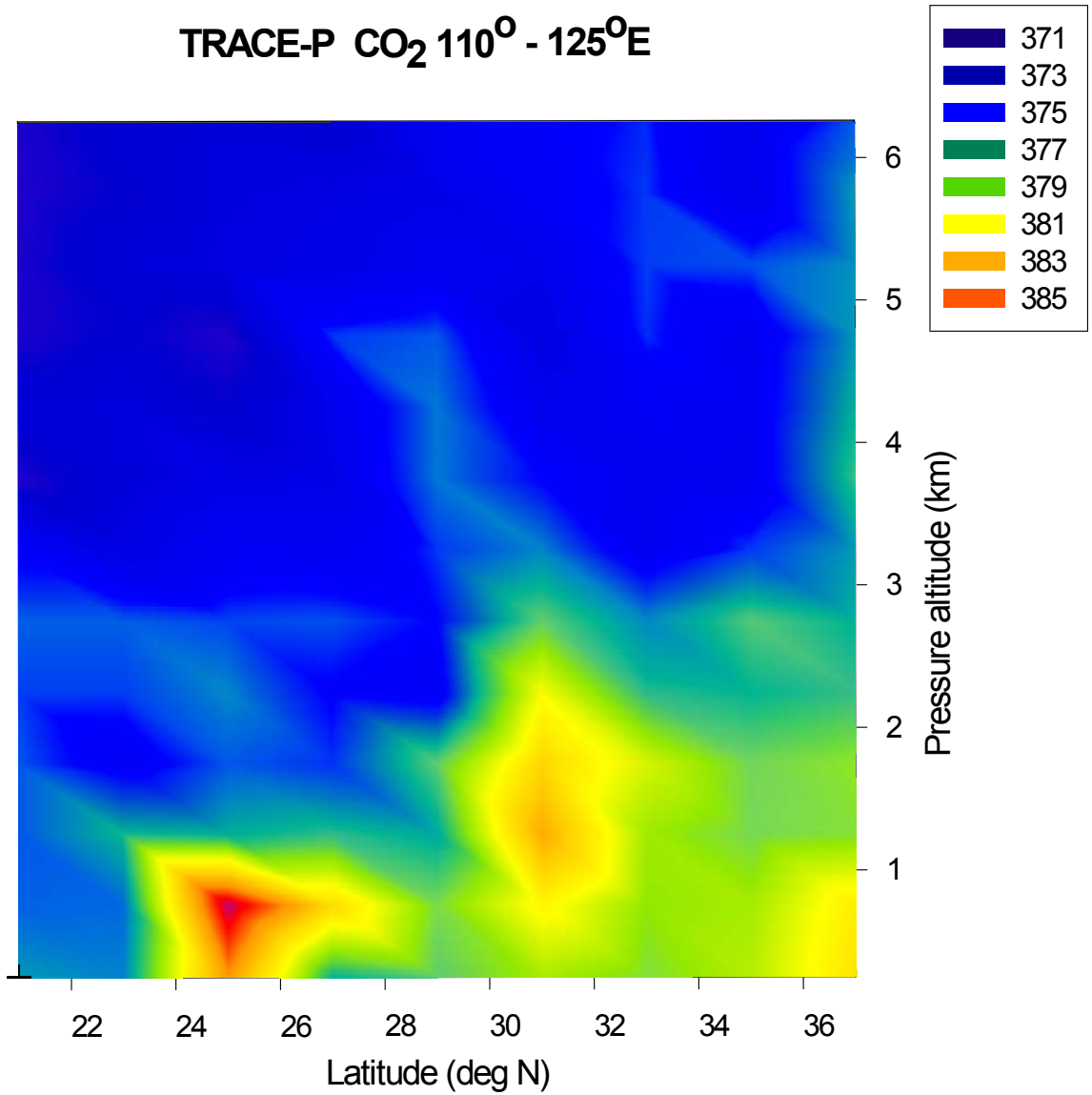

60N
50N
40N
30N
20N
10N
0
100E
110E
120E
130E
140E
150E
160E
Ryori
綾里
TAP
Minamitorishima
南鳥島
Hateruma
Yonagunijima
与那国島

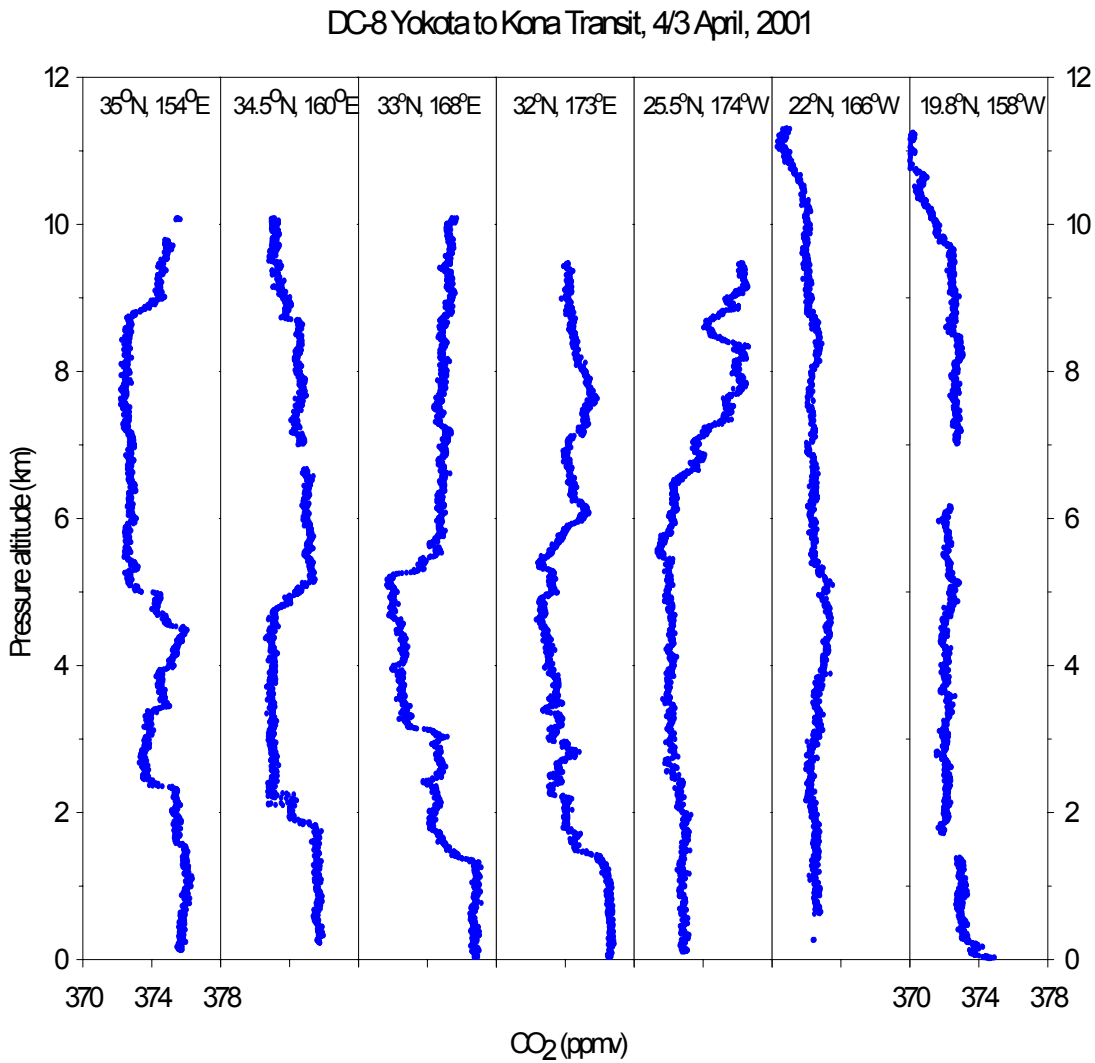

CH4 (ppbv)
1800
1900
2000
2100
CO (ppbv), Wind direction (deg)
45
90
135
180
225
270
315
360
2.5
2.0
1.5
1.0
0.5
0.0
Pressure altitude (km)
θ
WD
TAP CO2
368
370
372
374
376
378
380
382
CO2 (ppmv)
250
260
270
280
290
300
Potential temperature, θ (K)

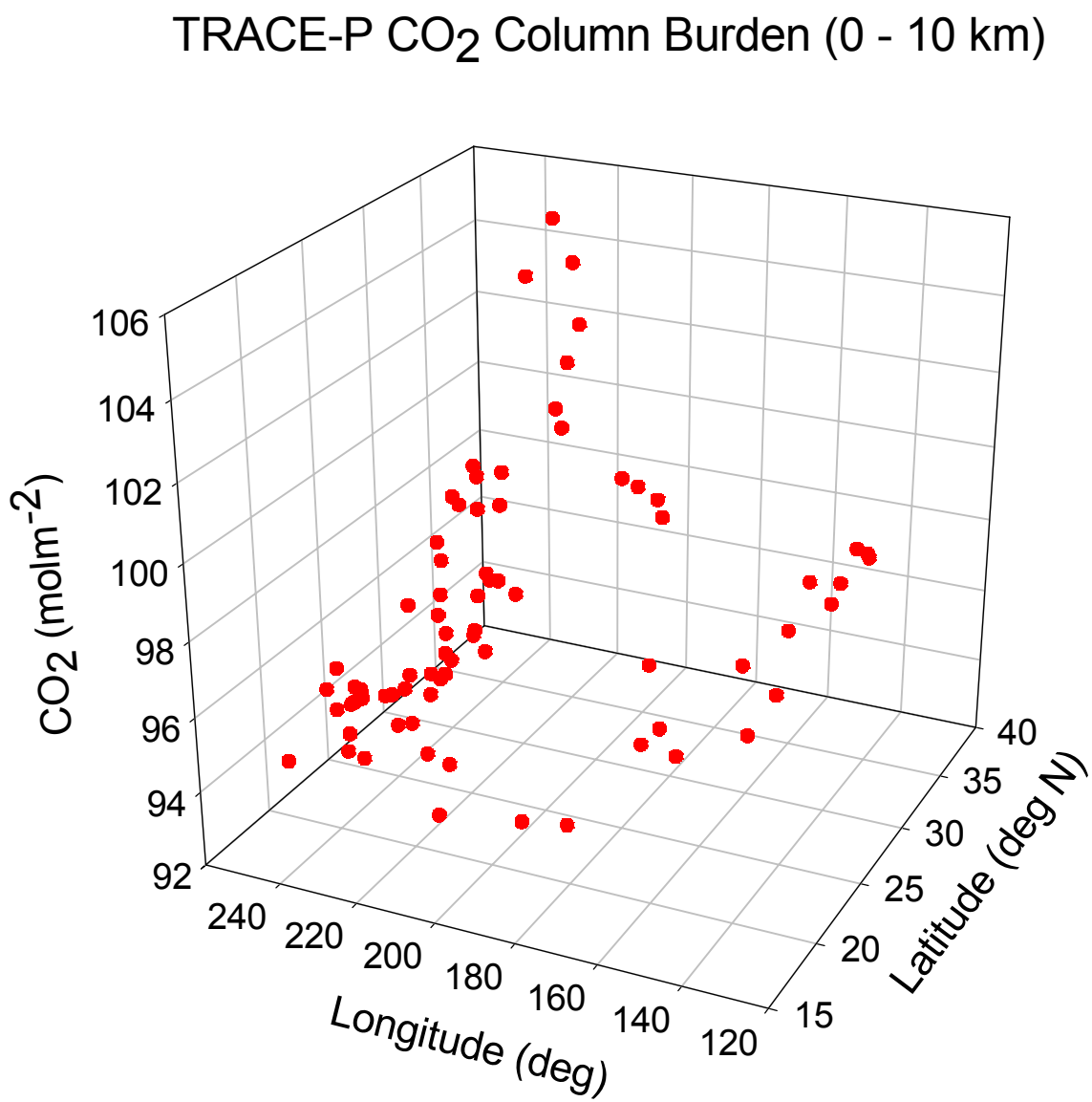
TAPwCH4.jnb

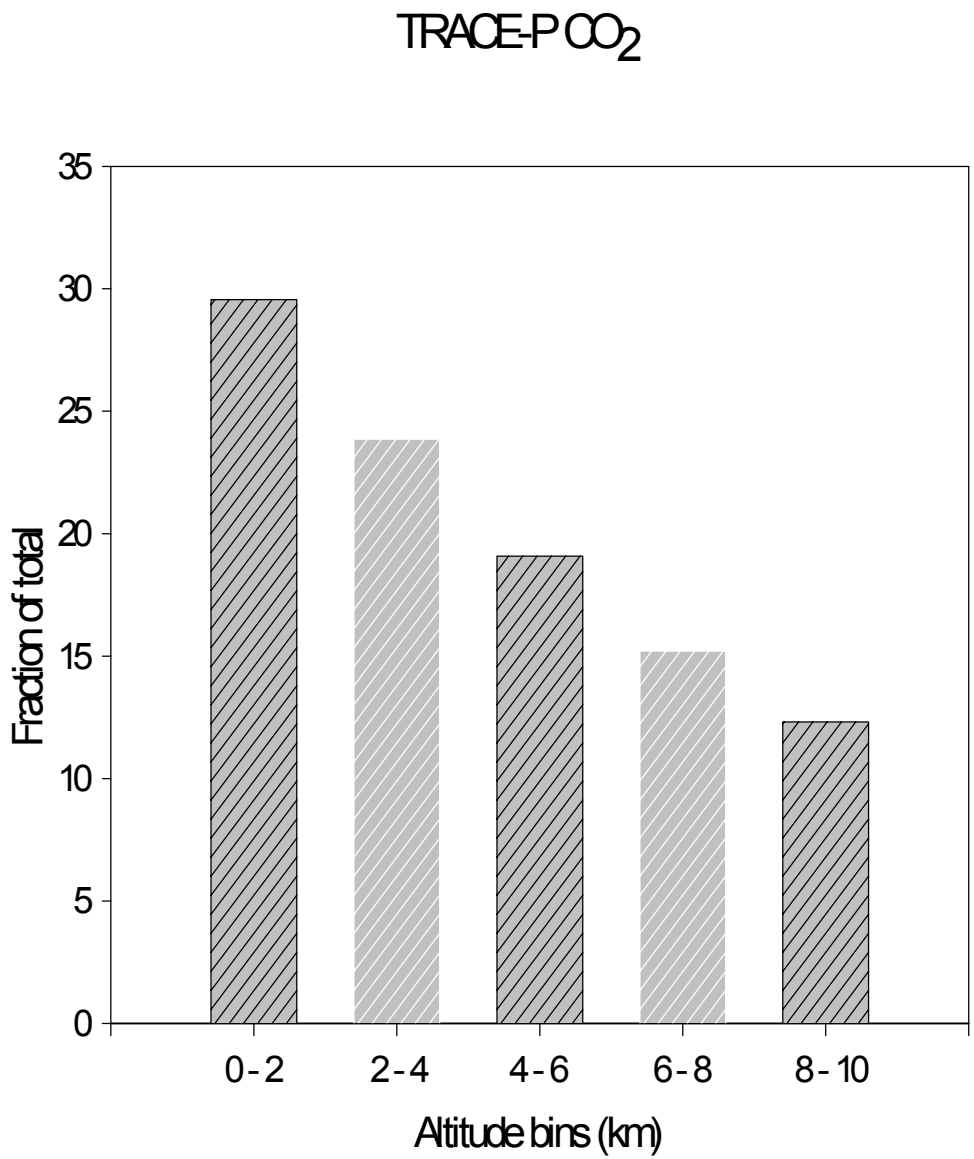
Precision Constraints on Remote CO_2 Measurements

Vay and Anderson


TRACE-P CO2 110O - 125OE
371
373
375
377
379
381
383
385
6
5
4
3
2
1
Pressure altitude (km)
22
24
26
28
30
32
34
36
Latitude (deg N)


DC-8 Yokota to Kona Transit, 4/3 April, 2001
35°N, 154°E
34.5°N, 160°E
33°N, 168°E
32°N, 173°E
25.5°N, 174°W
22°N, 166°W
19.8°N, 158°W
Pressure altitude (km)
0
2
4
6
8
10
12
370
374
378
CO2 (ppmv)


TRACE-P CO2 Column Burden (0 - 10 km)
CO2 (molm-2)
106
104
102
100
98
96
94
92
240
220
200
180
160
140
120
Longitude (deg)
15
20
25
30
35
40
Latitude (deg N)


TRACE-P CO2
35
30
25
20
15
10
5
0
Fraction of total
0-2
2-4
4-6
6-8
8-10
Altitude bins (km)