

Supplement of Atmos. Chem. Phys., 19, 1915–1939, 2019
<https://doi.org/10.5194/acp-19-1915-2019-supplement>
© Author(s) 2019. This work is distributed under
the Creative Commons Attribution 4.0 License.



Supplement of

Upper tropospheric CH₄ and CO affected by the South Asian summer monsoon during the Oxidation Mechanism Observations mission

Laura Tomsche et al.

Correspondence to: Laura Tomsche (laura.tomsche@mpic.de)

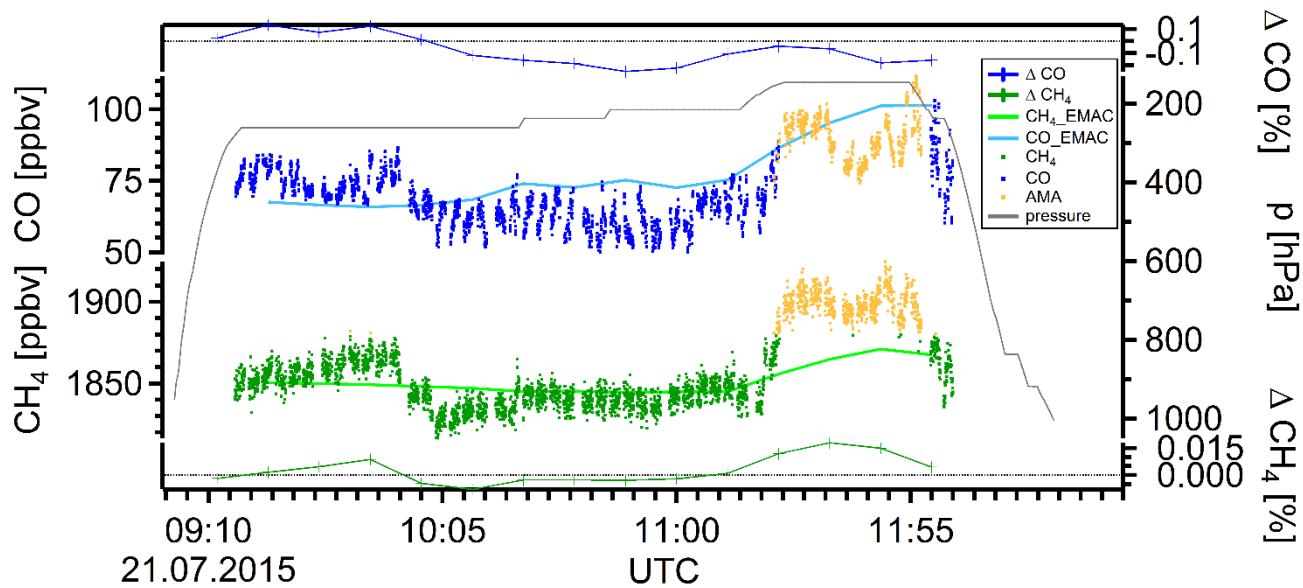
The copyright of individual parts of the supplement might differ from the CC BY 4.0 License.

Table S1: Uncertainty for CO and CH₄ for all flights during OMO.

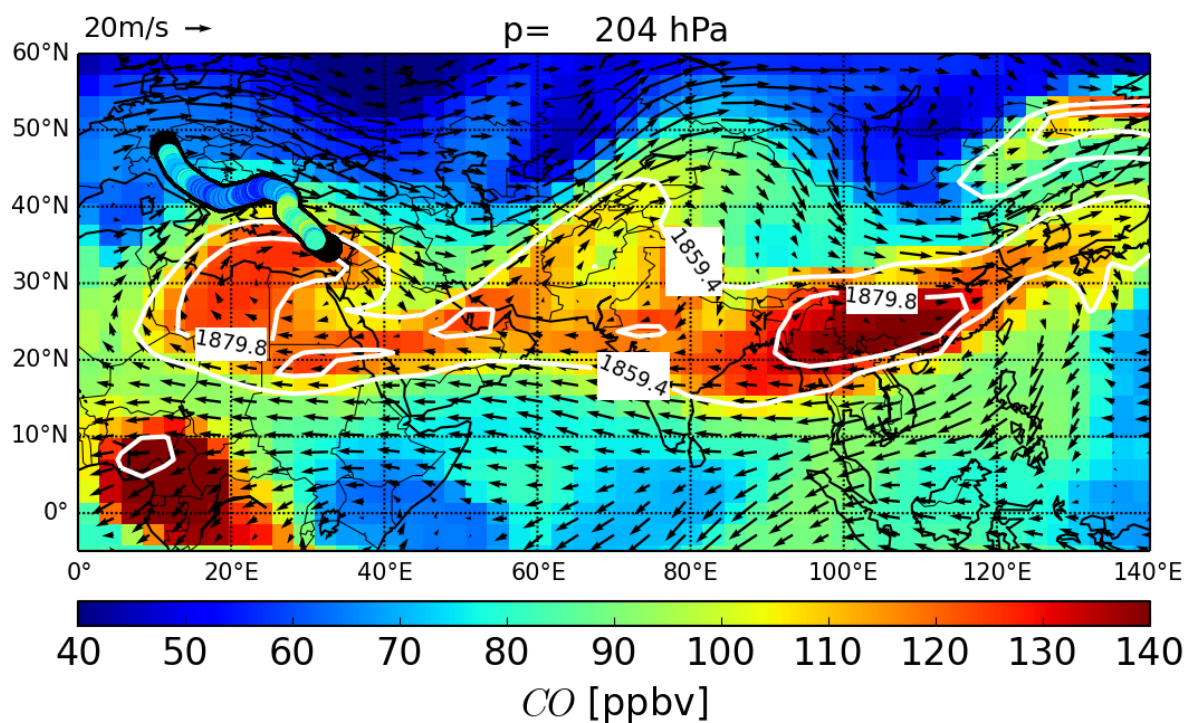
flight no.	date	CO uncertainty [%]	CH ₄ uncertainty [%]
8	7.21.2015	3.52	0.33
9	7.25.2015	3.47	0.34
10	7.28.2015	3.23	0.33
11	8.1.2015	3.41	0.23
12/13	8.6.2015	19.42	0.26
14	8.8.2015	4.64	0.24
15/16	8.9.2015	4.08	0.19
17/18	9.10.2015	3.78	0.21
19	8.13.2015	7.89	0.34
20	8.15.2015		0.19
21	8.18.2015	5.26	0.21
22	8.23.2015		0.20
23	8.25.2015	3.61	0.31
24	8.27.2015		0.23

Detailed overview of all OMO flights for $p > 300$ hPa:

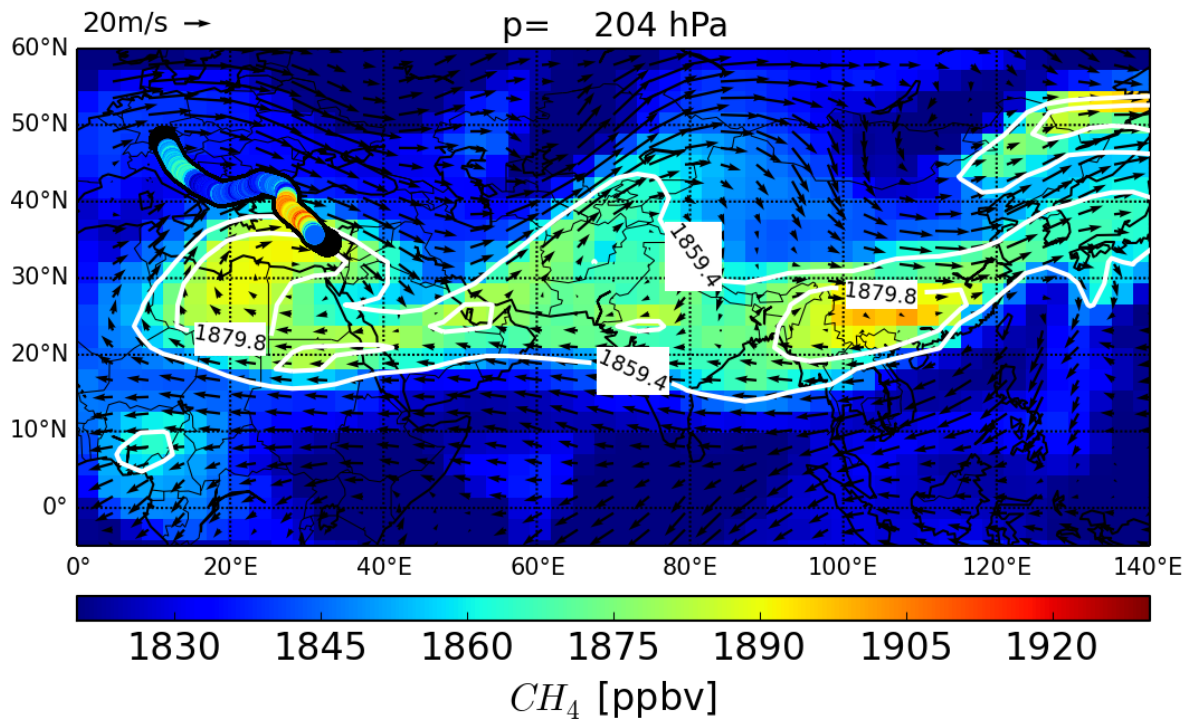
- 5 a) CO and CH₄ in situ and EMAC data along the flight track. The AMA is colour coded due to $c[\text{CH}_4] \geq 1879.8$ ppb (yellow). Further the deviation between EMAC and in situ data are shown for CO and CH₄. Additionally, the flight altitude is in grey.
- b) 204 hPa EMAC data for CO and wind field and in situ CO along the flight track. White contours represent CH₄ threshold and background values according to section 3.1.
- c) 204 hPa EMAC data for CH₄ and wind field and in situ CH₄ along the flight track. White contours represent CH₄ threshold and background values according to section 3.1.
- 10 d) 10 day back centroid trajectories for 10 min releases along the flight track (black); colour coded is the altitude in hPa. Triangles are back trajectories for CH₄ mixing ratios above the CH₄ threshold and circles for below the CH₄ threshold.



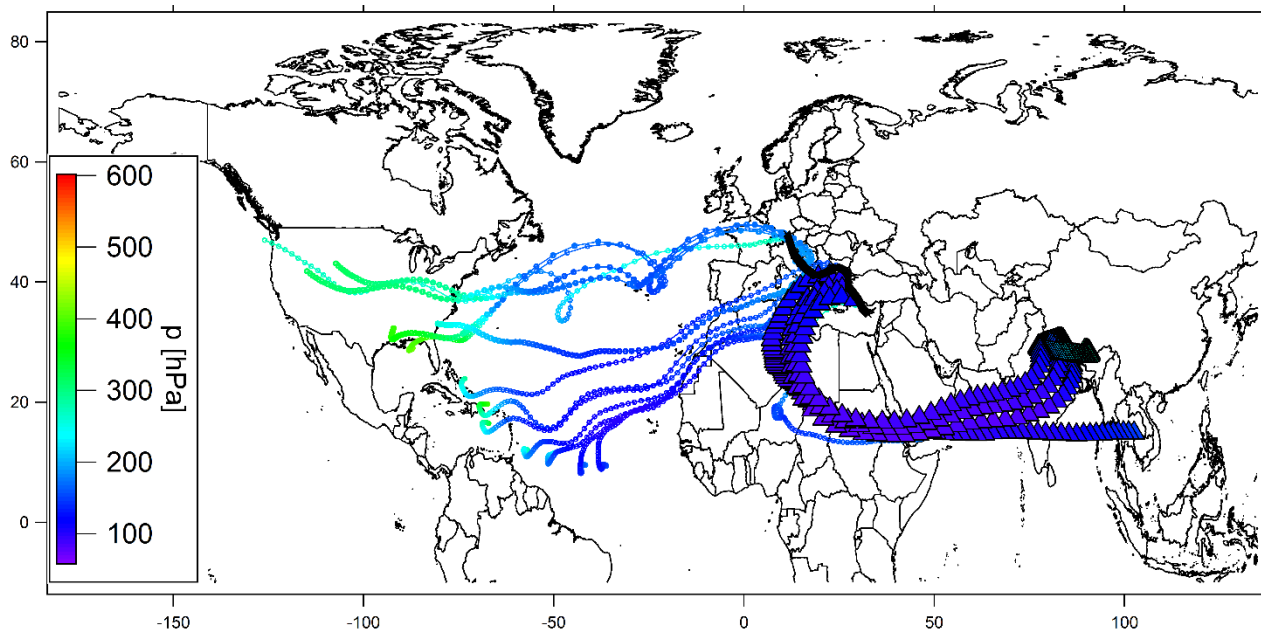
a)



b)

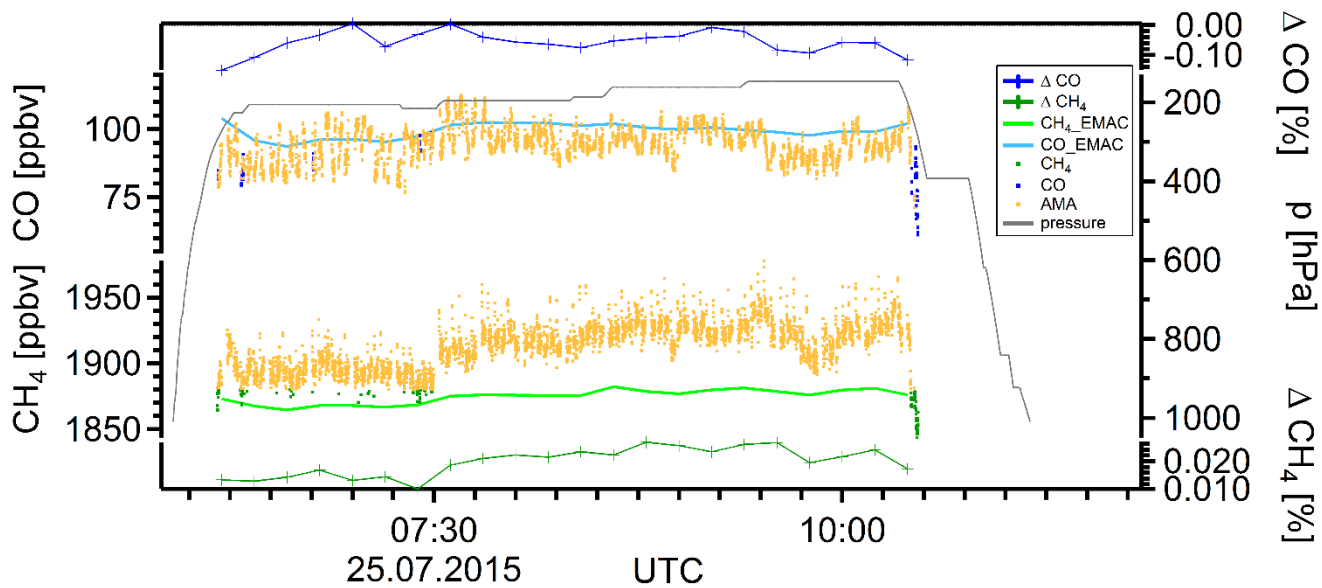


c)

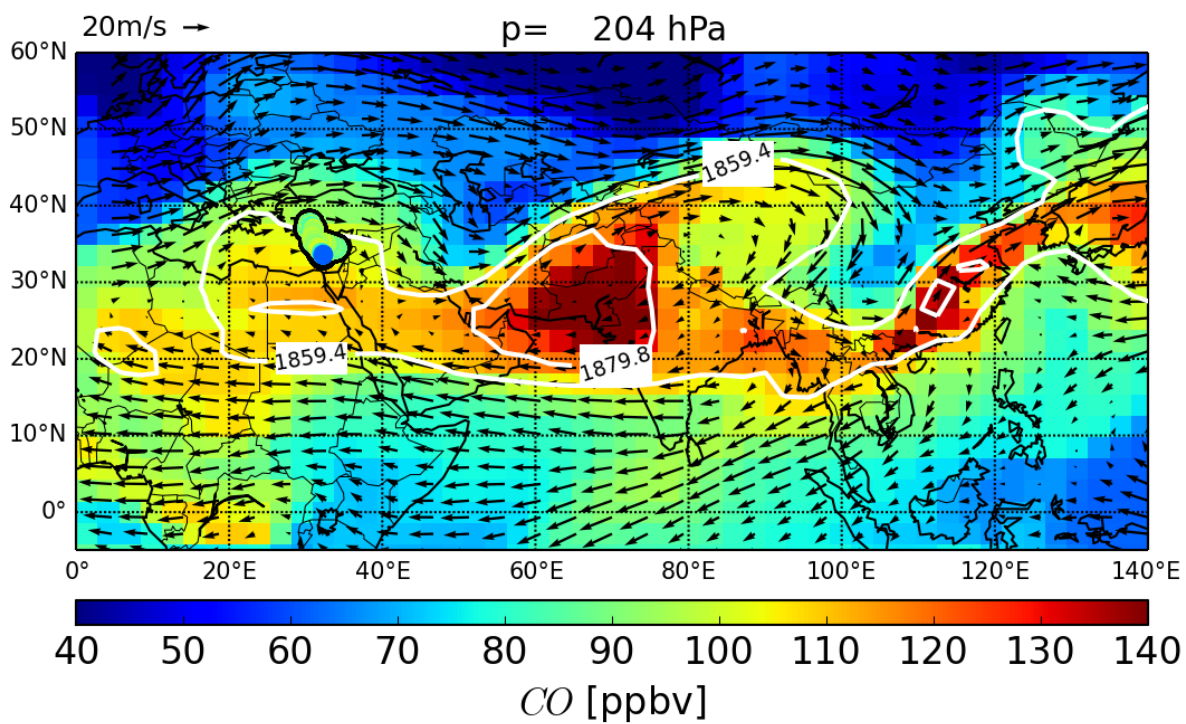


d)

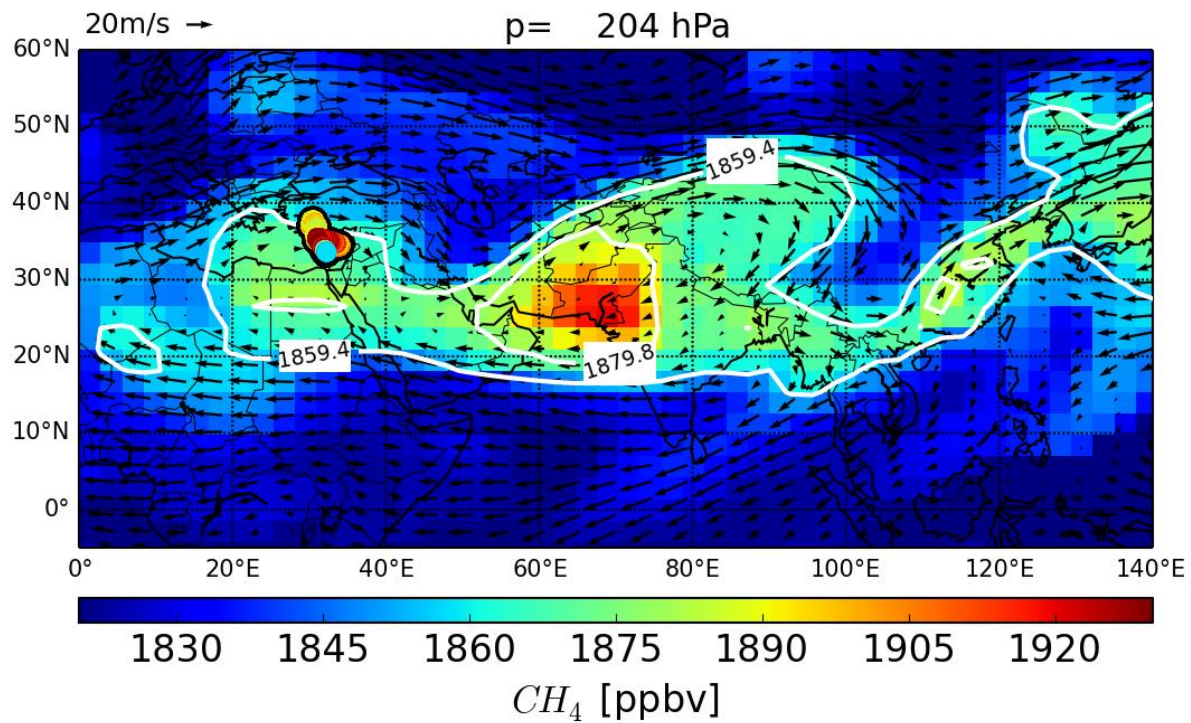
5 Figure S1: Flight 08 (07.21.2015): transfer flight from Oberpfaffenhofen to Paphos.



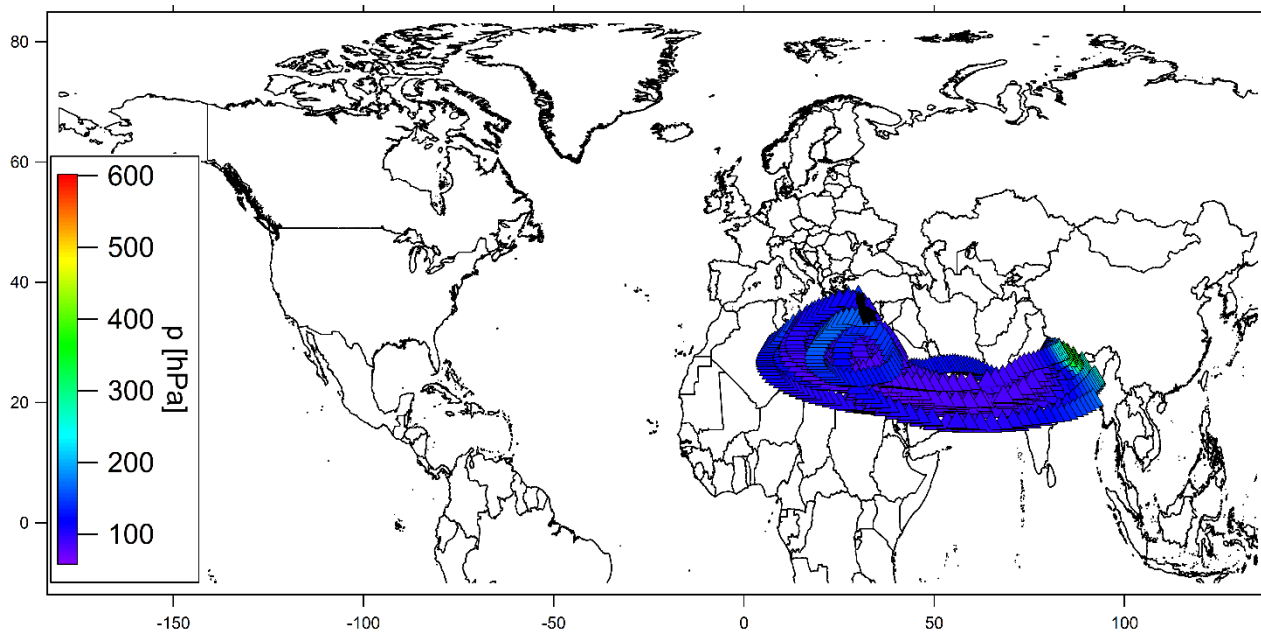
a)



b)

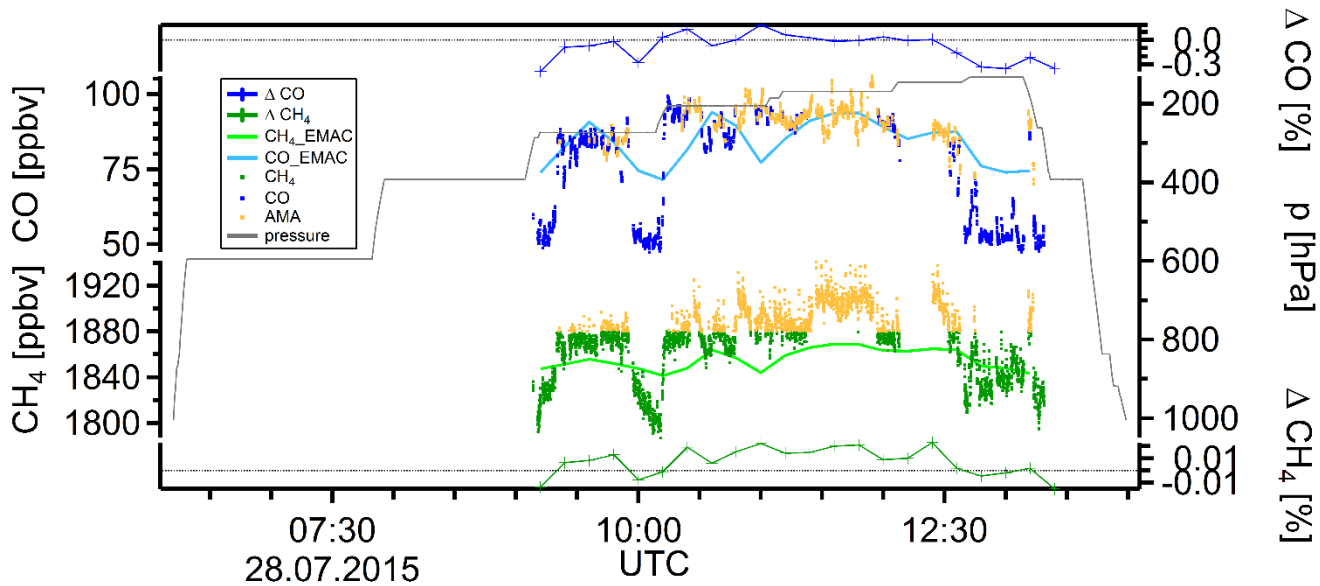


c)

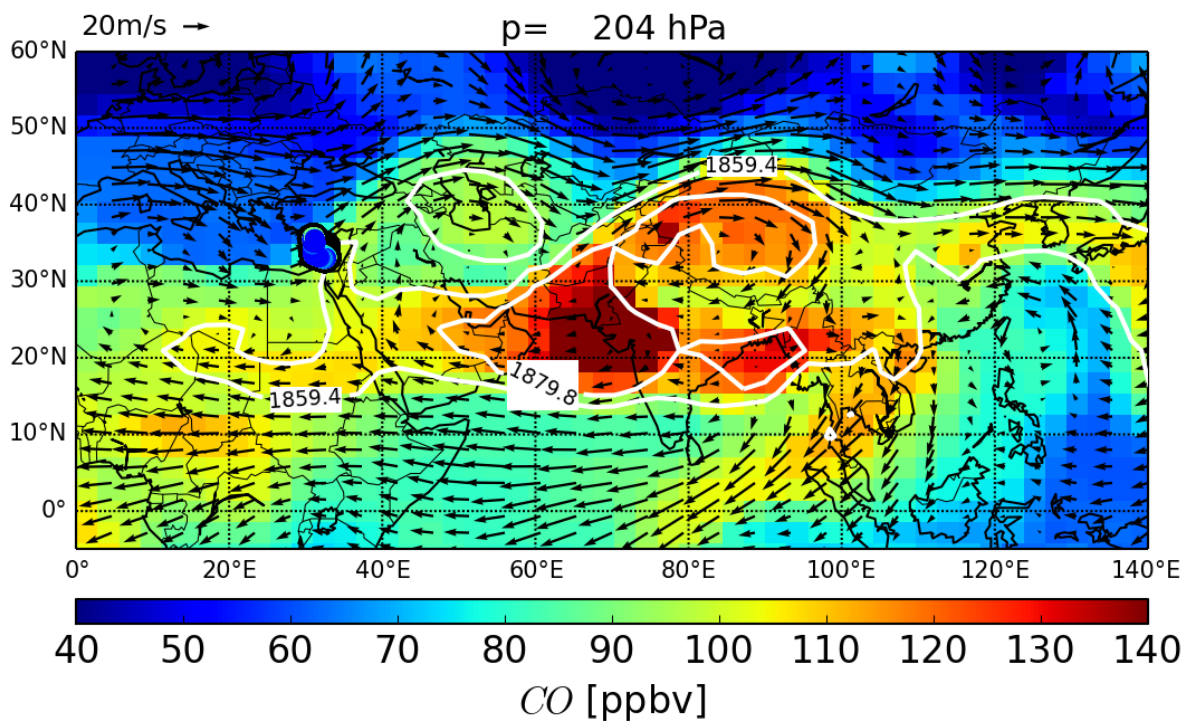


d)

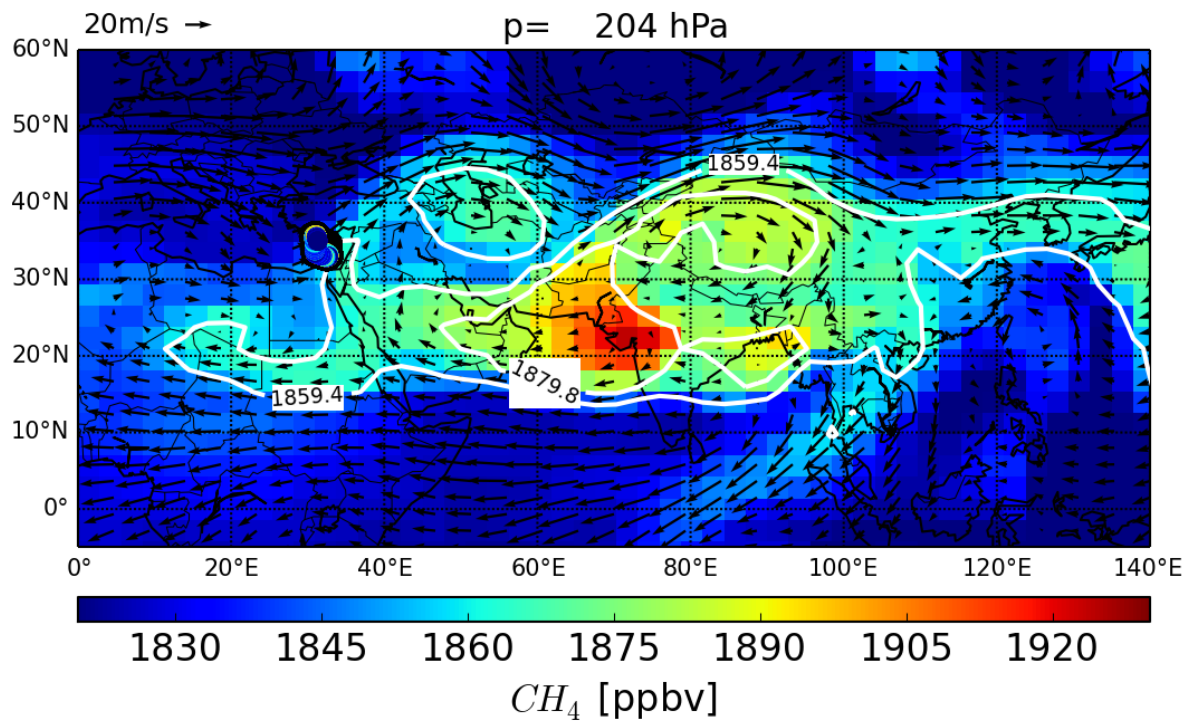
5 Figure S2: Flight 09 (07.25.2015): measurement flight from Paphos to Paphos over Cyprus.



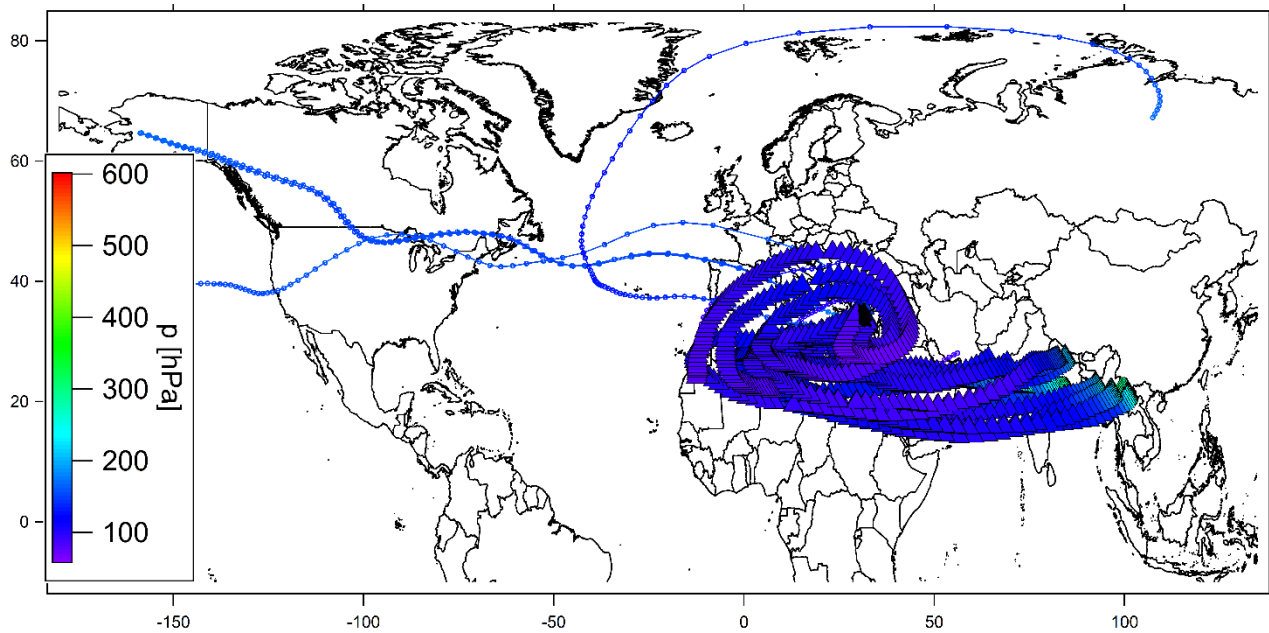
a)



b)

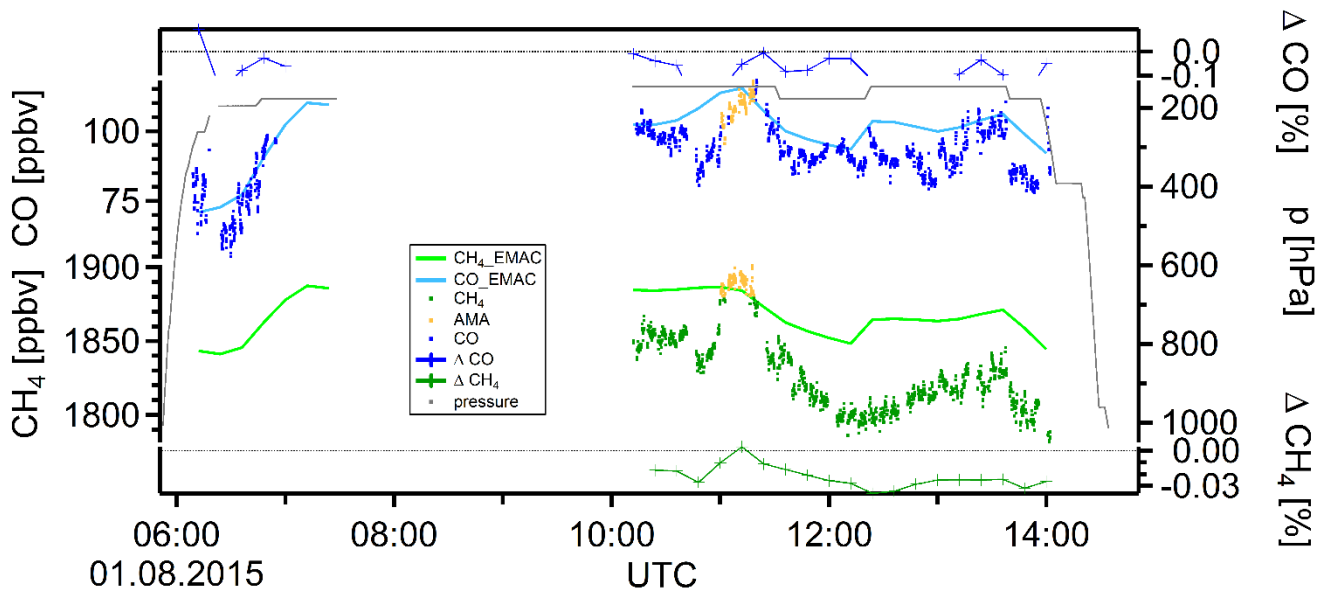


c)

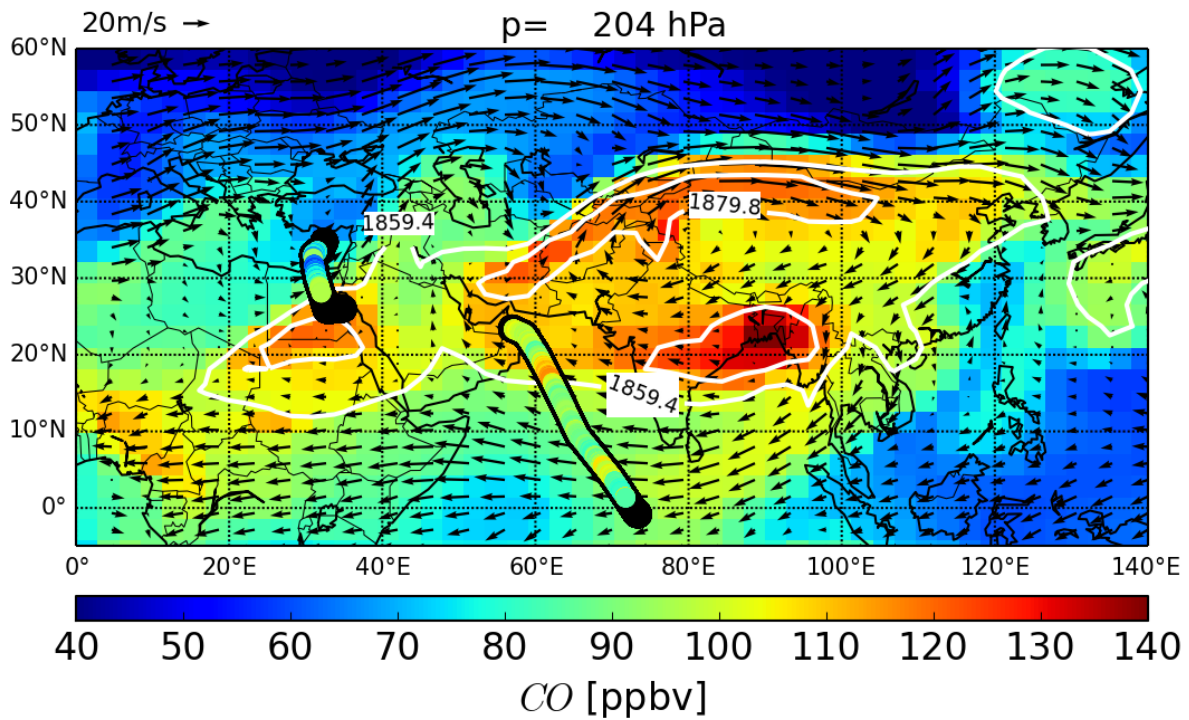


d)

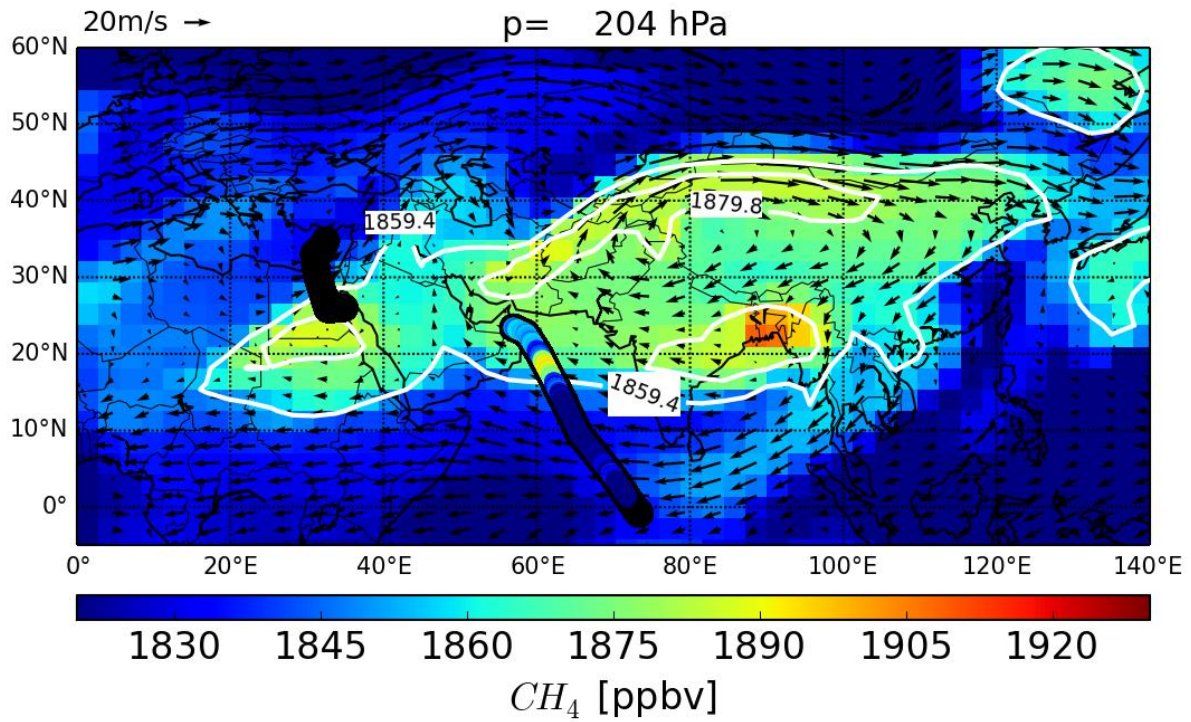
5 Figure S3: Flight 10 (07.28.2015): measurement flight from Paphos to Paphos over Cyprus.



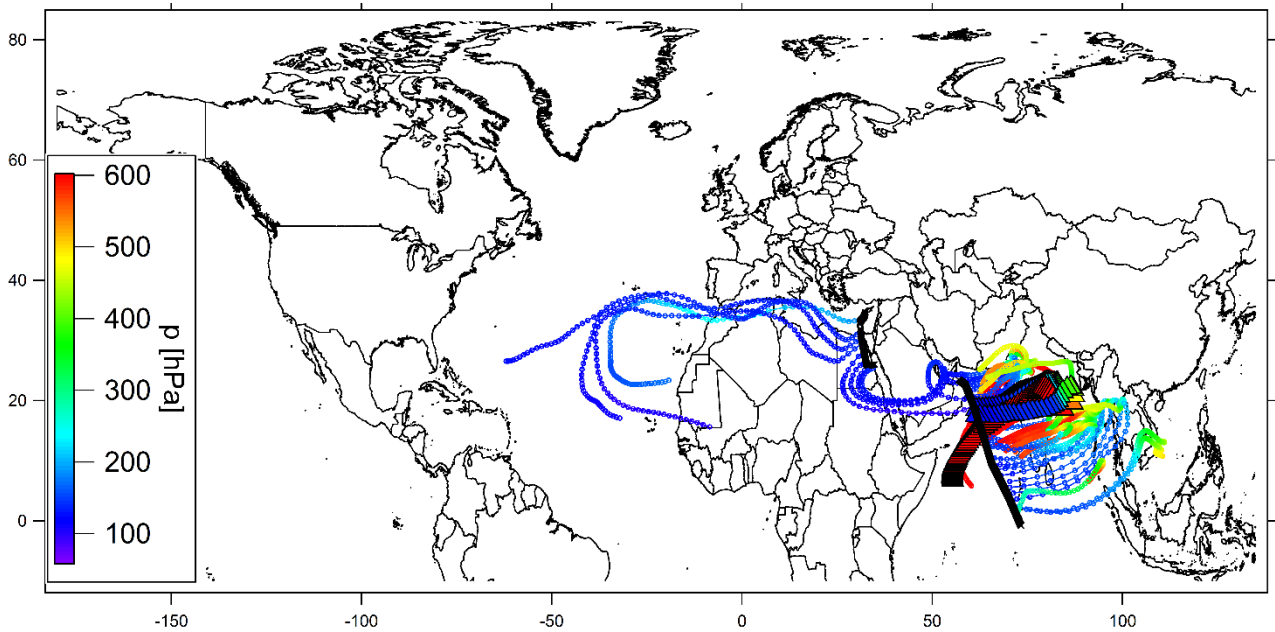
a)



b)

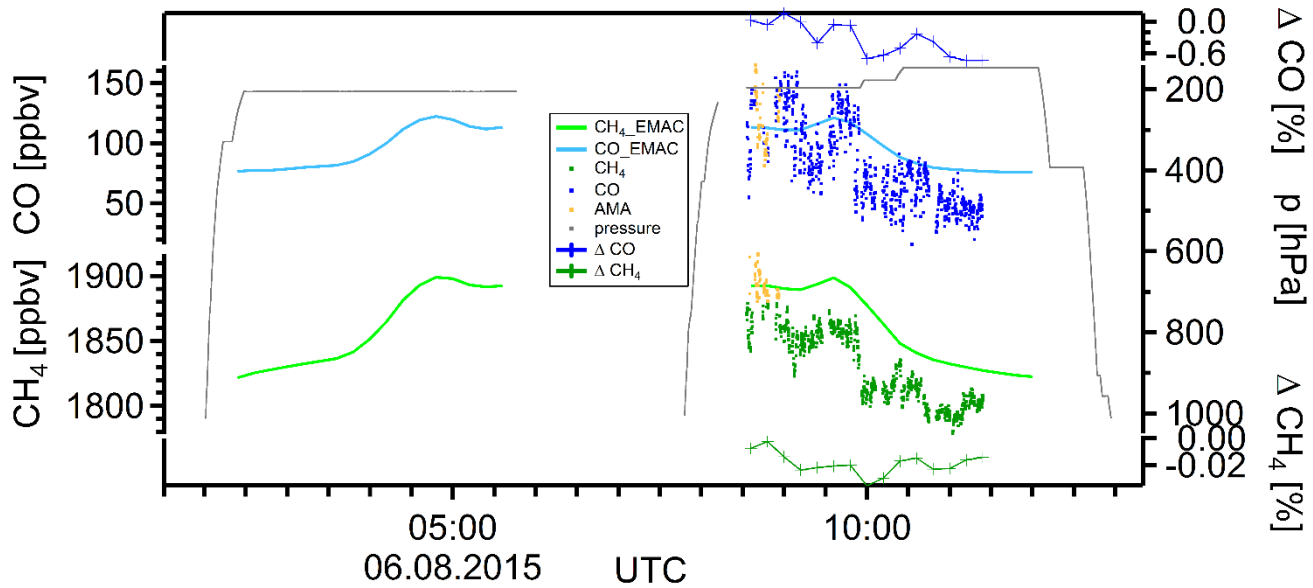


c)

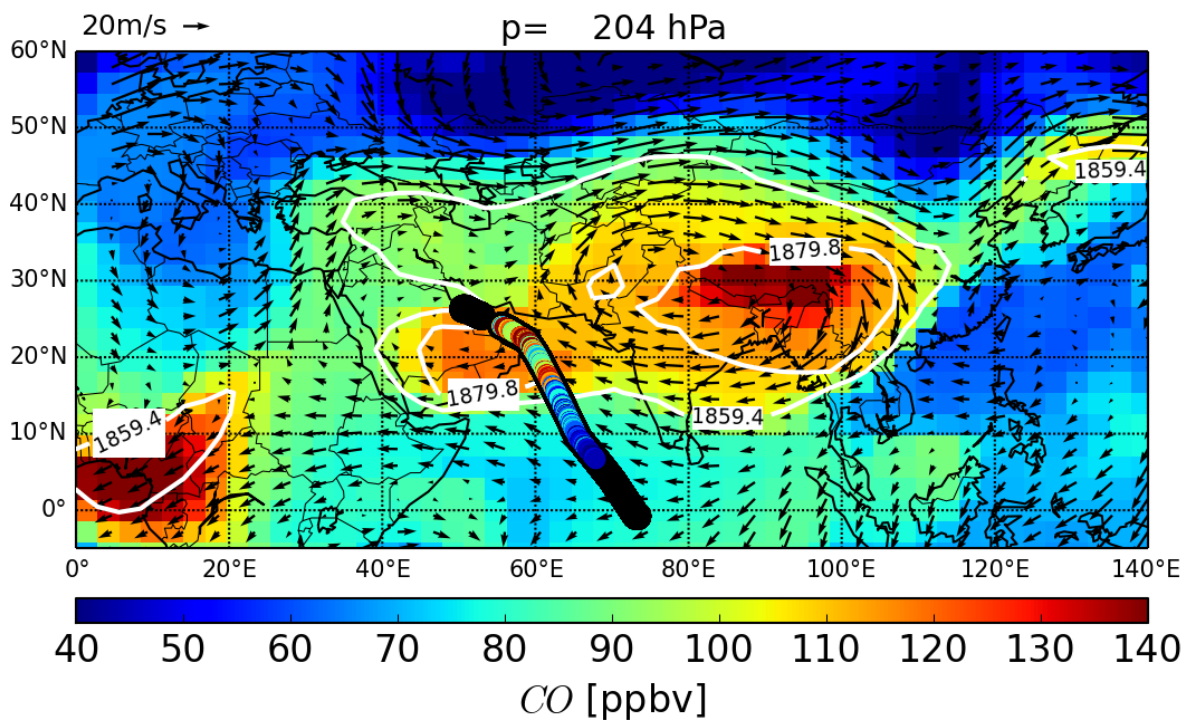


d)

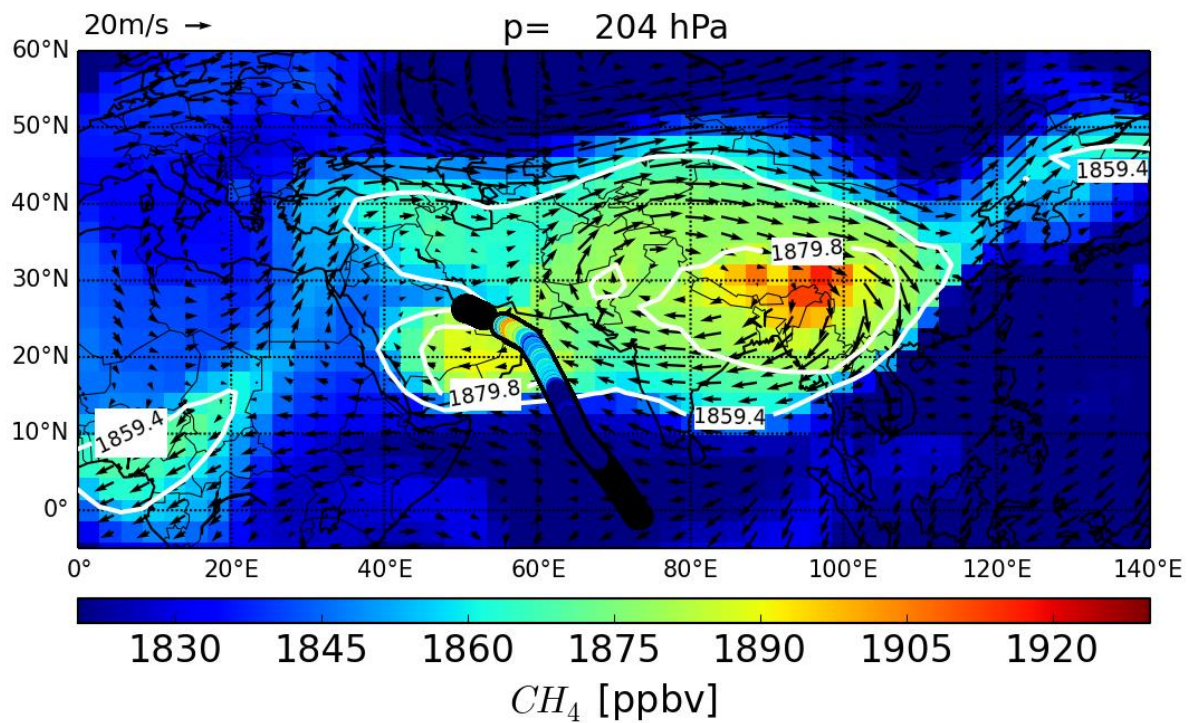
5 Figure S4: Flight 11 (08.01.2015): transfer flight from Paphos to Gan.



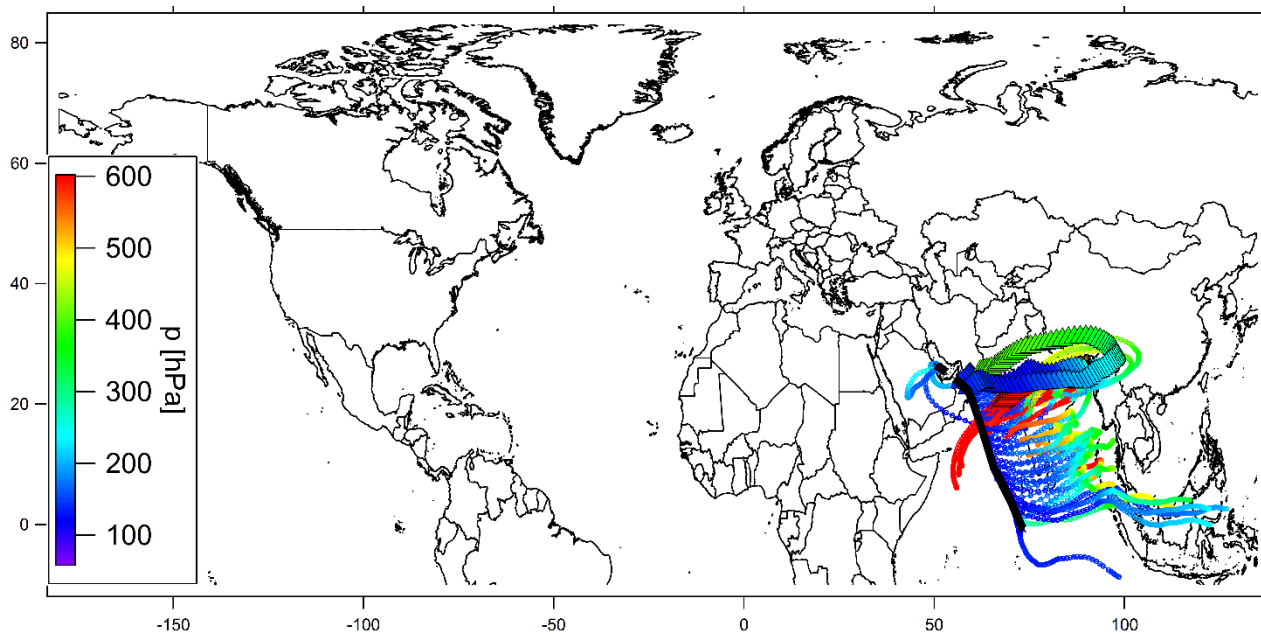
a)



b)

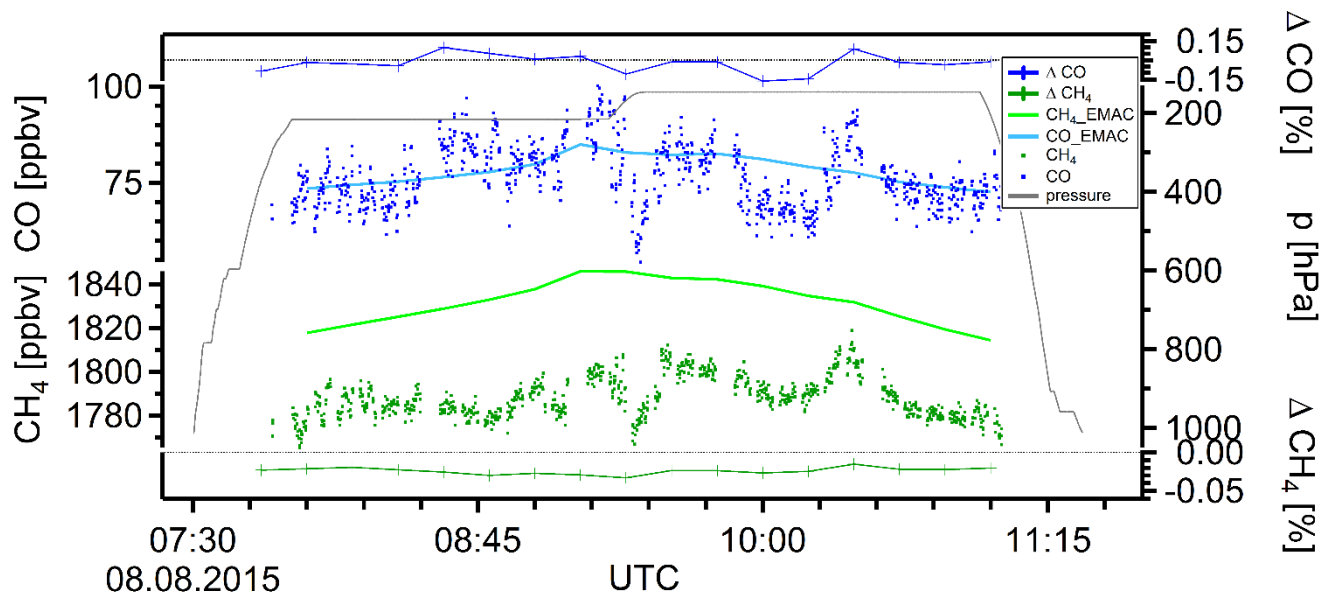


c)

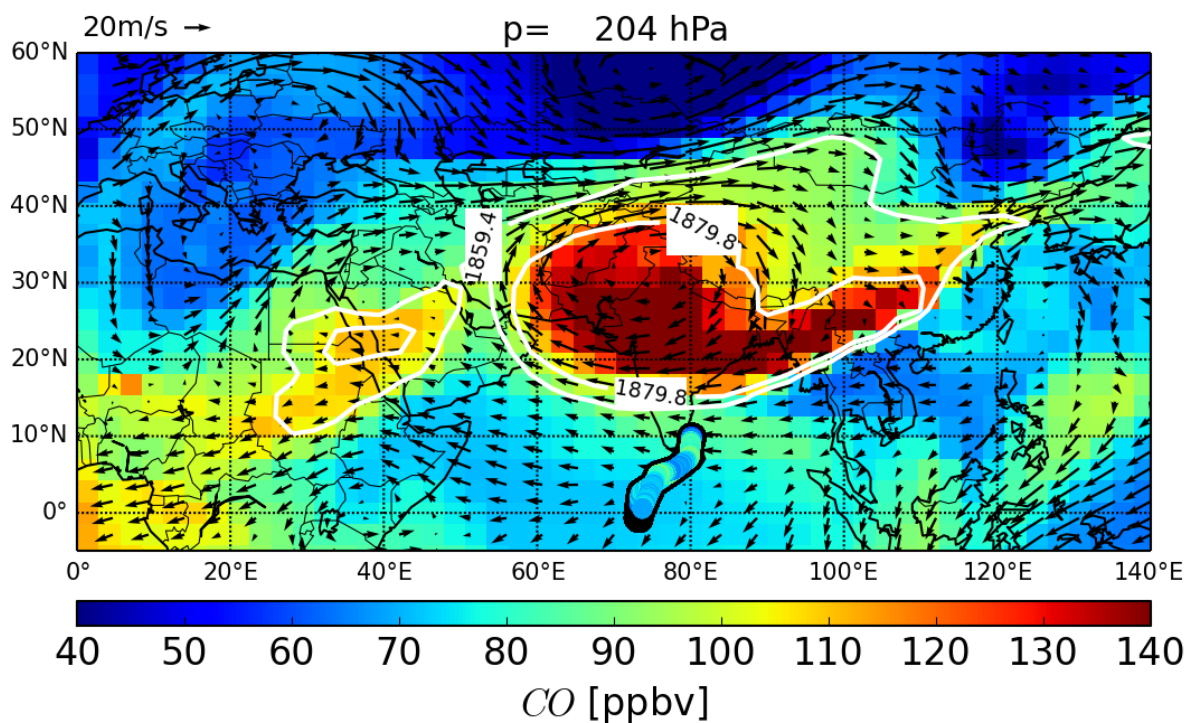


d)

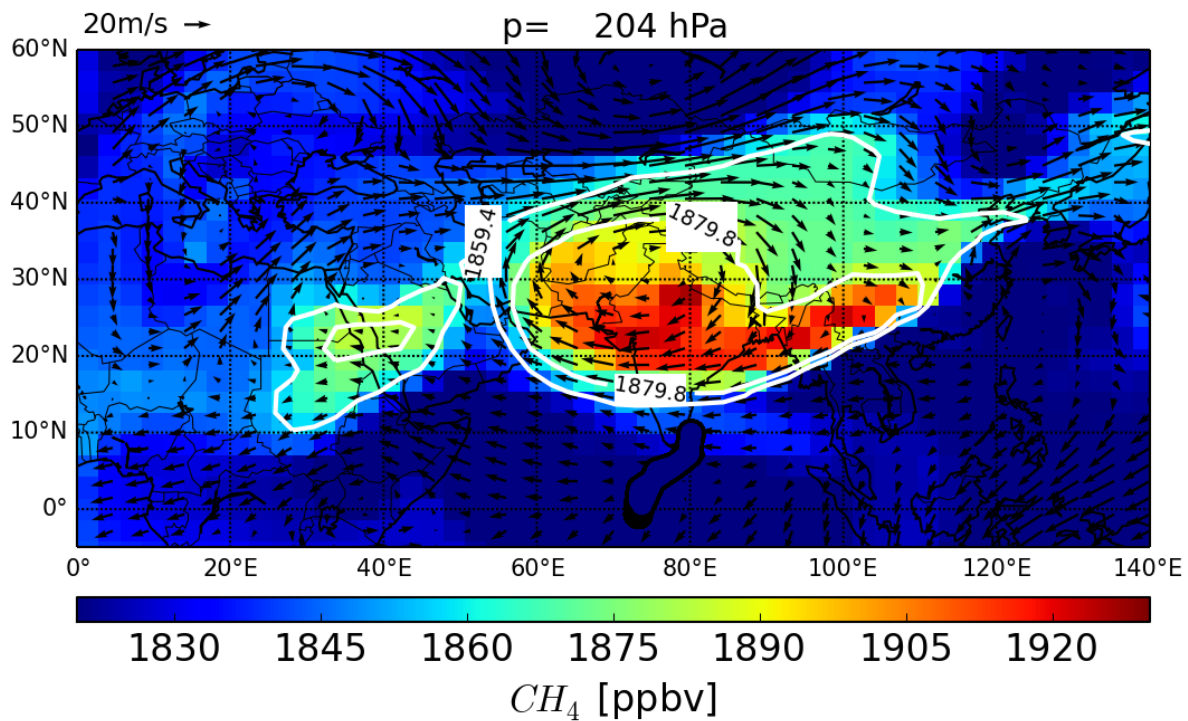
5 **Figure S5: Flight 12/13 (08.06.2015): measurement flight from Gan to Bahrain and return to Gan.**



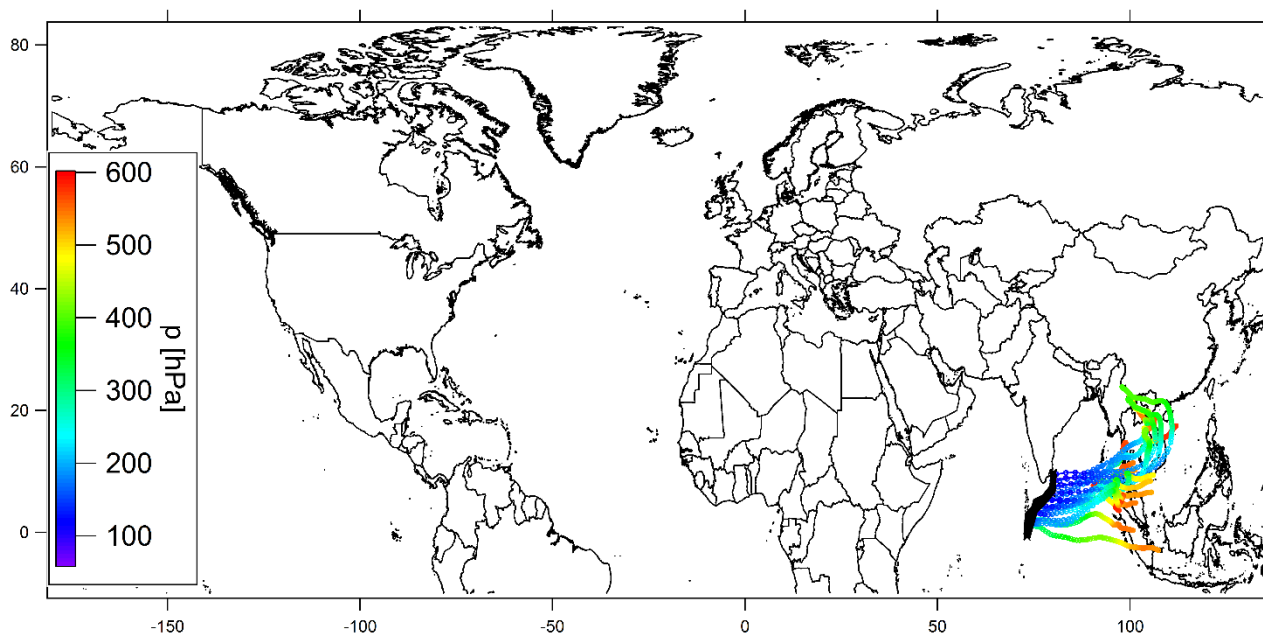
a)



b)

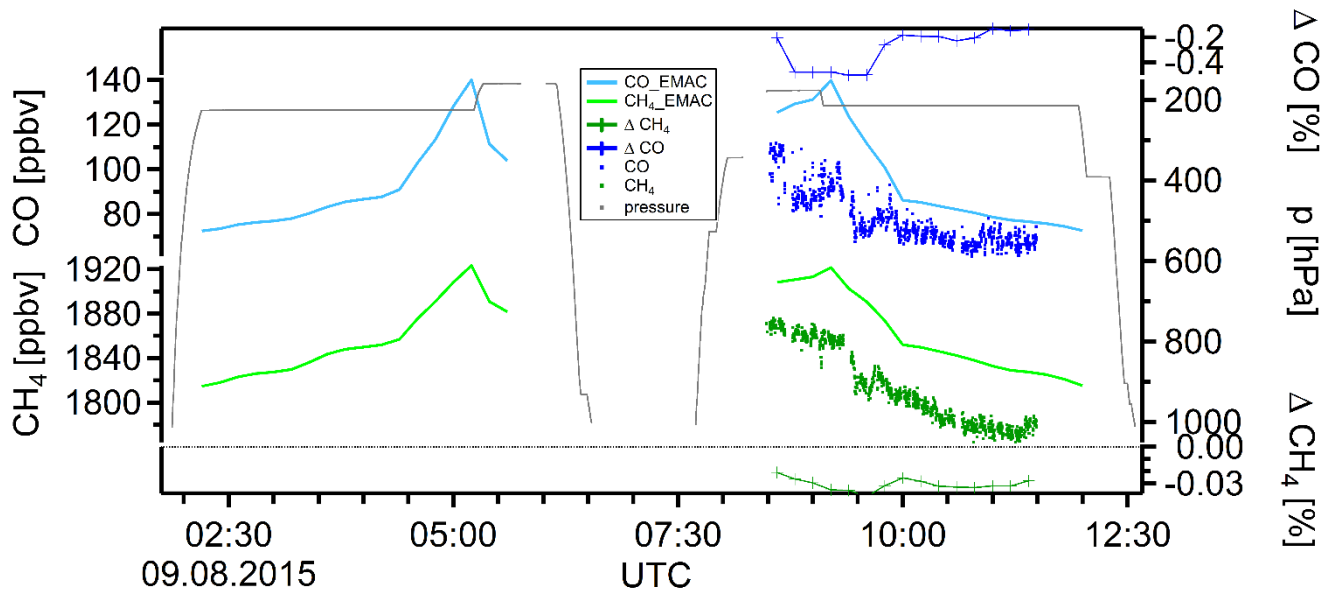


c)

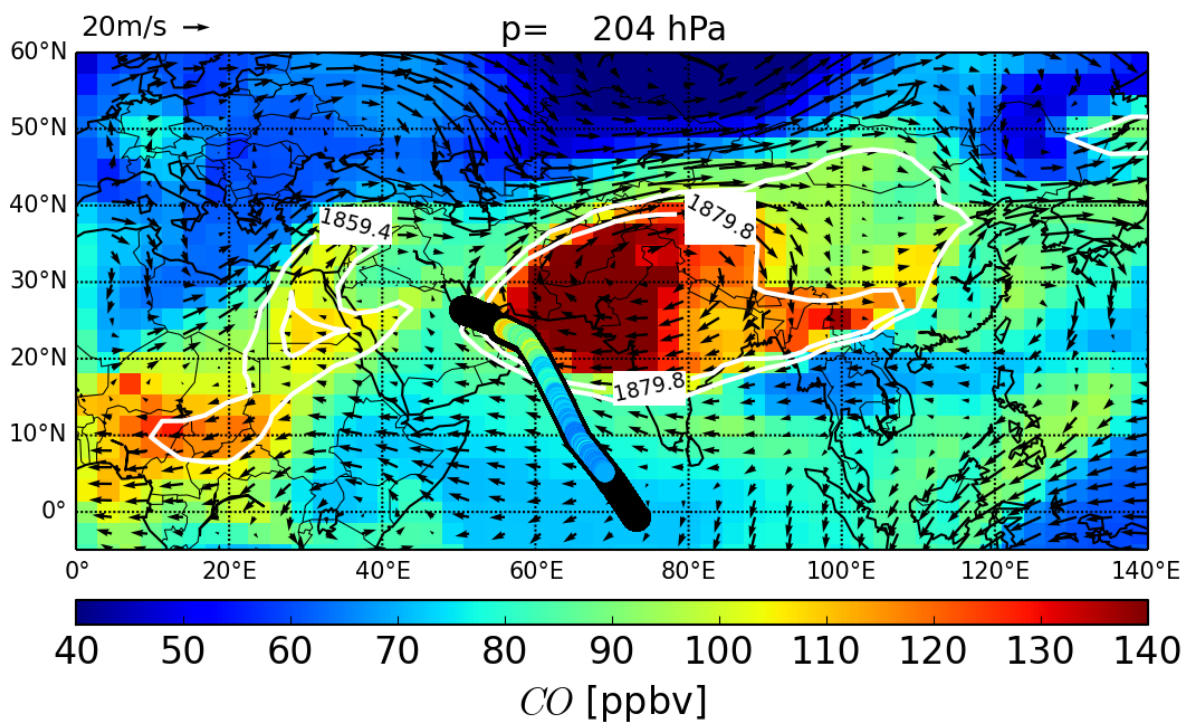


d)

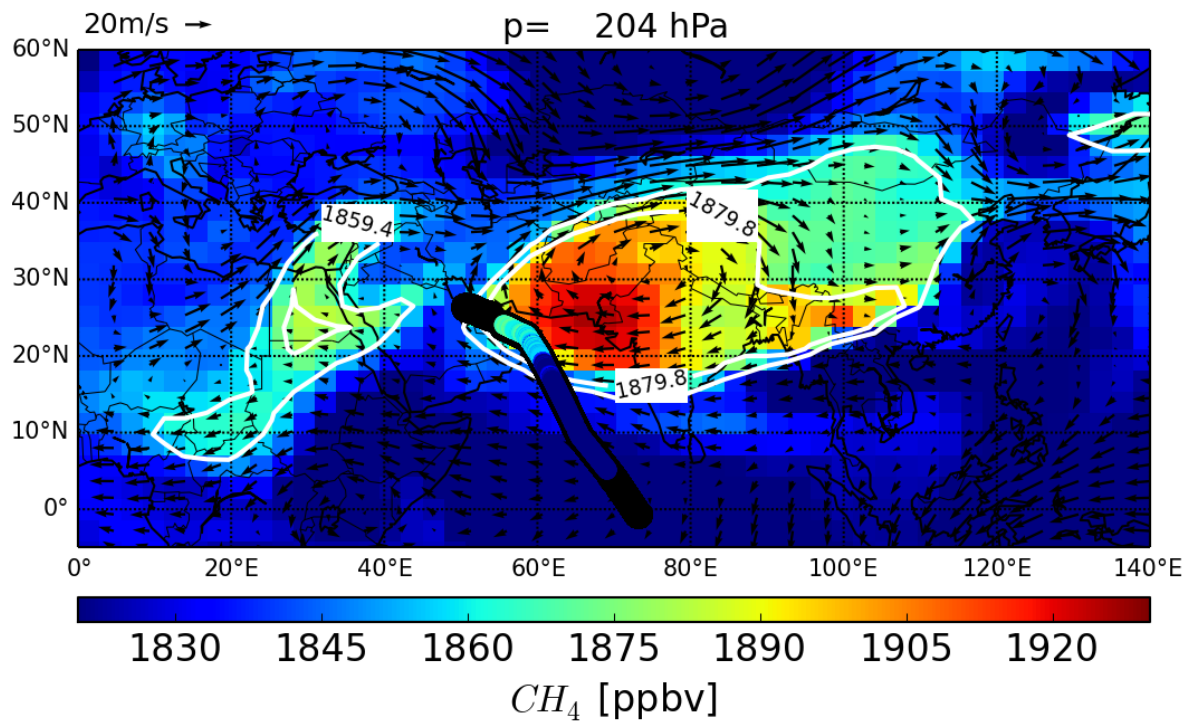
5 **Figure S6: Flight 14 (08.08.2015): measurement flight from Gan to Gan towards Sri Lanka.**



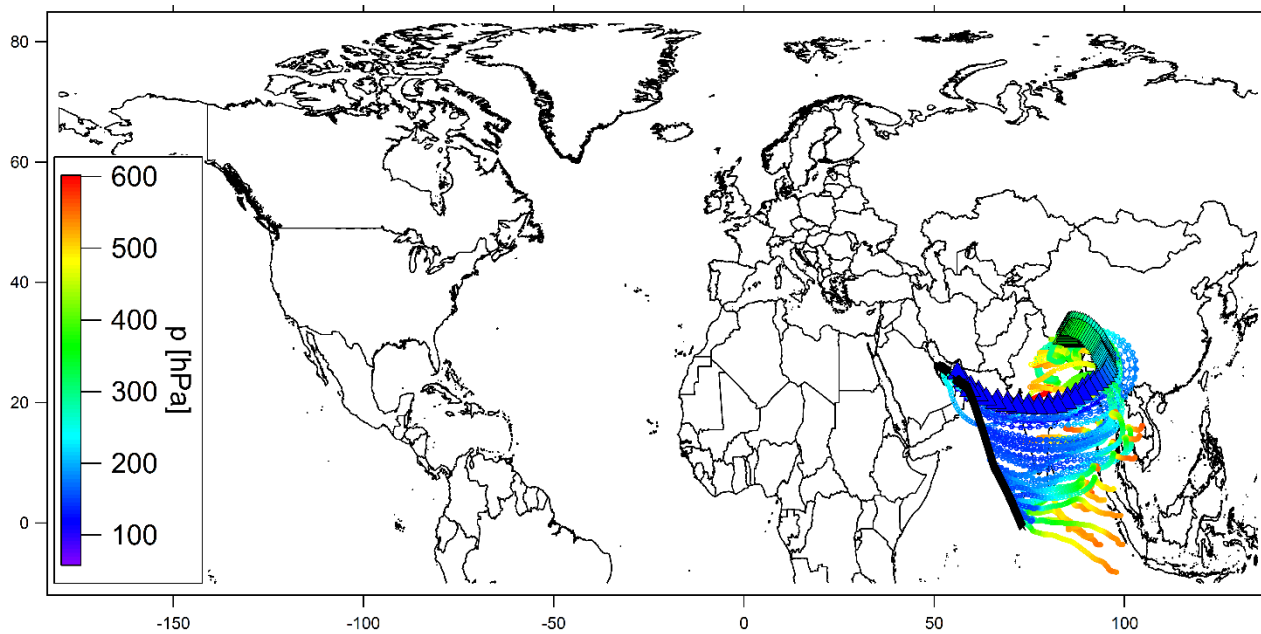
a)



b)

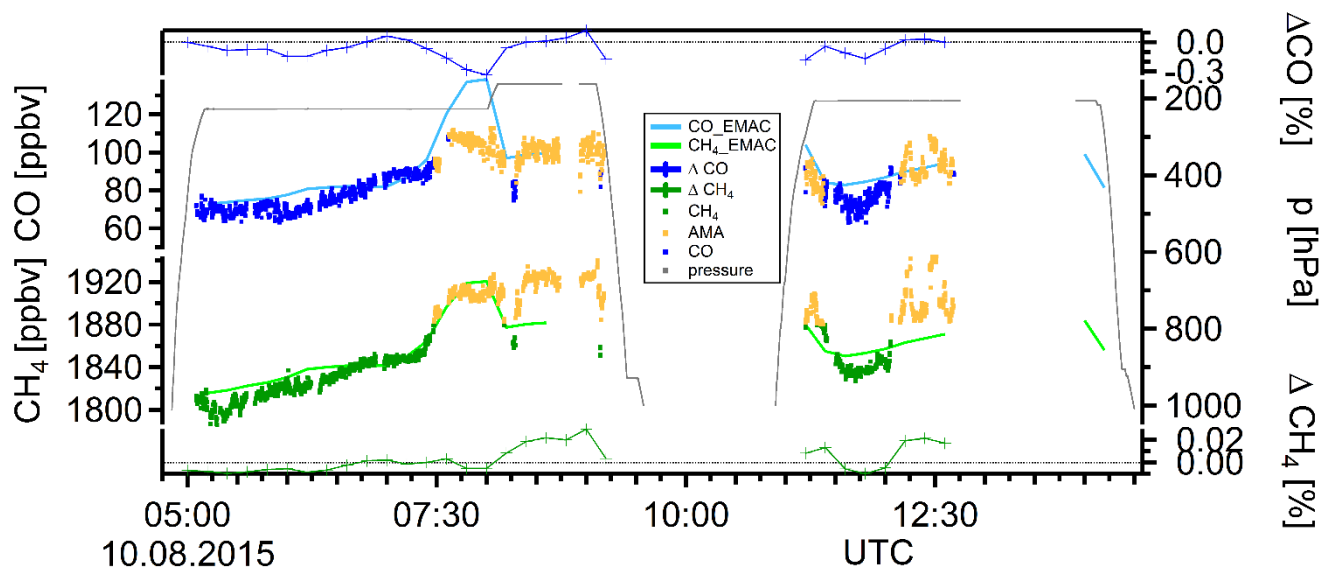


c)

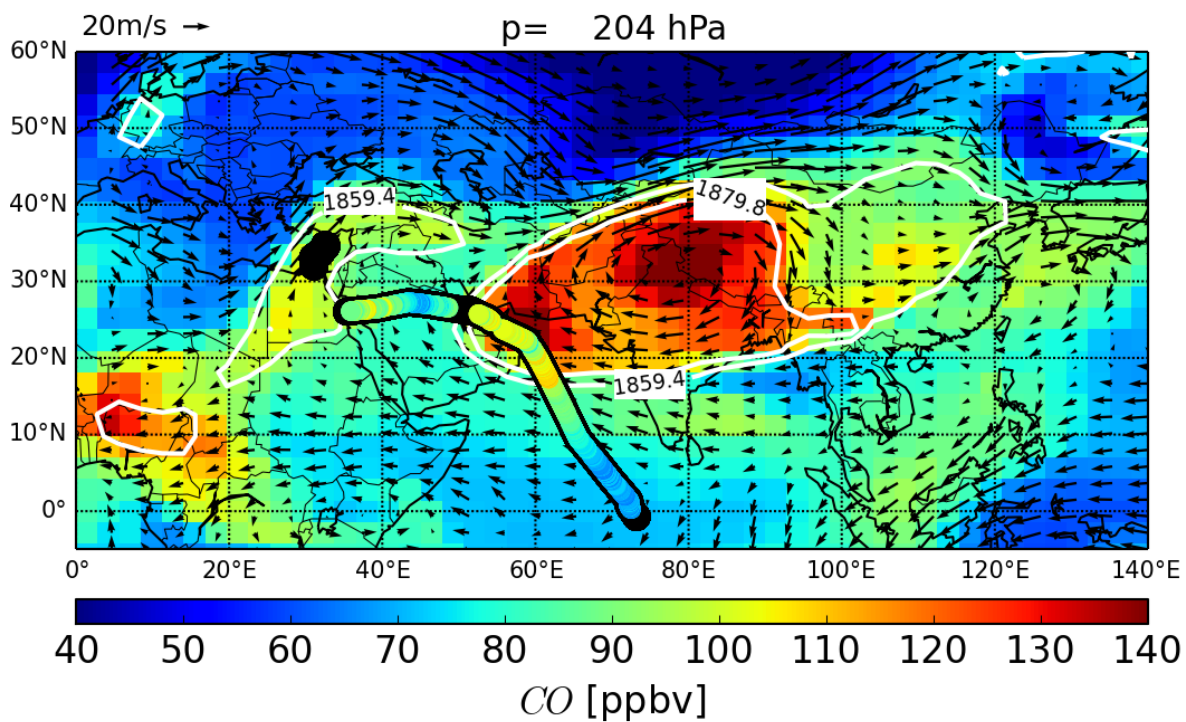


d)

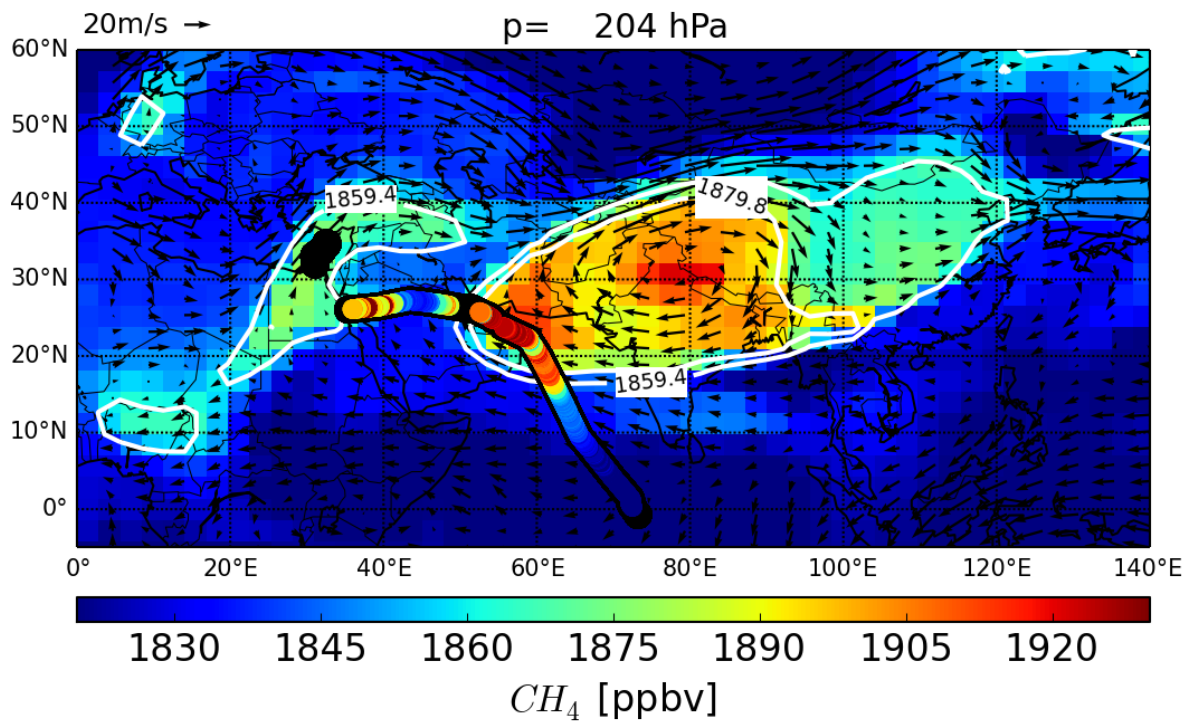
5 Figure S7: Flight 15/16 (08.09.2015): measurement flight from Gan to Bahrain and return to Gan.



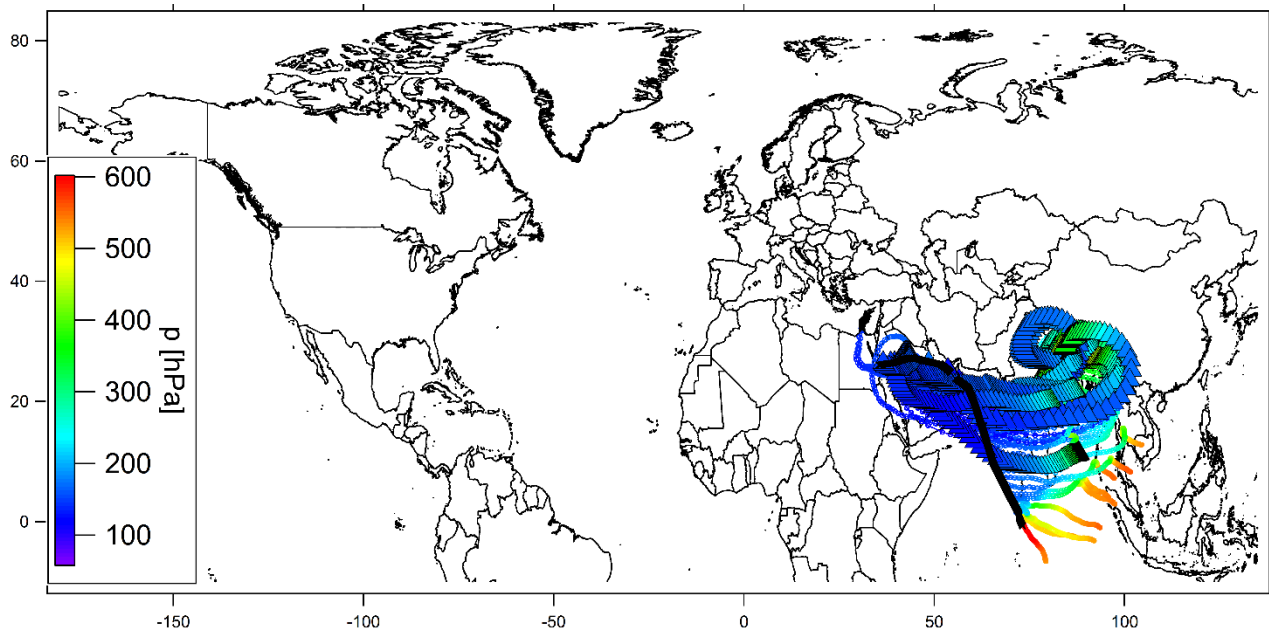
a)



b)

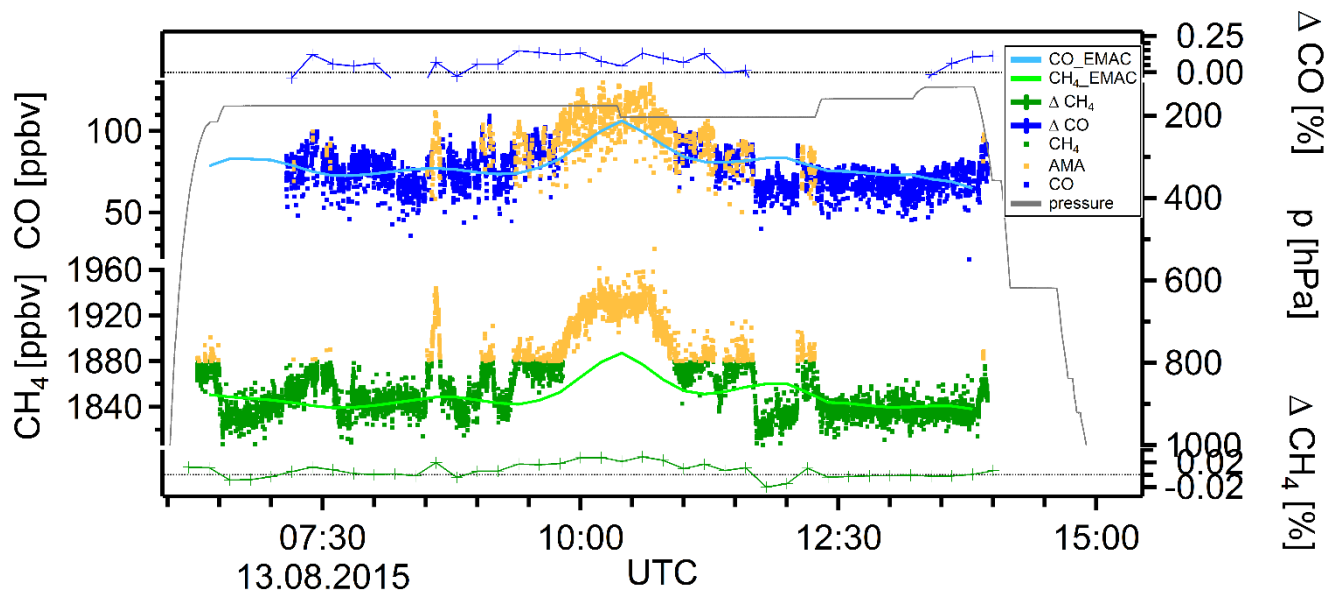


c)

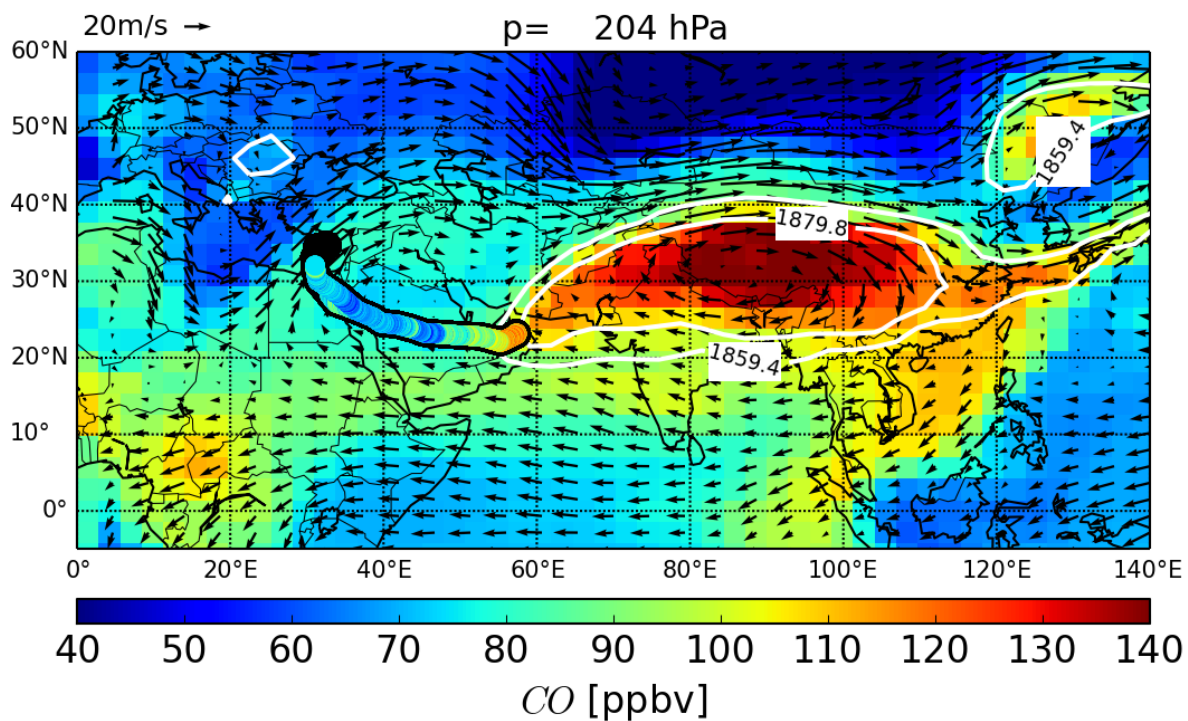


d)

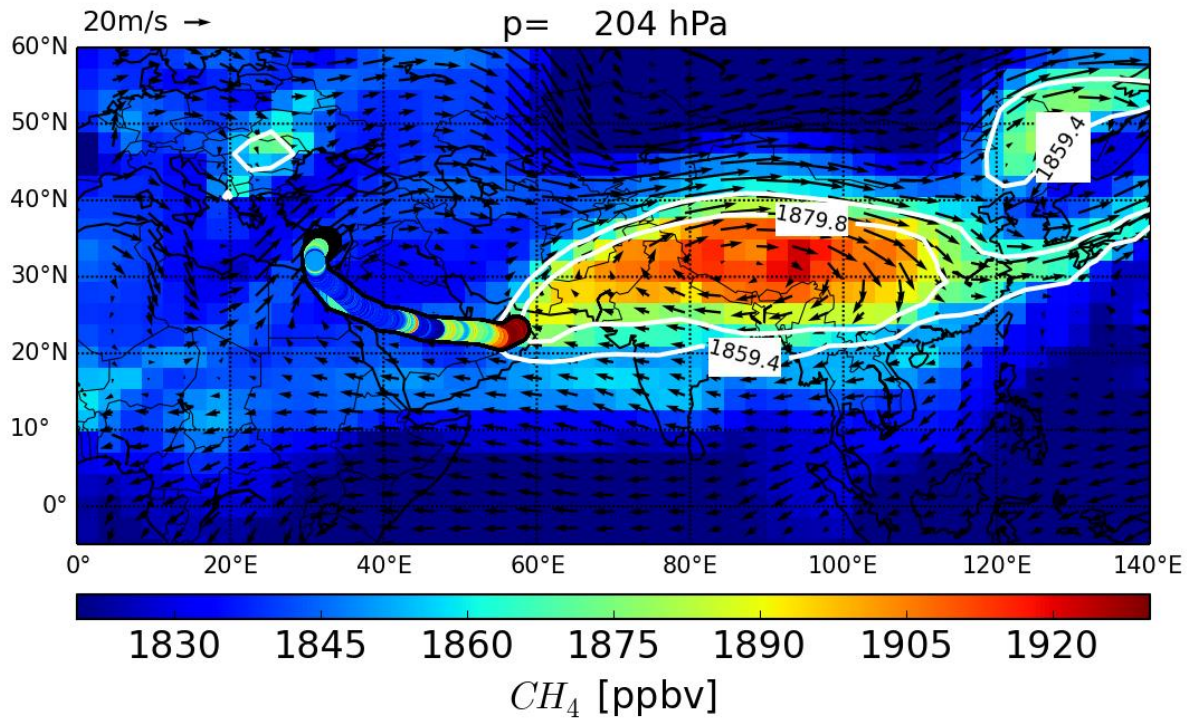
5 Figure S8: Flight 17/18 (08.10.2015): transfer flight from Gan to Paphos via refuelling stop in Bahrain.



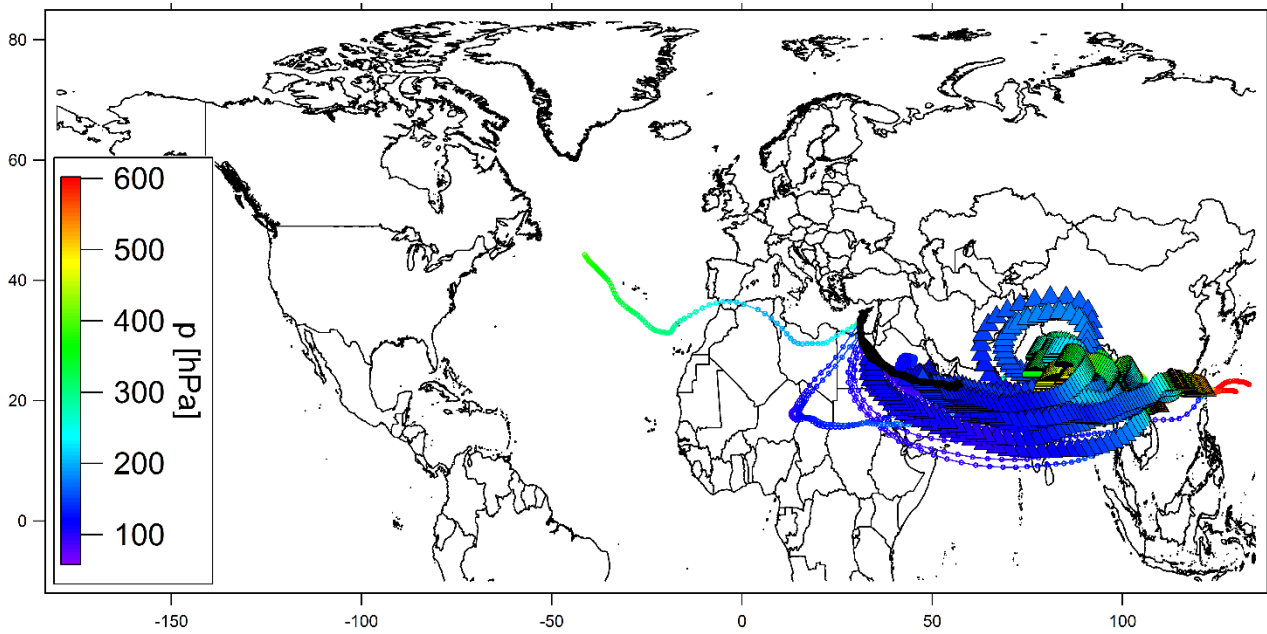
a)



b)

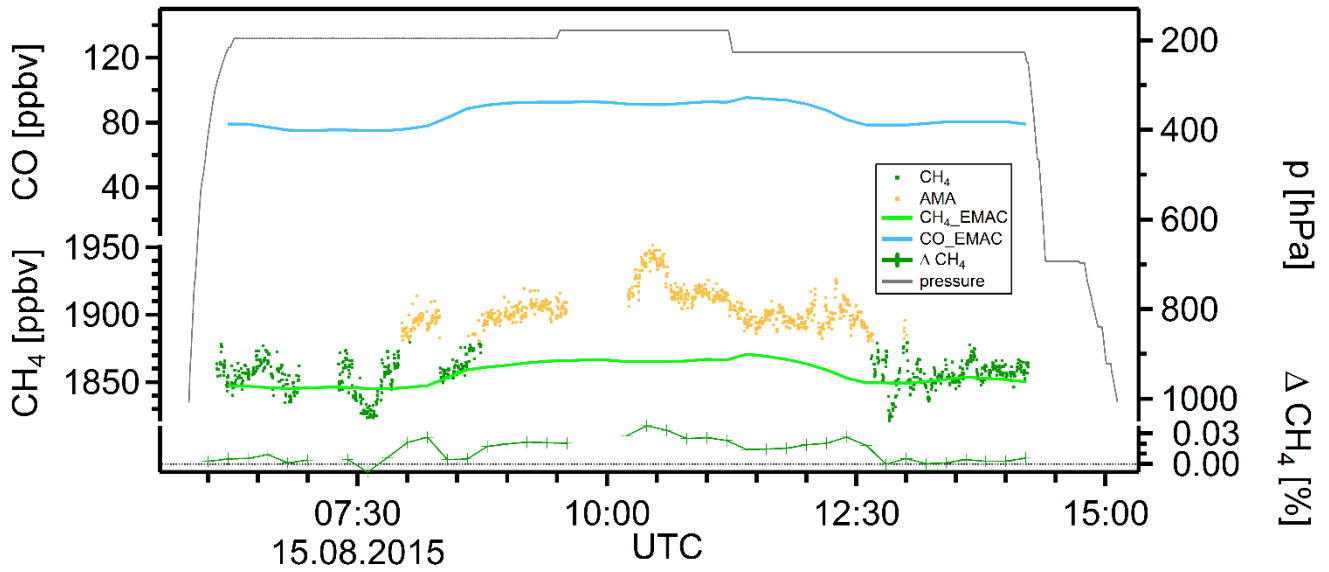


c)

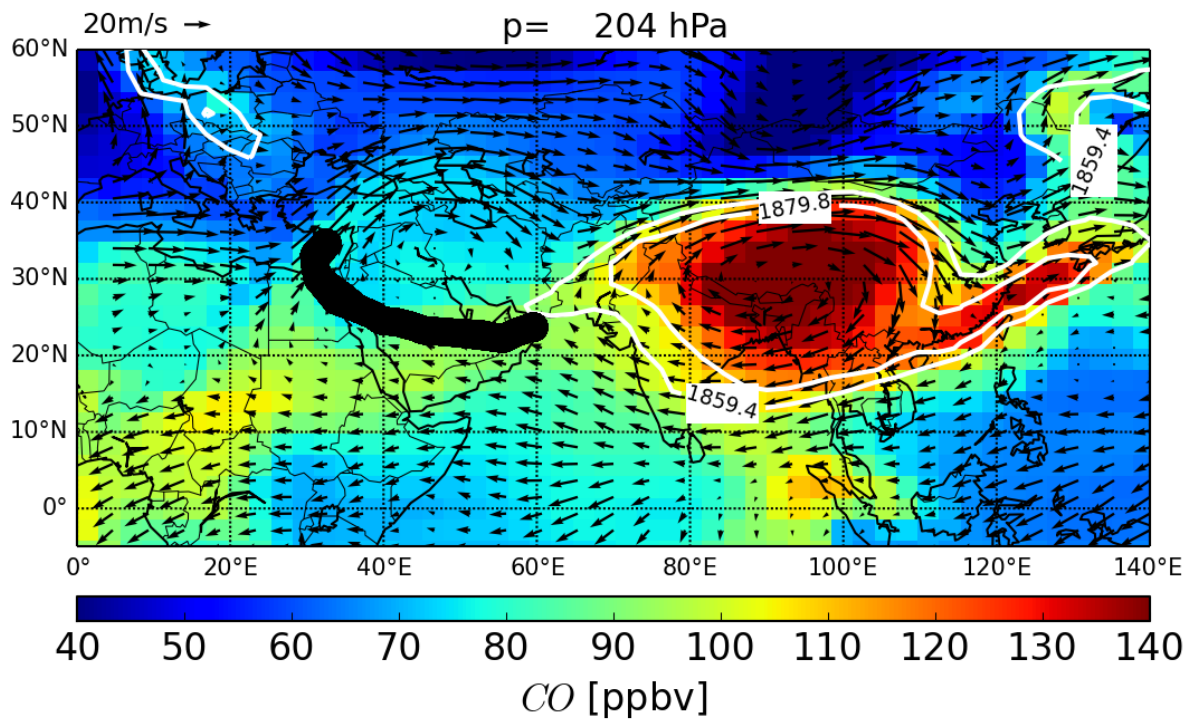


d)

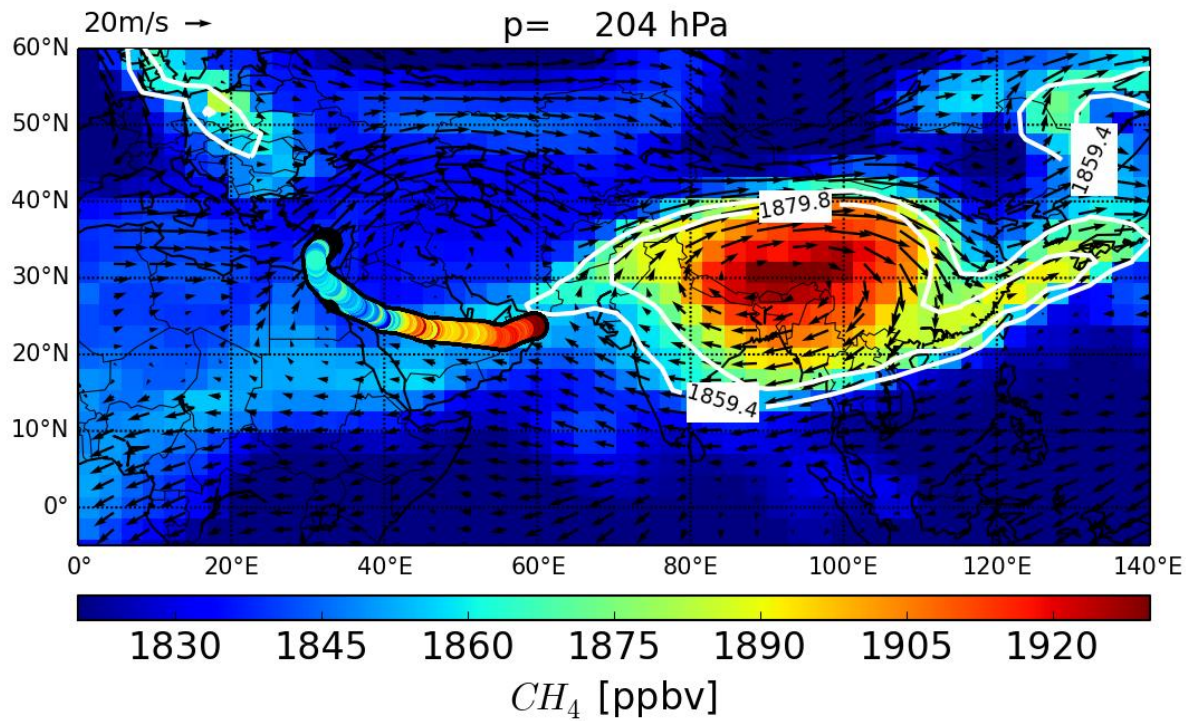
5 Figure S9: Flight 19 (08.13.2015): measurement flight from Paphos to Paphos towards Oman.



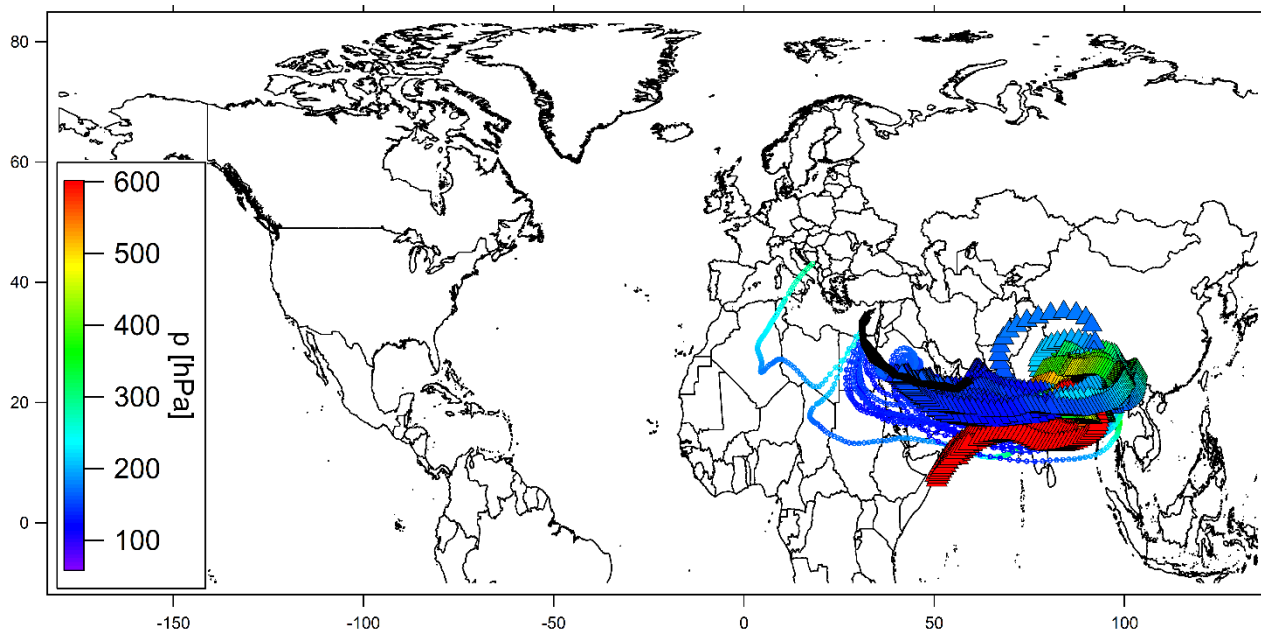
a)



b)

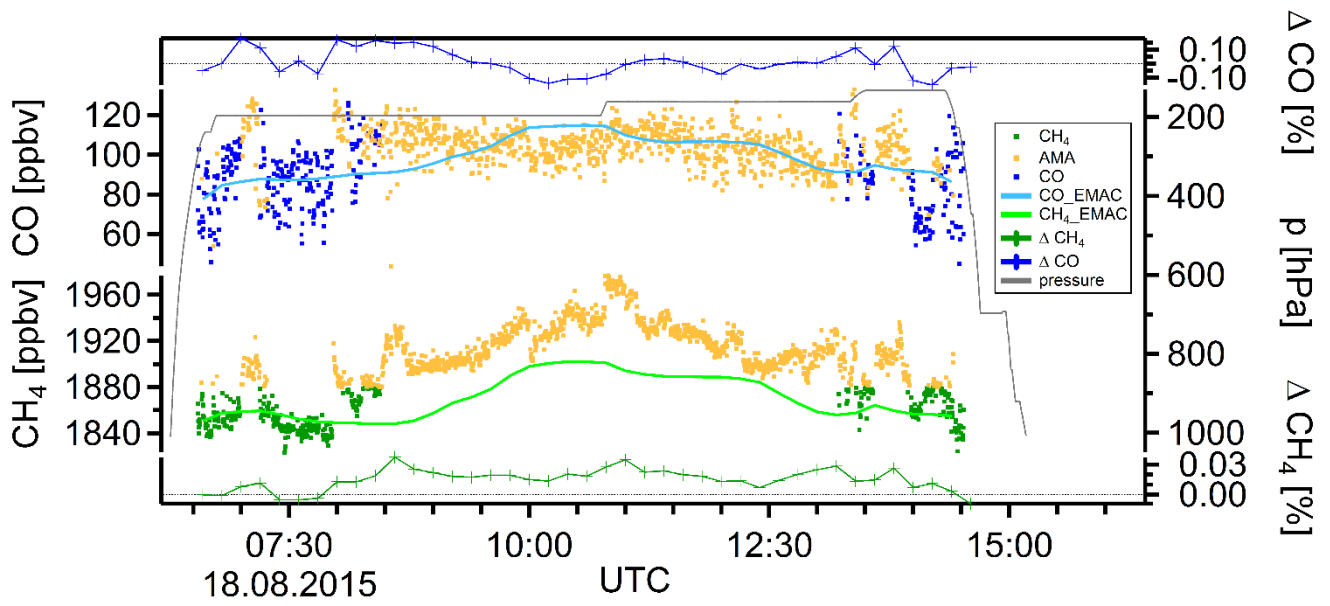


c)

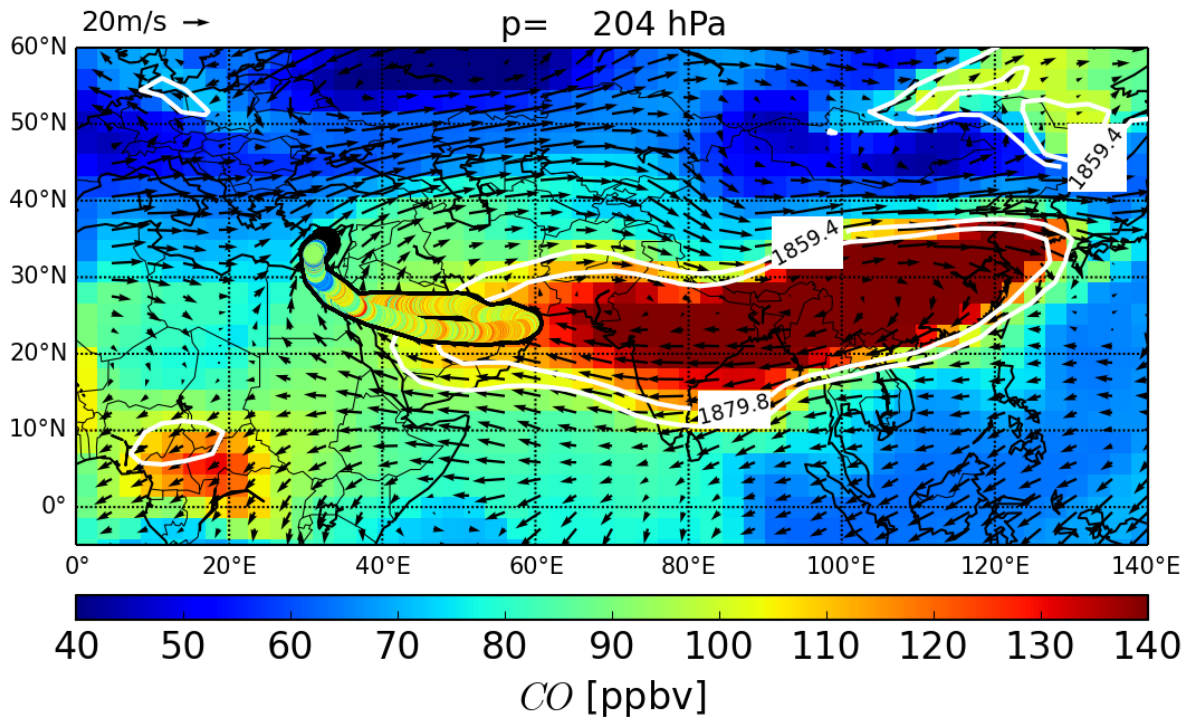


d)

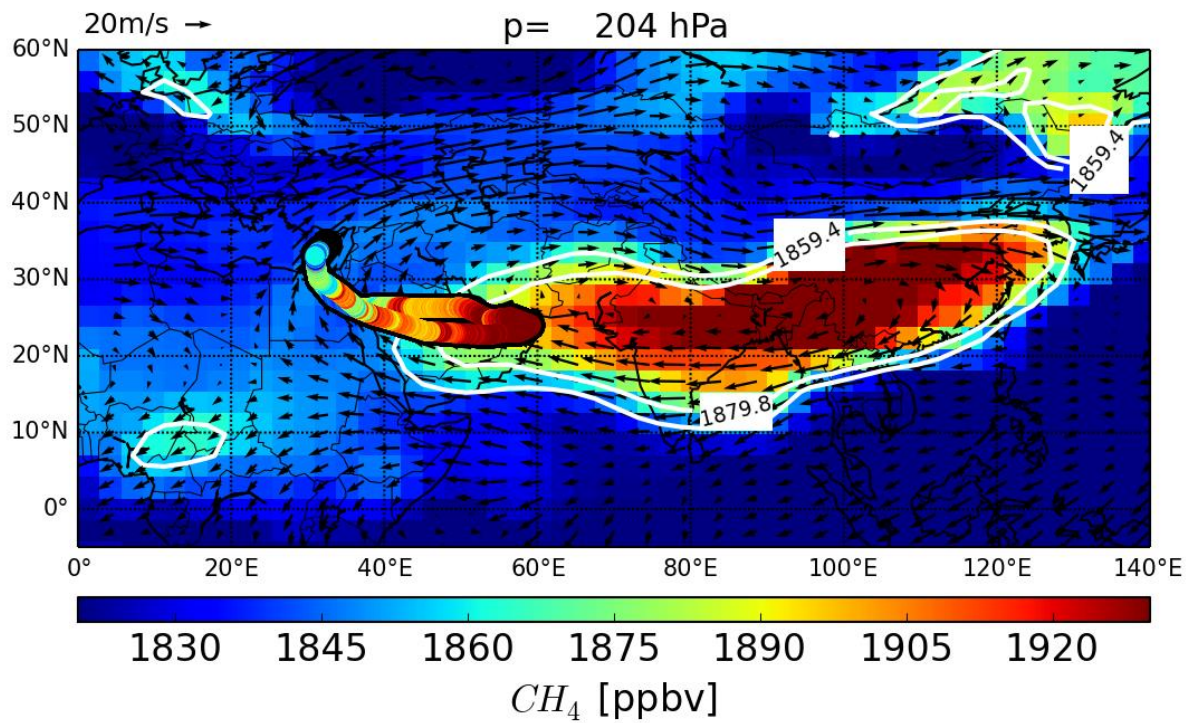
5 Figure S10: Flight 20 (08.15.2015): measurement flight from Paphos to Paphos towards Oman.



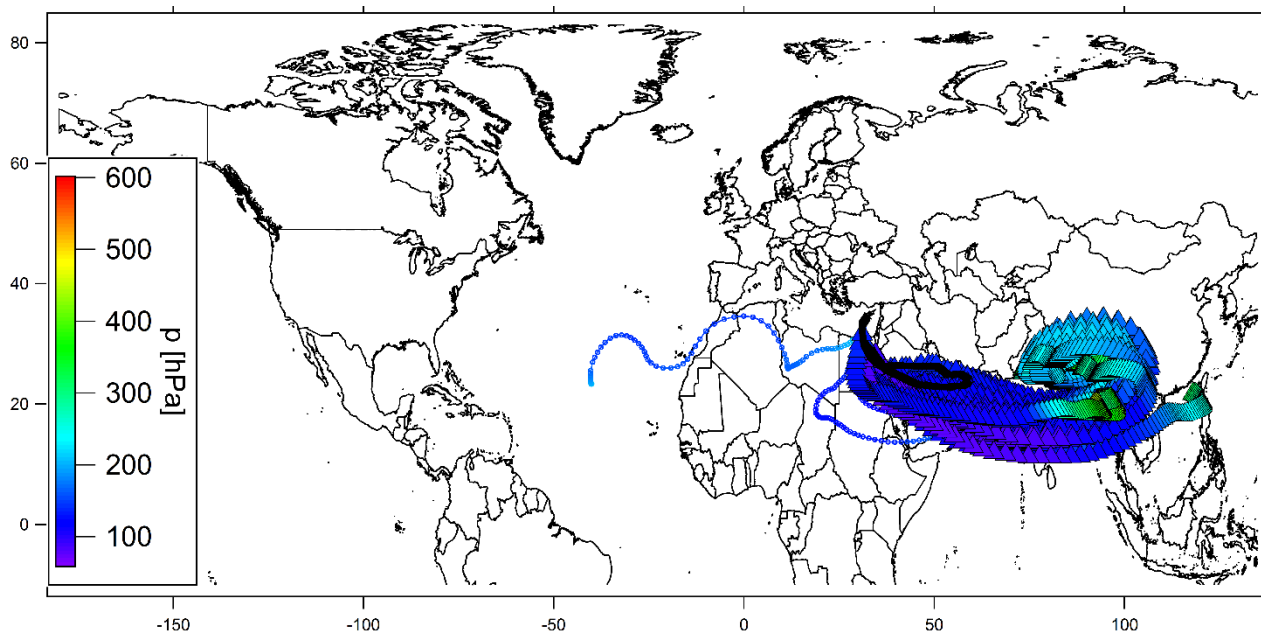
a)



b)

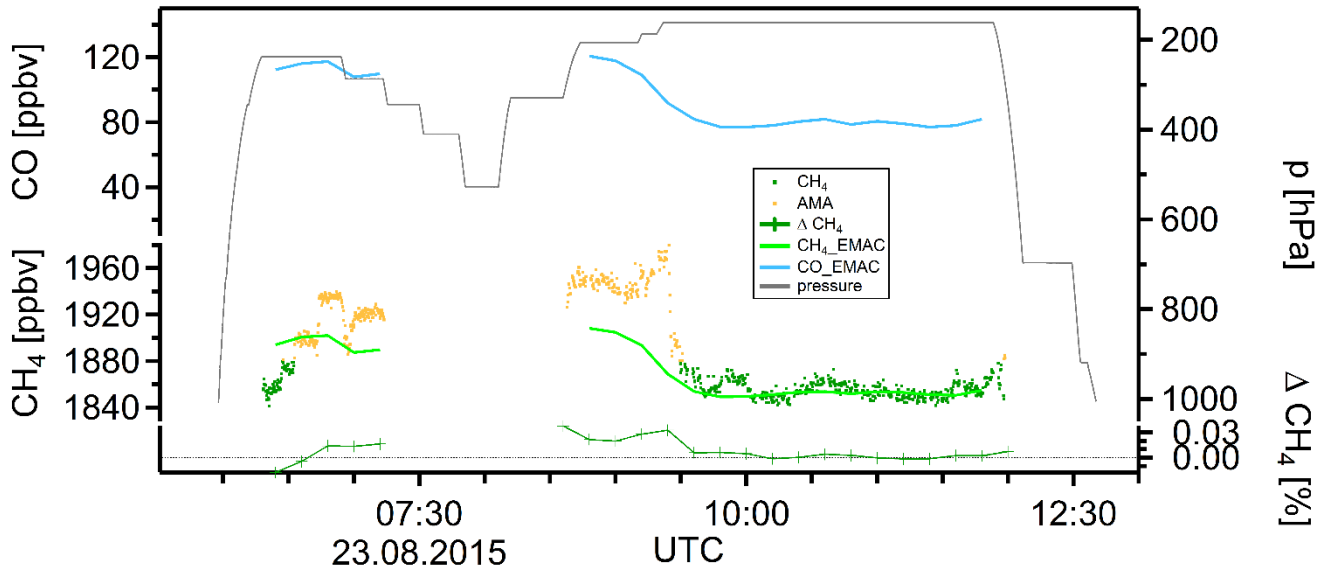


c)

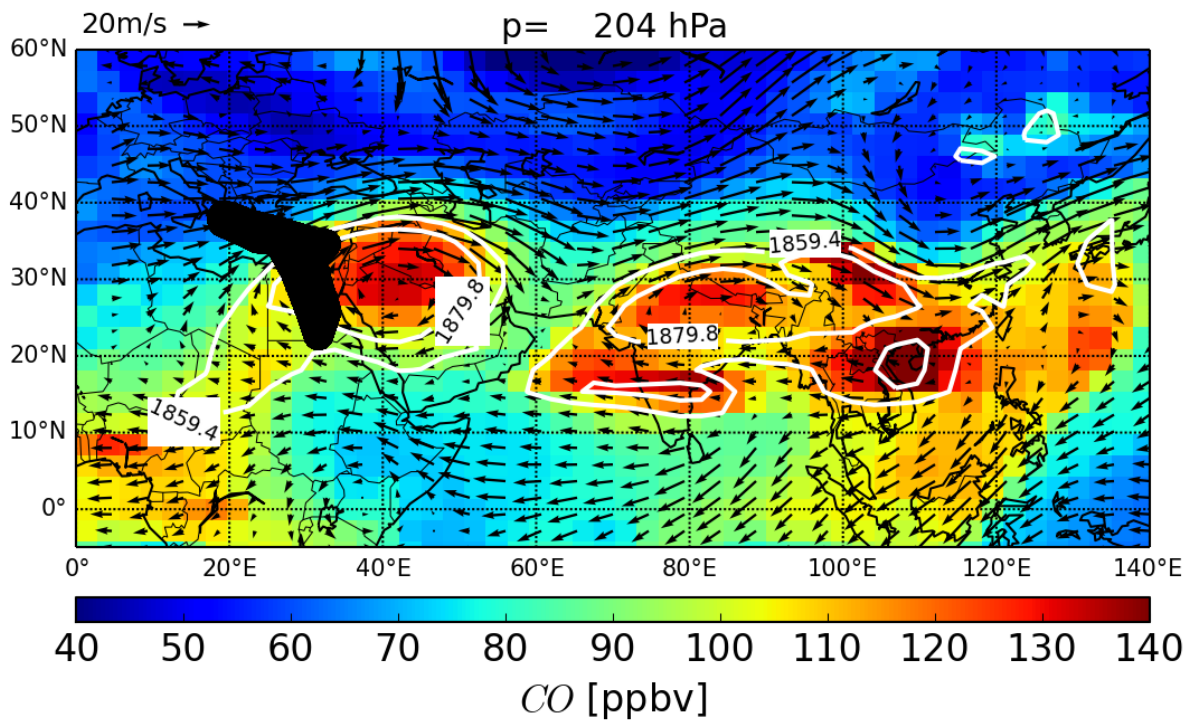


d)

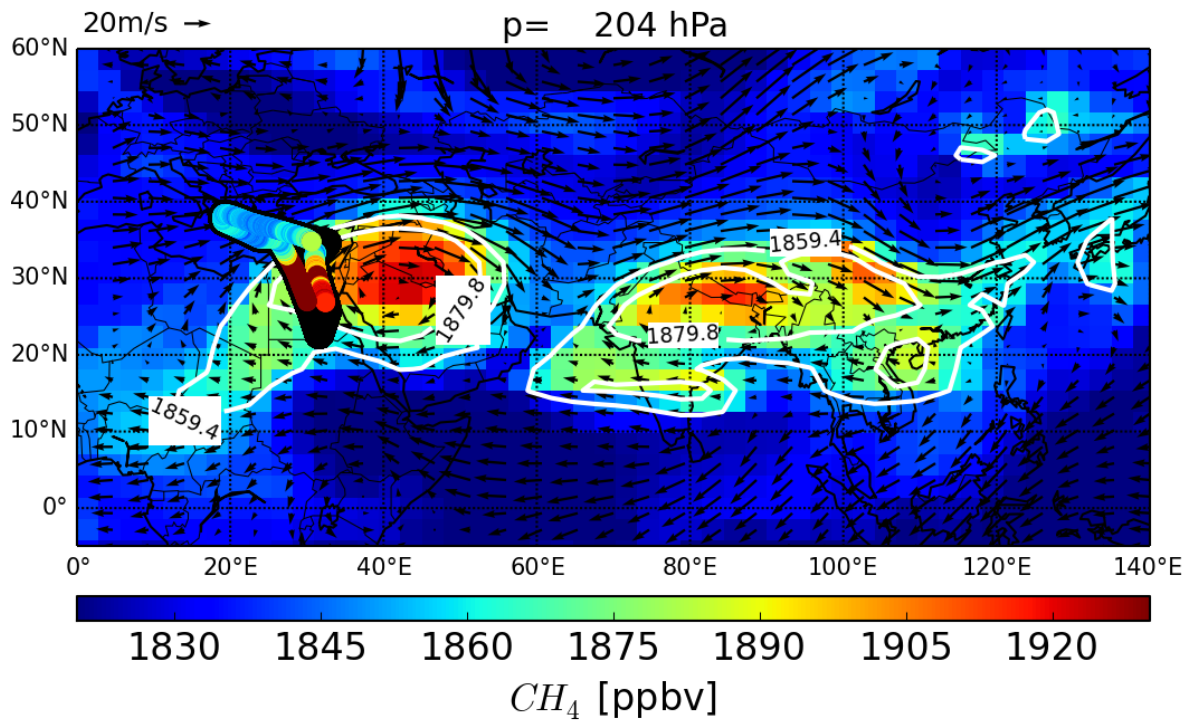
5 Figure S11: Flight 21 (08.18.2015): measurement flight from Paphos to Paphos towards Oman.



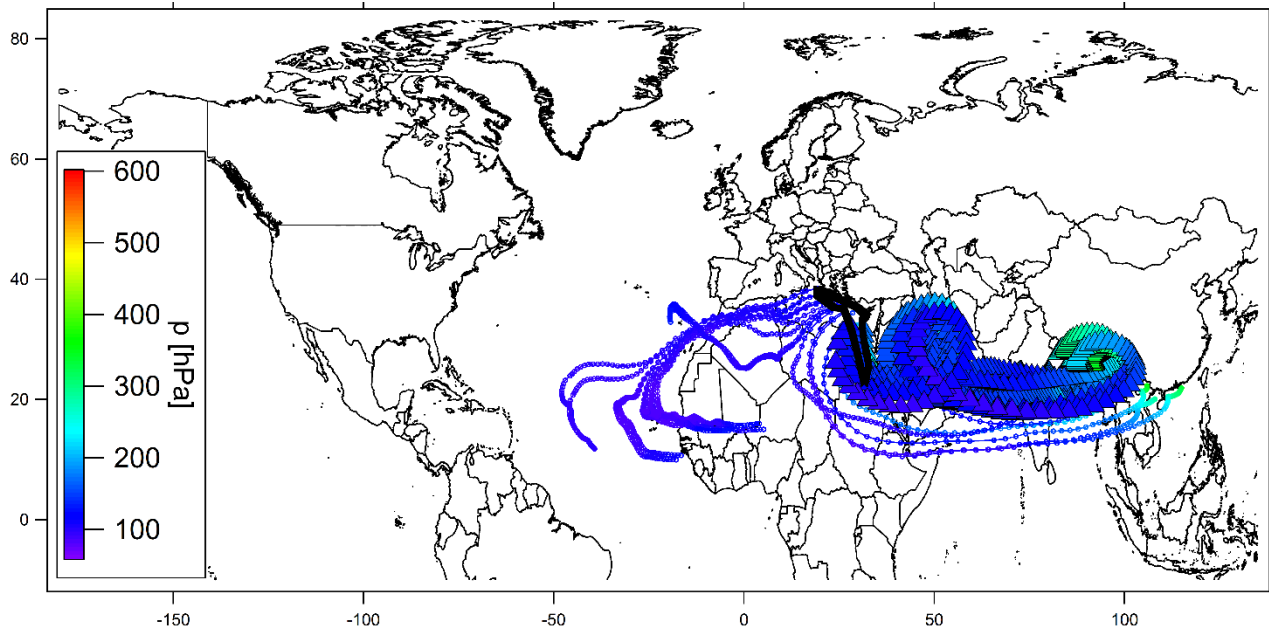
a)



b)

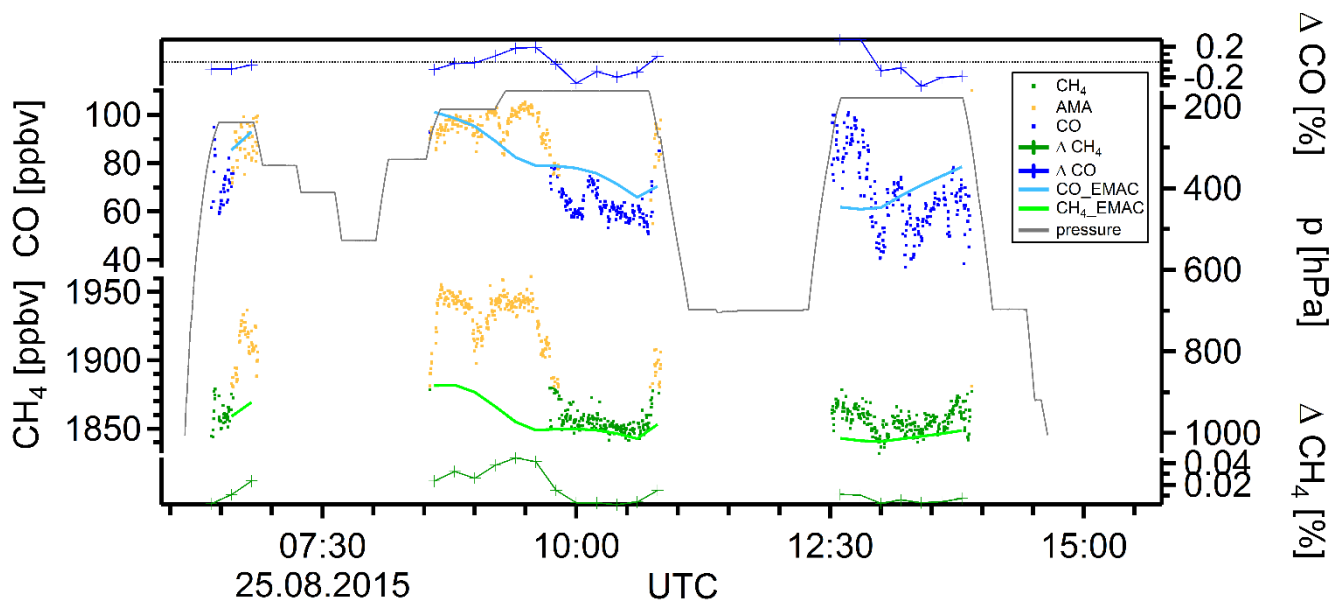


c)

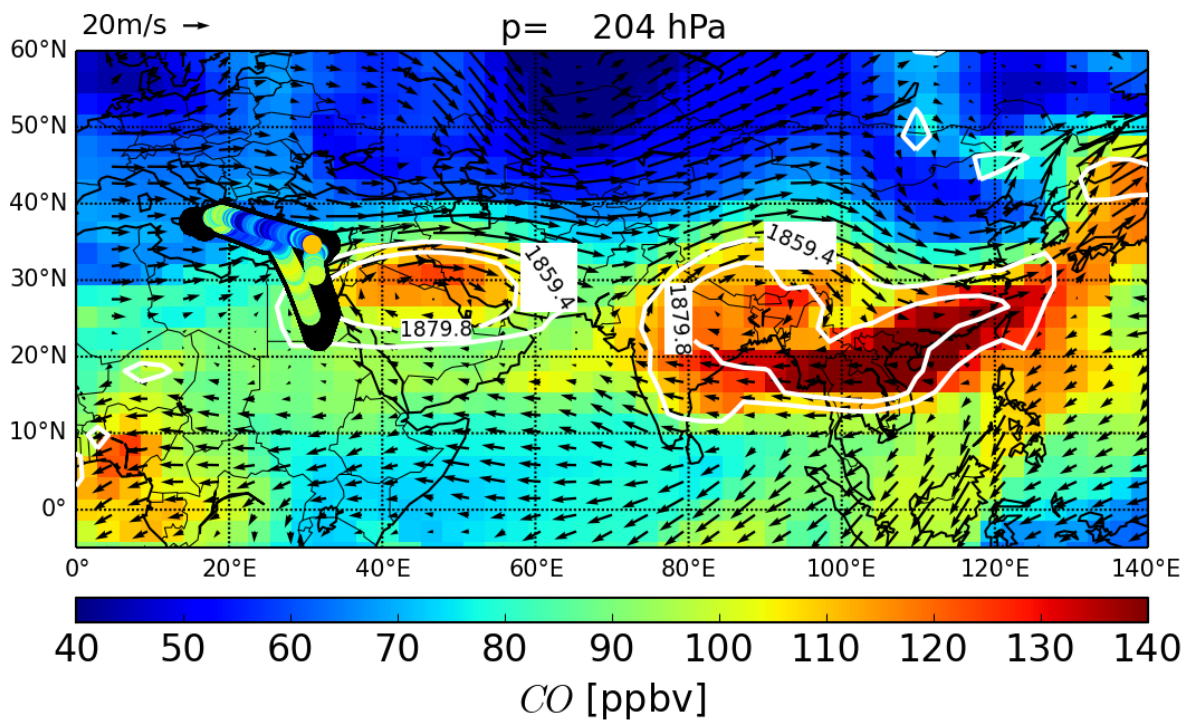


d)

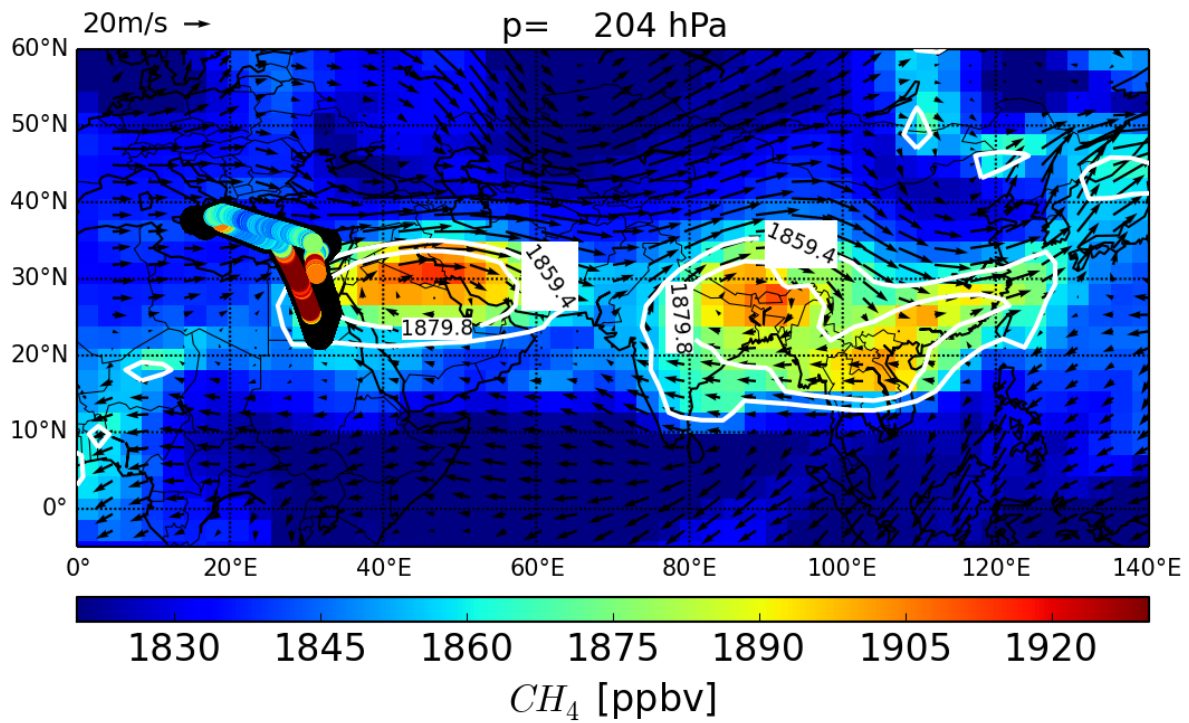
5 Figure S12: Flight 22 (08.23.2015): measurement flight from Paphos to Paphos over Egypt, Greece, the Mediterranean; with profiles over Egypt.



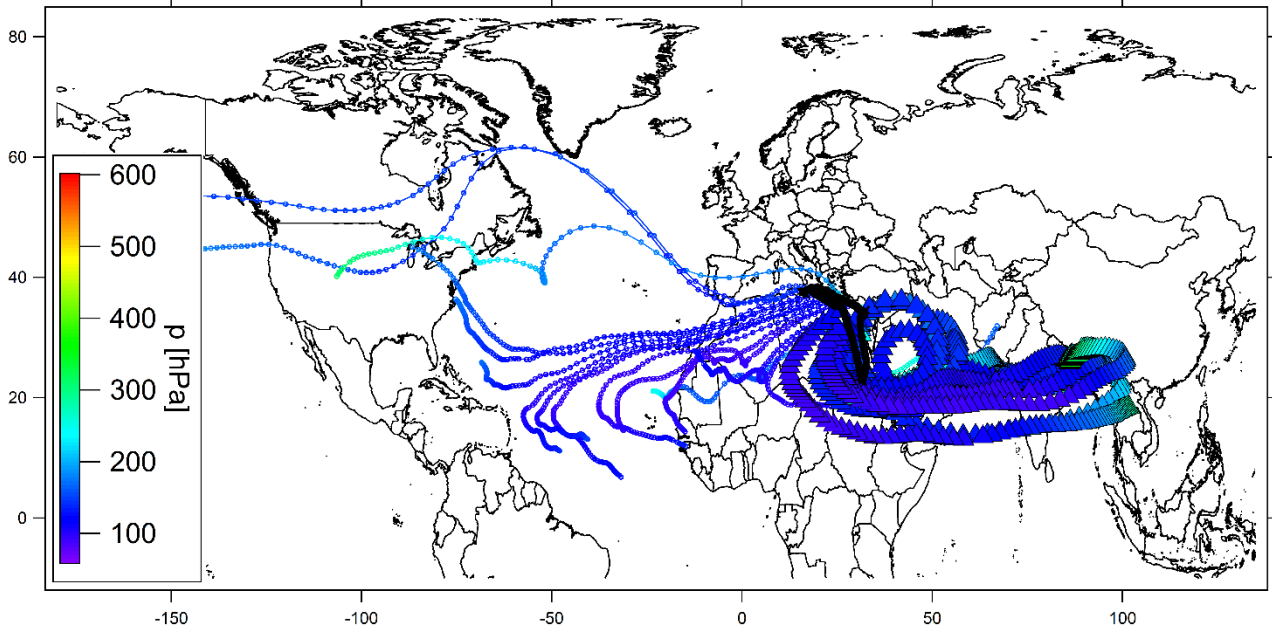
a)



b)

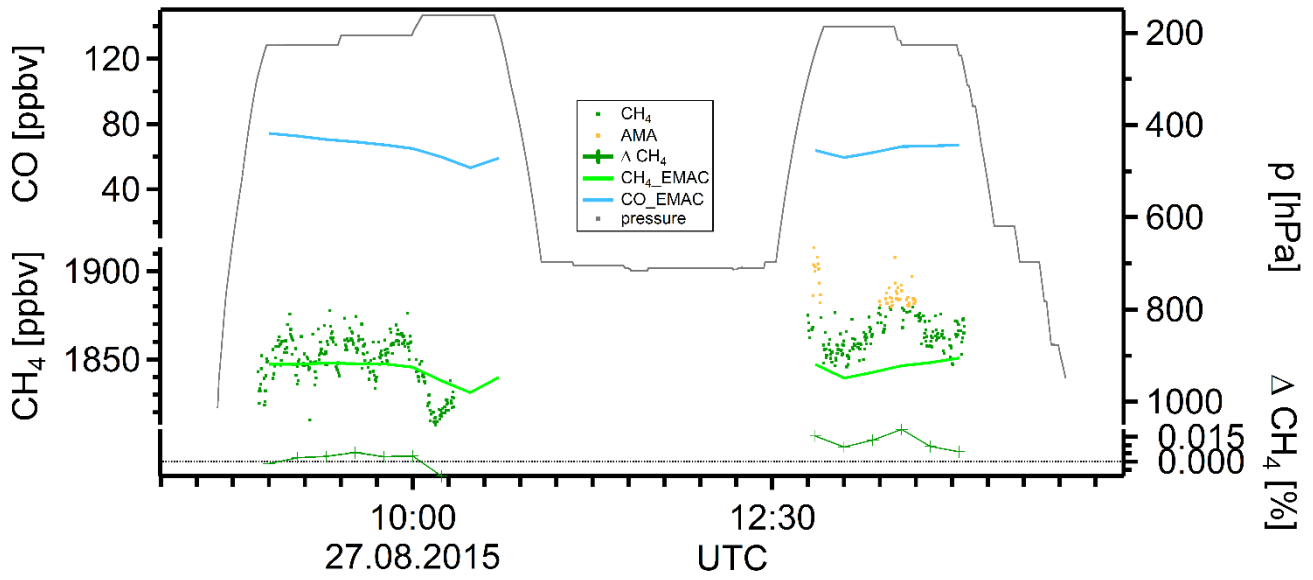


c)

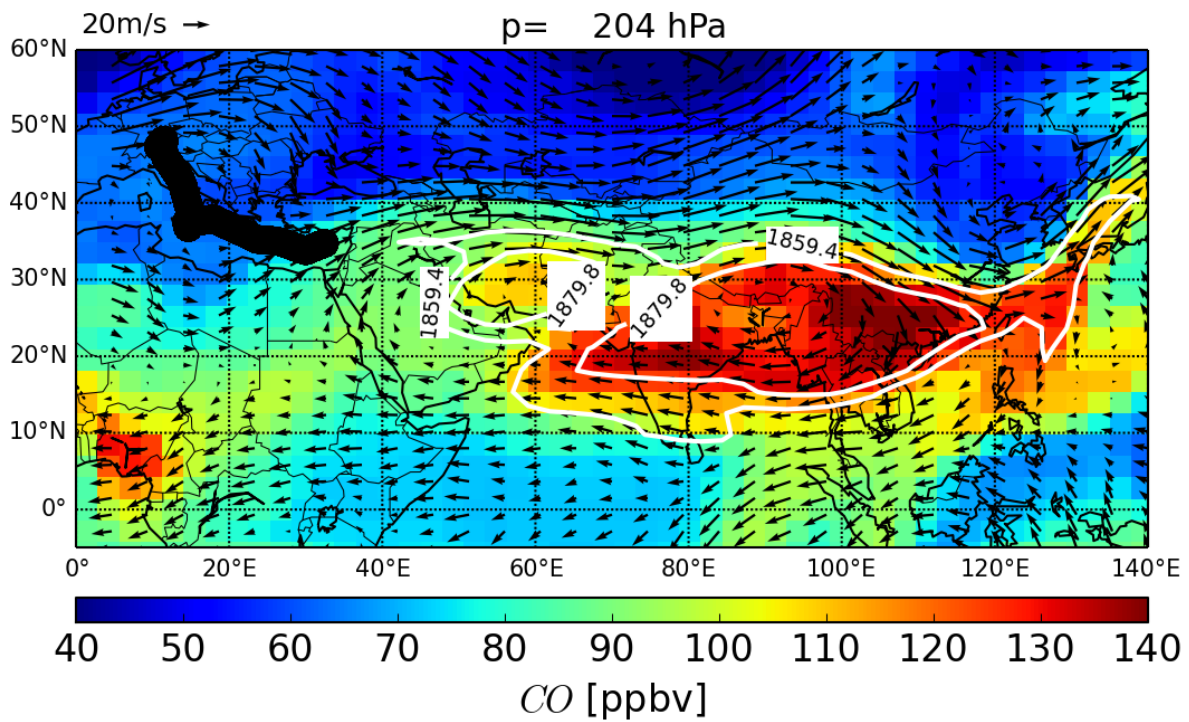


d)

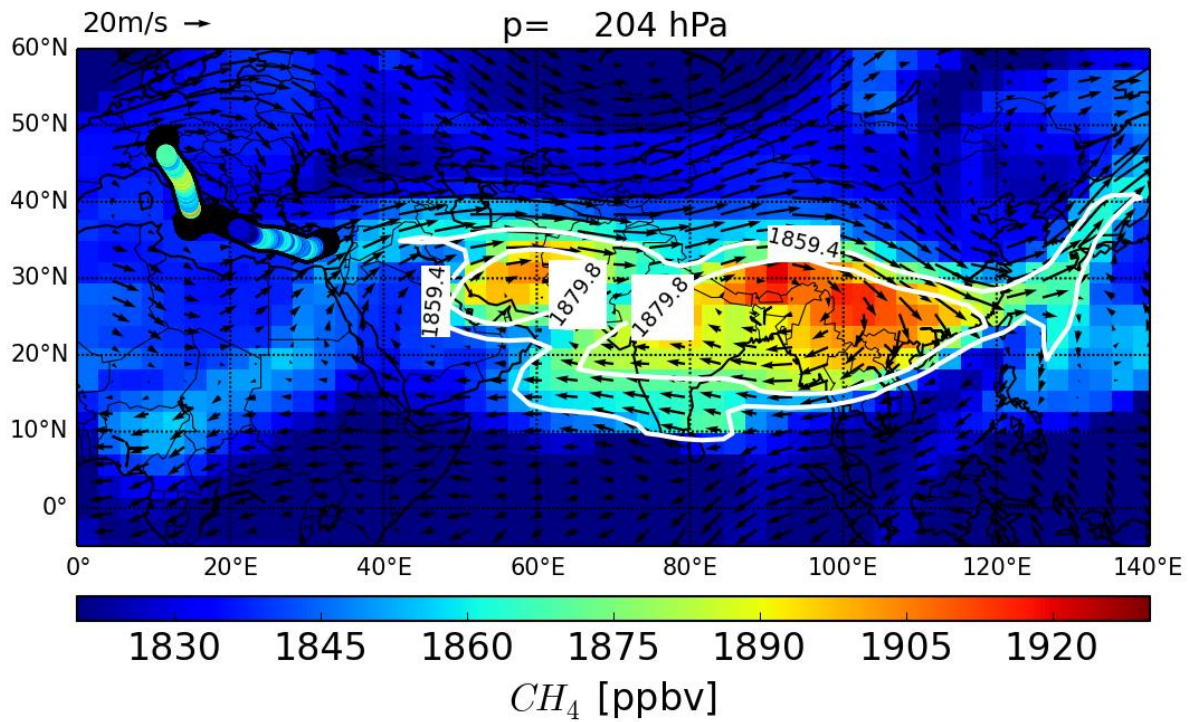
5 Figure S13: Flight 23 (08.25.2015): measurement flight from Paphos to Paphos over Egypt, Etna, the Mediterranean; with profiles over Egypt and low altitude at the Etna.



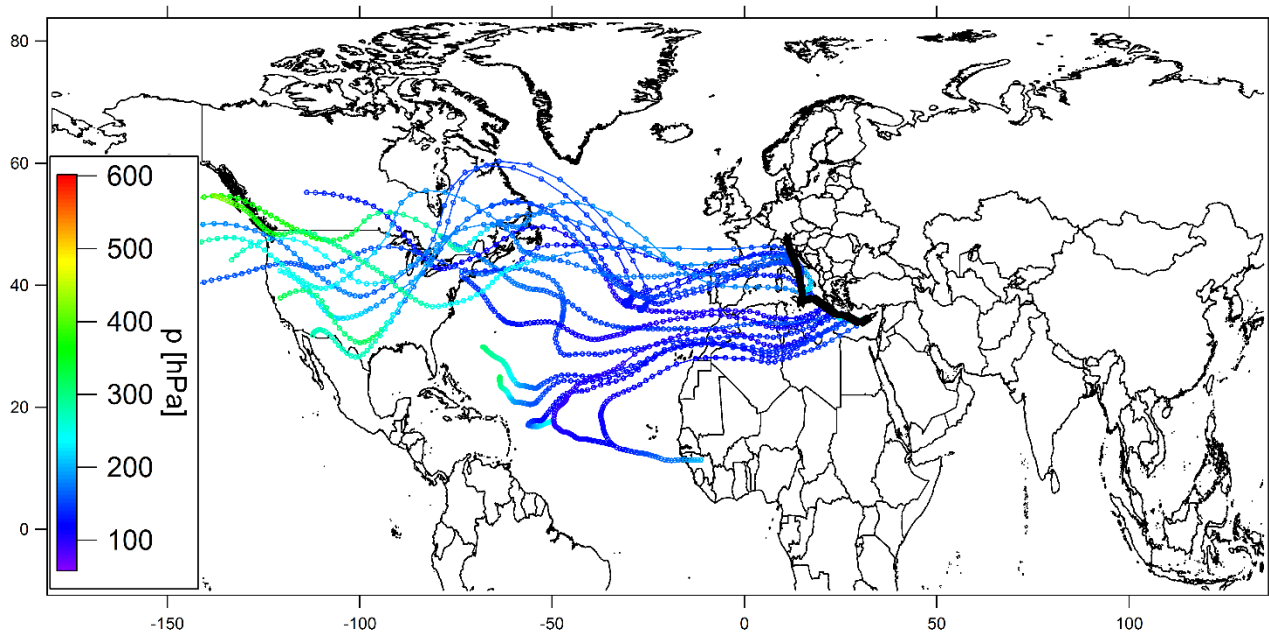
a)



b)



c)



d)

5 **Figure S14: Flight 24 (08.27.2015): transfer flight from Paphos to Oberpfaffenhofen via Etna with low altitude.**