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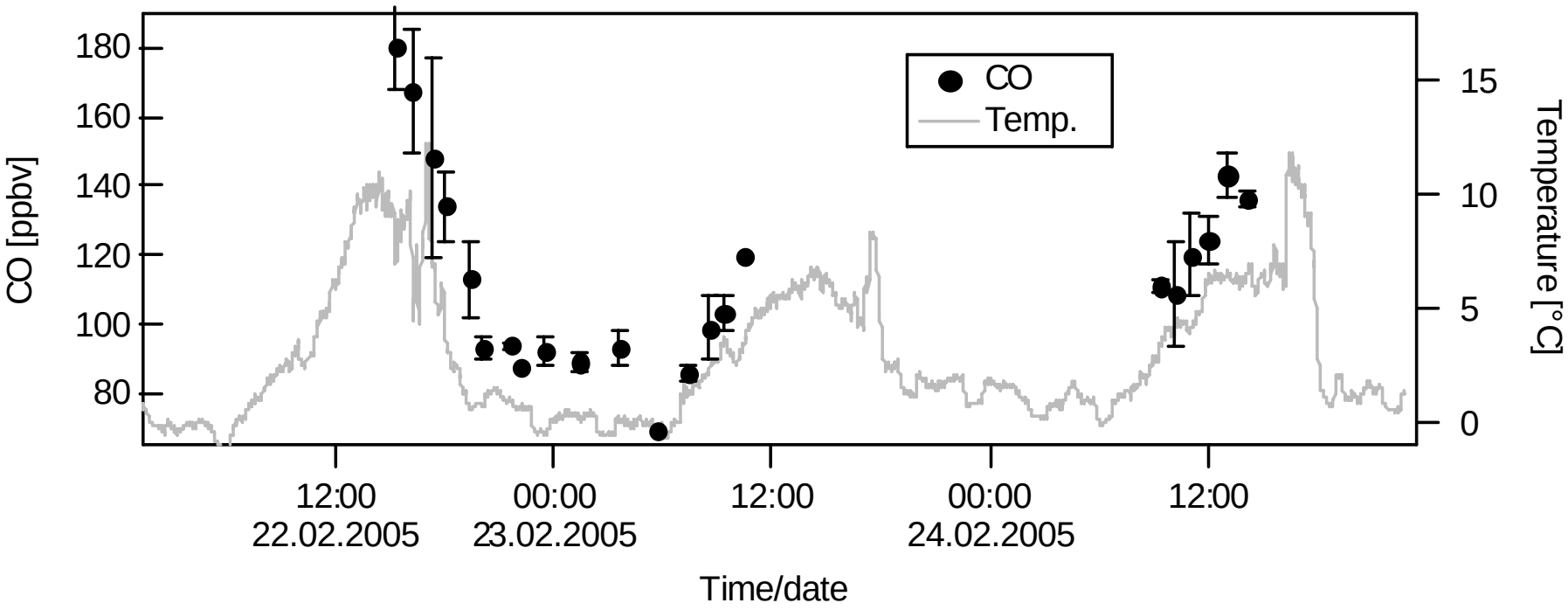
Pico Espejo: when is it in the free troposphere?

In-situ measurements

from 16 to 24 February 2005

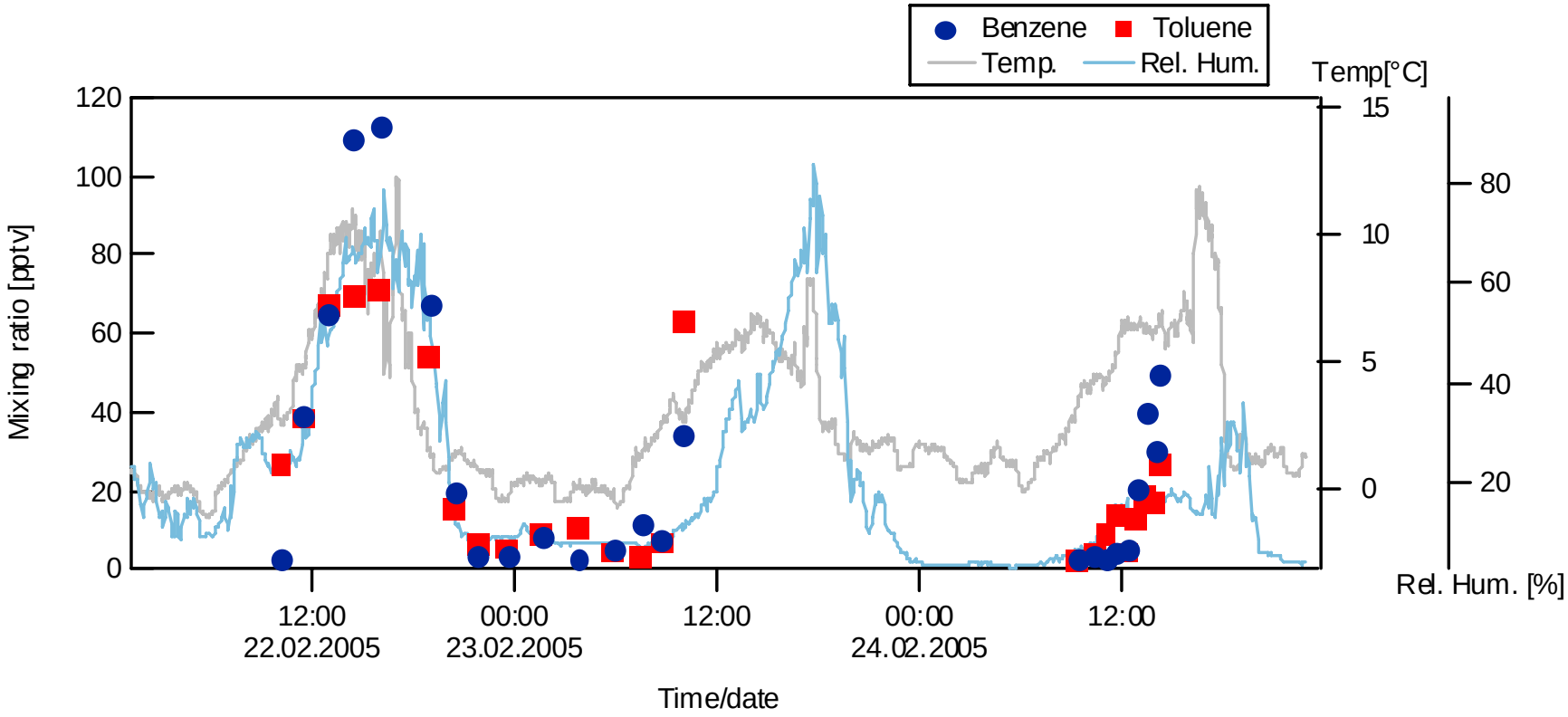
- Ozone (photometric O_3 analyser, Dasibi, model 1008 PC)
- CO (reduction gas-detector, Trace Analytical)
- Canister sampling 22-24 Feb. (GC-MS analysis)

Carbon monoxide



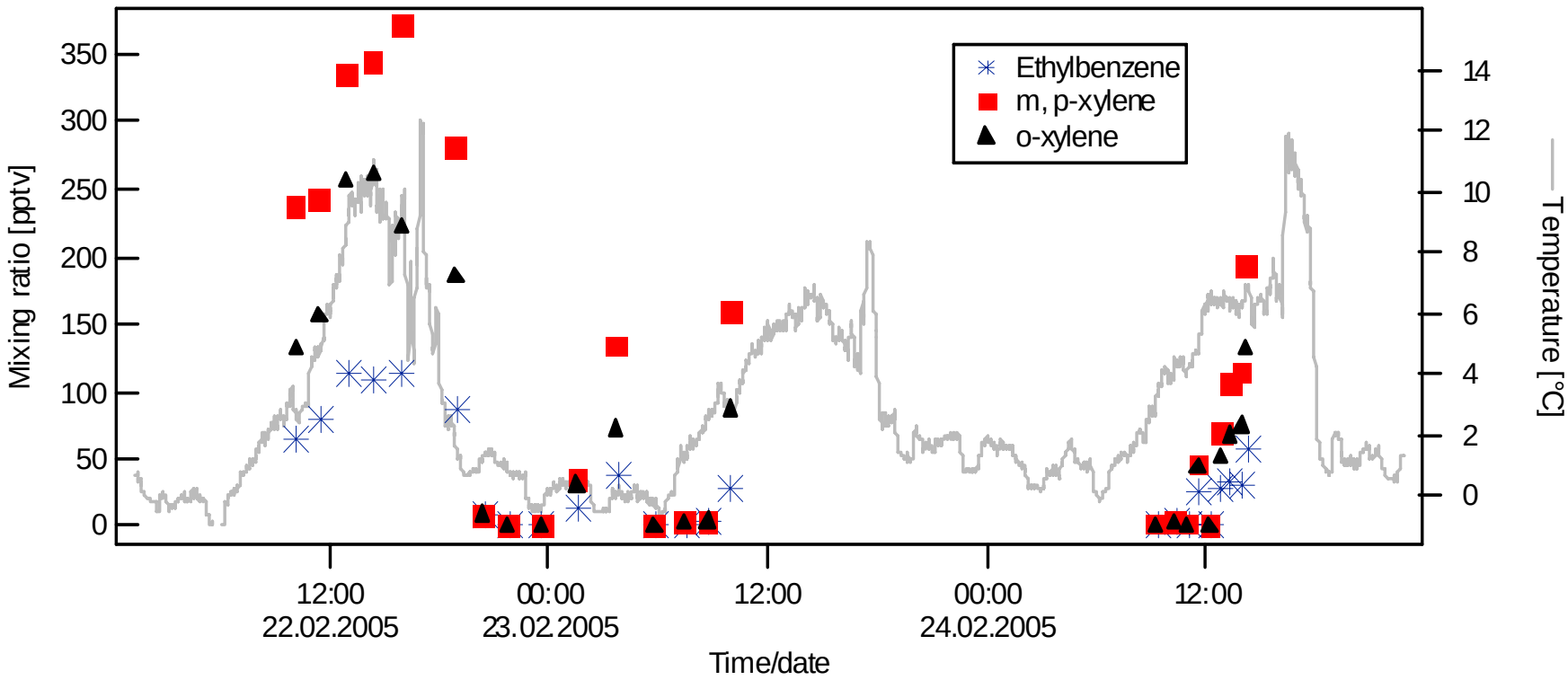
CO in remote areas: 50-150 ppbv
Mauna Loa (3400 m) 66/123 ppbv
Izaña (2370 m) D/U 89/92 ppbv
Jungfraujoch (3580 m) D/U 124/138 ppbv

Benzene and Toluene



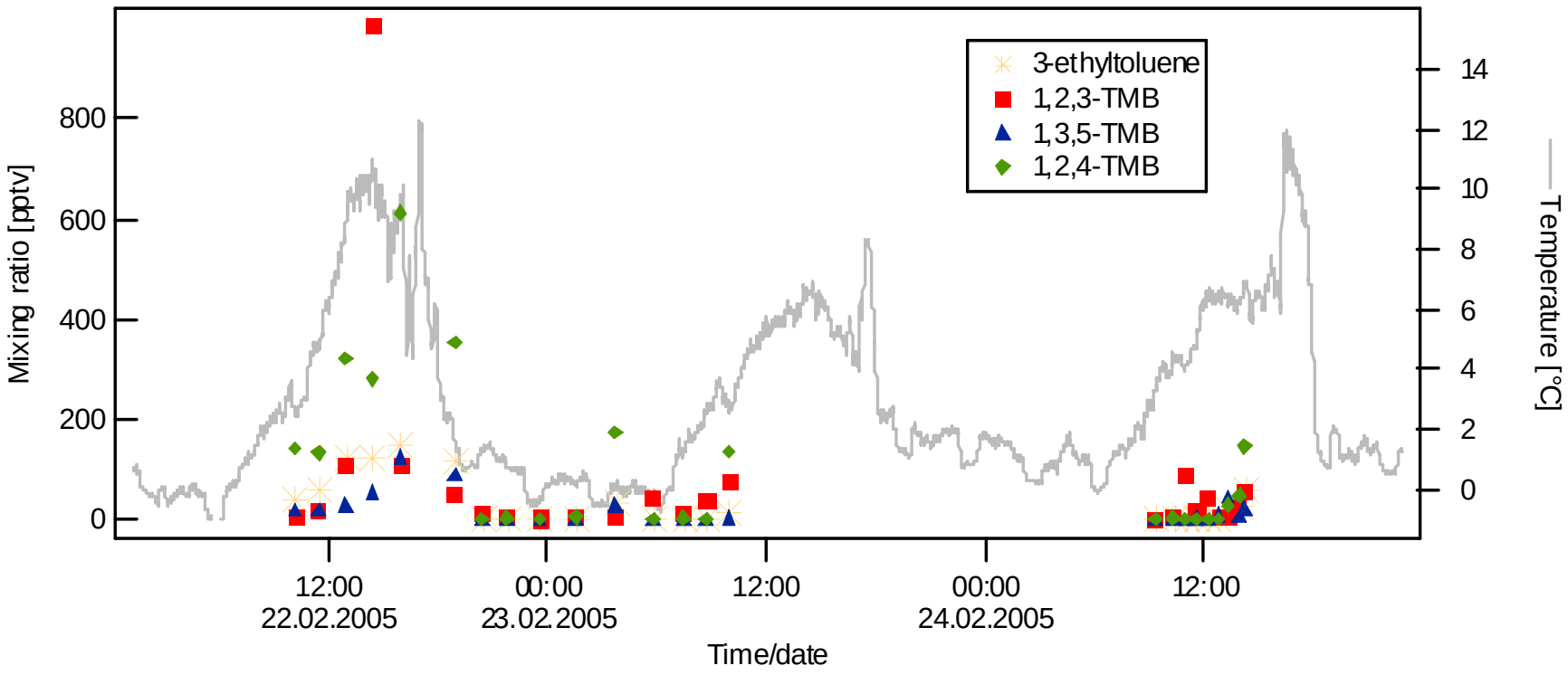
	Benzene	Toluene	
Mauna Loa	7-35	0.2-1	**pptv (FT)**
	8-55	2-6	**pptv (Upslope)**

Ethylbenzene and Xylenes

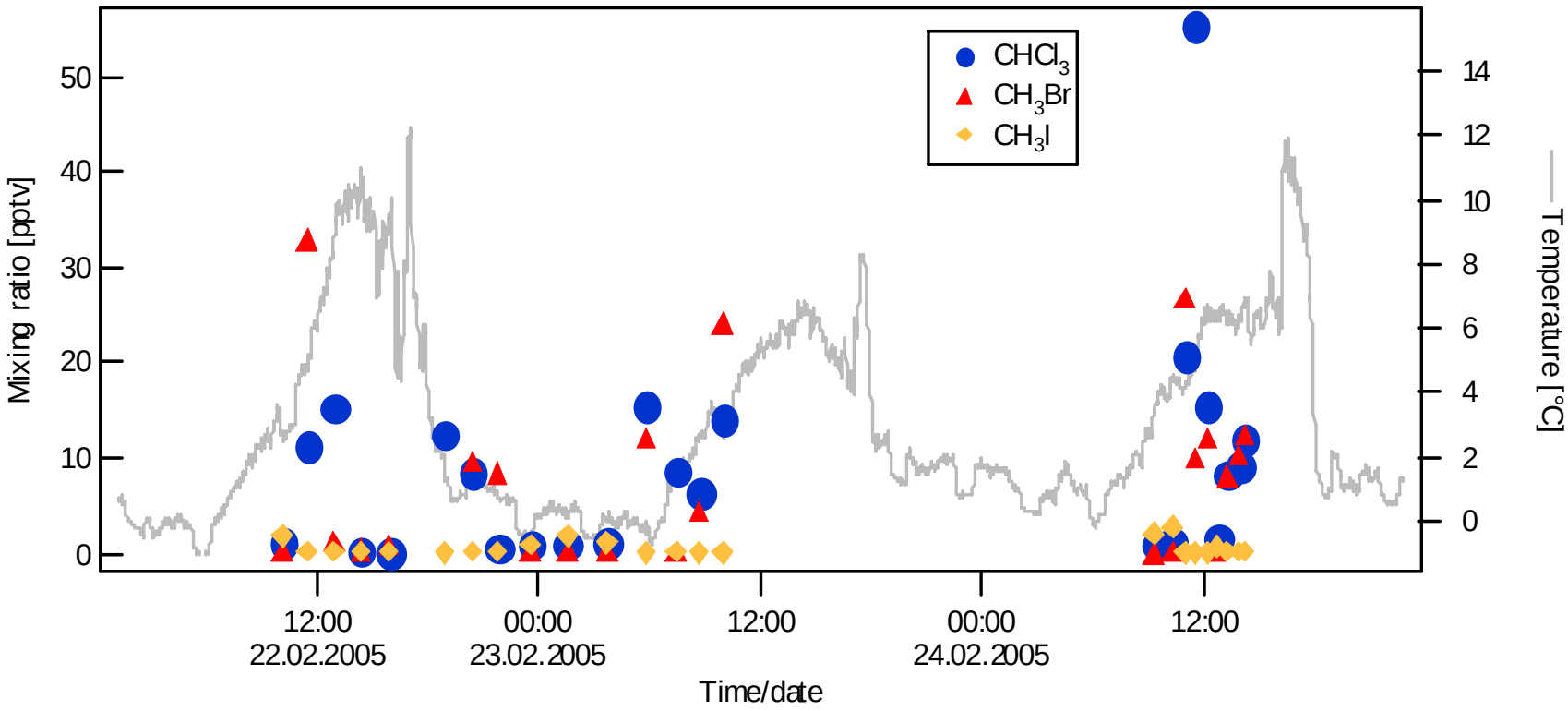


	O-Xylene	m/p-Xylene (pptv)
remote areas	1-30	2-8
rural/suburban	20-200	20-1200

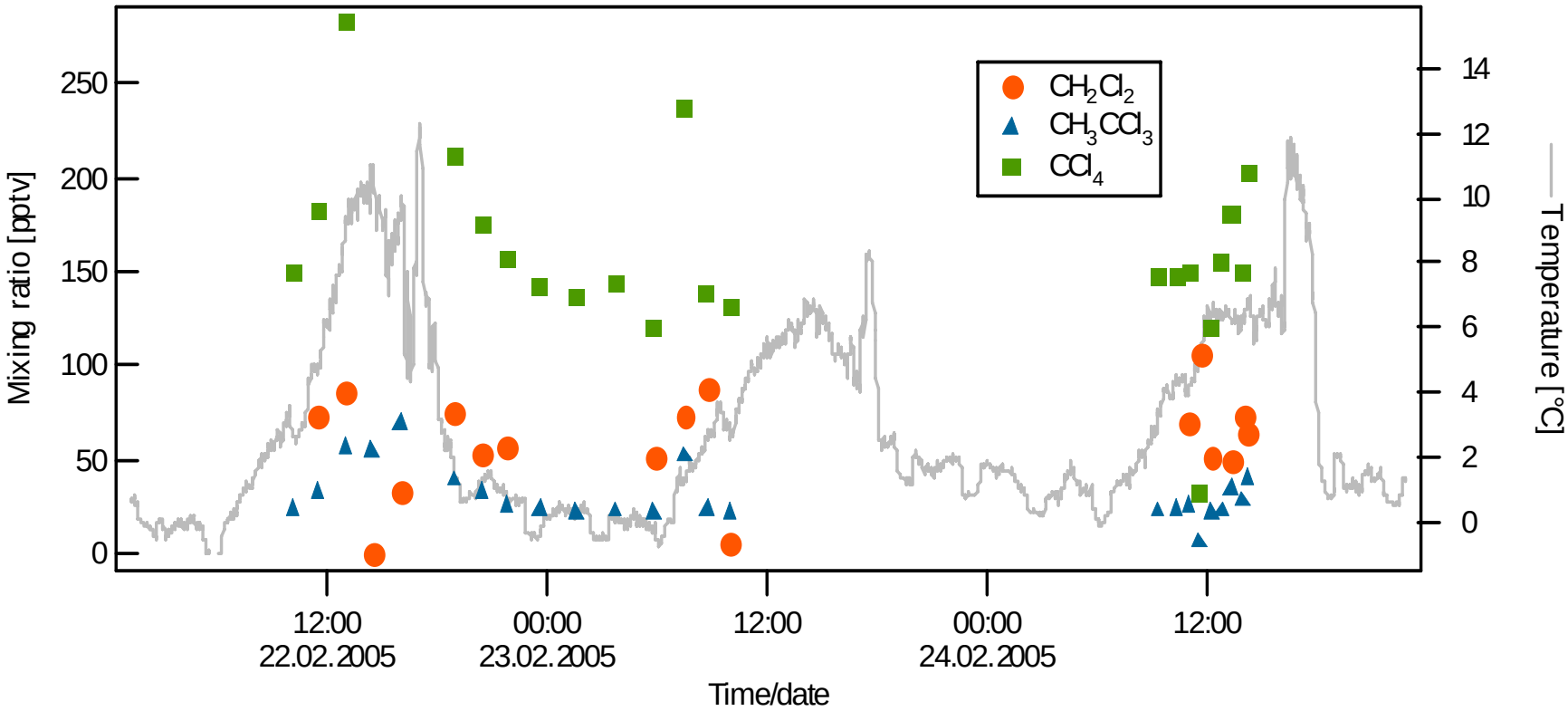
3-Ethyltoluene and Trimethylbenzenes



Halocarbons

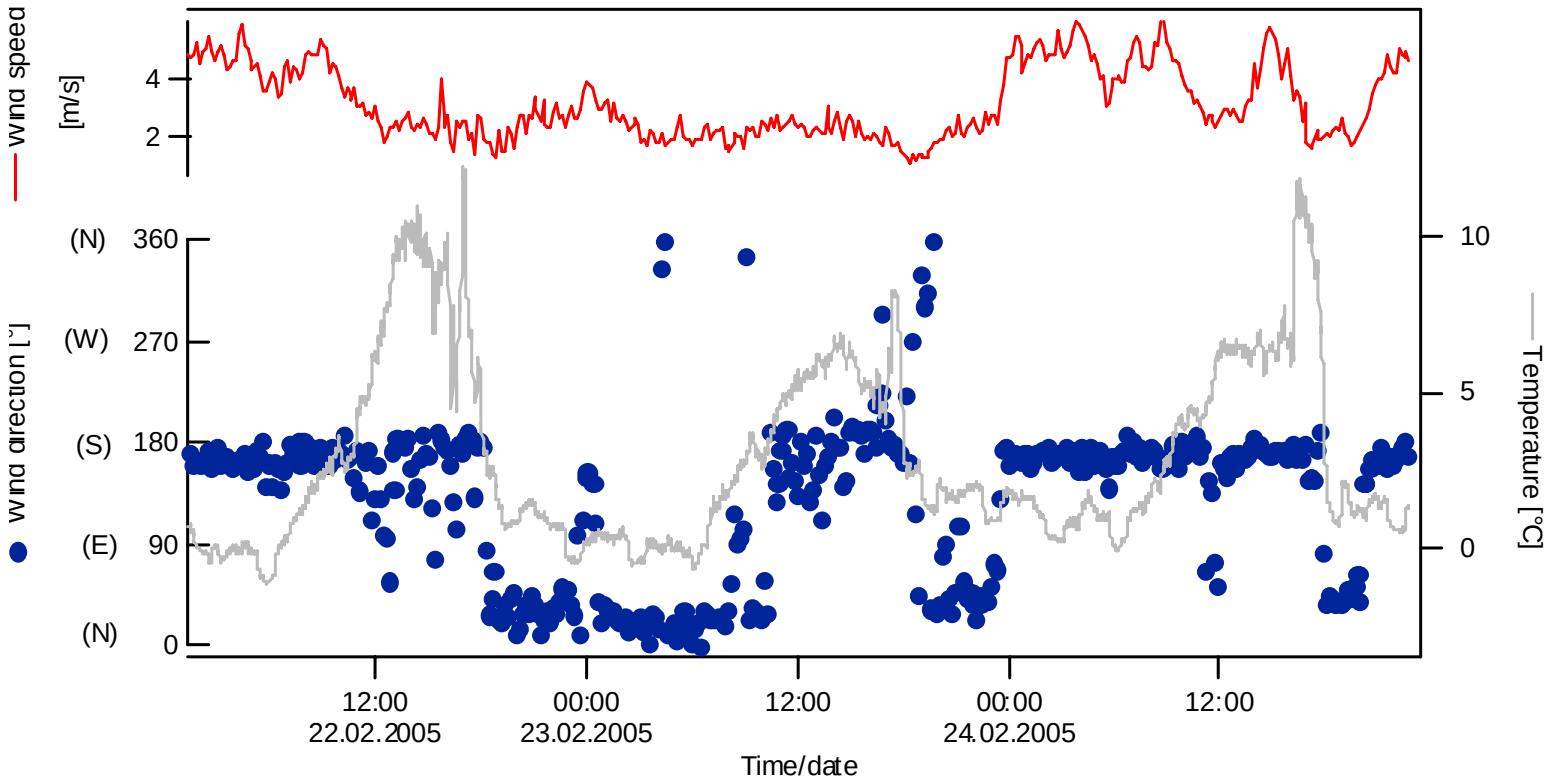


Dichloromethane, Methylchloroform and Carbon Tetrachloride

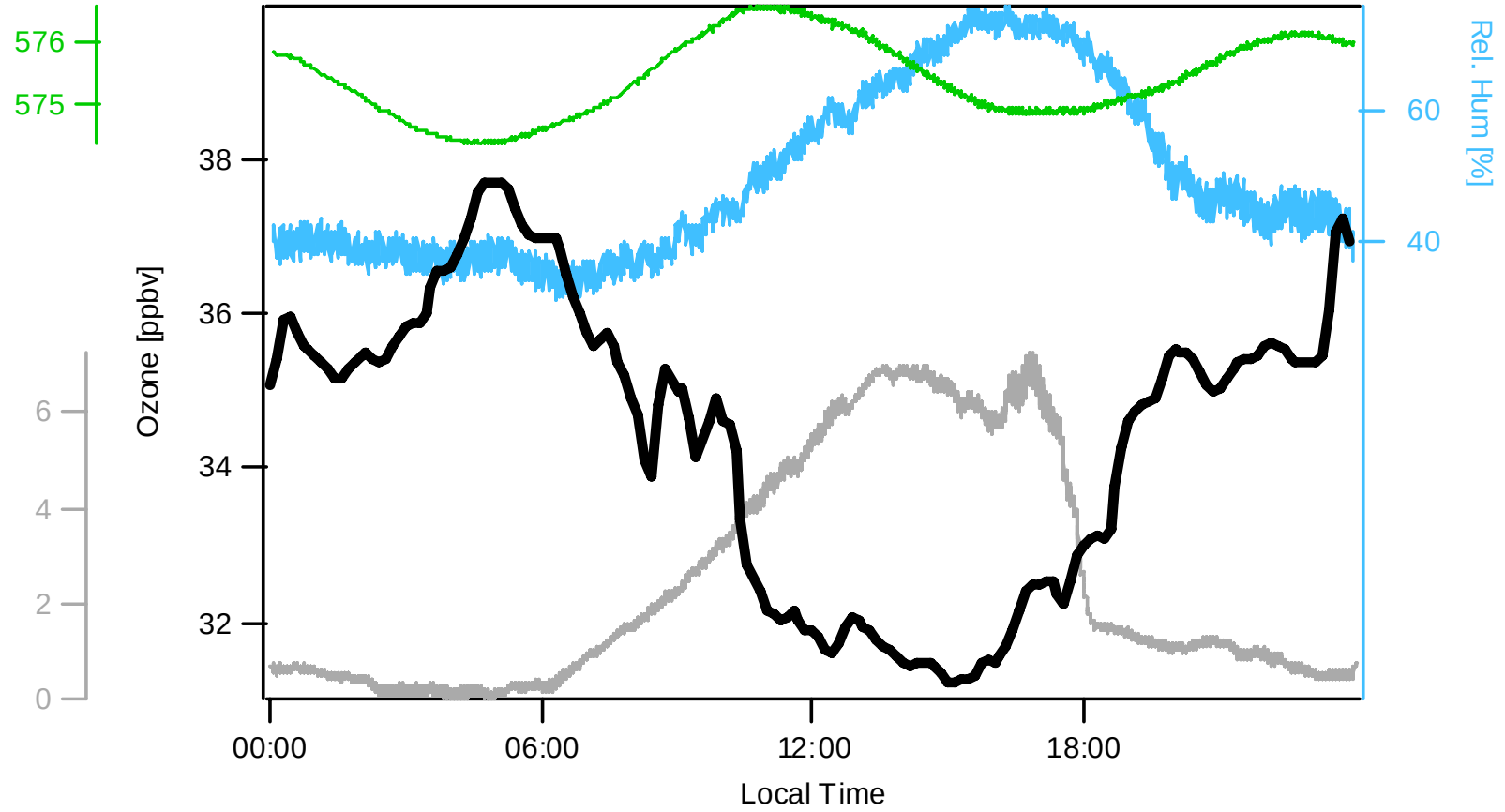


	CCl_4	CH_3CCl_3	
Mauna Loa	104	140	**pptv (FT)**

Wind direction/speed

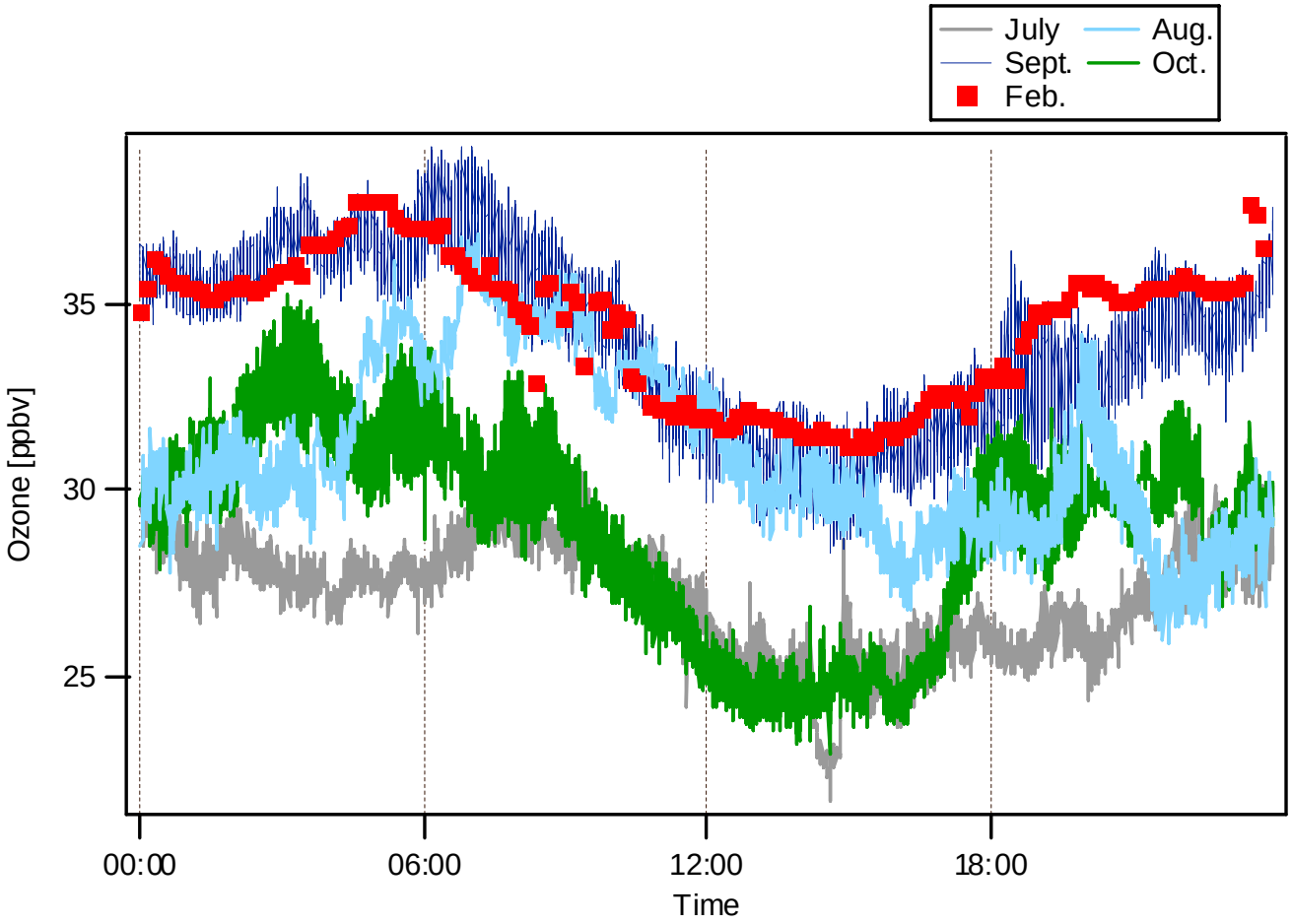


Average Ozone mixing ratio 18-24 Feb 2005 (dry season)



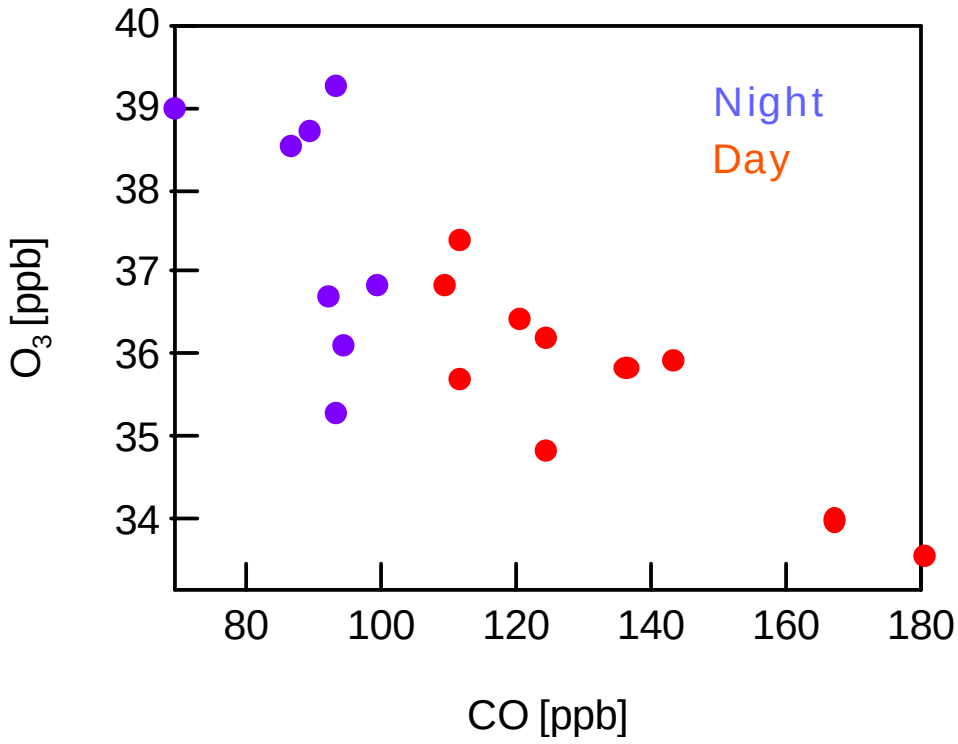
Mauna Loa: 35 Summer/64 ppbv Spring
Izaña: Downslope/Upslope 40/38 ppbv
Jungfraujoch: Downslope/Upslope 62/64 ppbv

Average Ozone July-Oct. 2004/Feb. 2005

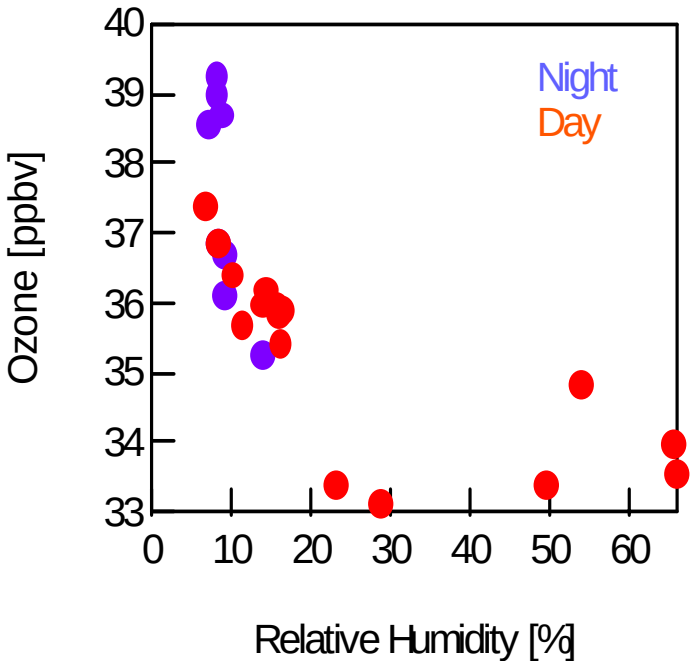


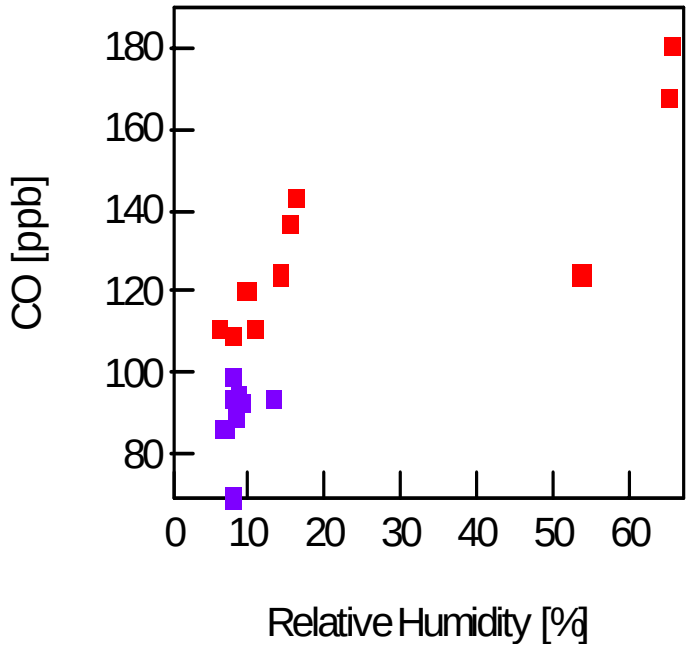
July-Oct. in-situ O_3 data kindly provided by G. Hochschild and G. Kopp

Relationship between O_3 and CO



Correlation with humidity





Conclusion

- Pico Espejo is in the free troposphere during the night and in the morning until aprox. 10:00

- Upslope flow occurred mainly between 10:00 and 19:00. Concentrations of anthropogenic gases peaked in the early afternoon. Nevertheless, the levels are very low, indicating that the site is not significantly affected by local pollution

- Ozone diurnal cycle is driven by local meteorology (catabatic and anabatic winds) and photochemistry (ozone consumption during daytime)