

## INSTRUMENT : Ozone Radiosoundings over Cotonou, Benin

### 1-) Short Description

In the frame of the EOP, ozone soundings have started over Cotonou, Benin in December 2004 at the frequency of one a week. During the SOP, the frequency was doubled. We plan to keep on launching up to the end of February 2007. Cotonou is located exactly at : 6.21°N, 2.23°E and 9.5 masl.

We use the vaisala technique, both for the PTU and the ozone sondes.

The objective of this instrument is to build a thorough ozone climatology in the troposphere and the lower stratosphere to better characterize the origin and fate of ozone over this region and their seasonal variations. This instrument complements the MOZAIC data recorded over Lagos between 1998 and 2004, from the ground to 12 km altitude only (*Sauvage et al.*, 2005; 2006).

### 2-) Dates of Observations

Below are the dates of the available soundings so far. Usually they are launched between 8 and 10 UTC (9:00 and 11:00 am local time)

20041220  
20041222  
20050117  
20050118  
20050208  
20050211  
20050218  
20050225  
20050311  
20050318  
20050401  
20050415  
20050509  
20050513  
20050520  
20050608  
20050610  
20050613  
20050616  
20050627  
20050819  
20050826  
20050831  
20050916  
20050924  
20050930  
20051007

20051028  
20051031  
20051104  
20051125  
20051129  
20051216  
20051220  
20051222  
20060106  
20060109  
20060112  
20060116  
20060119  
20060206  
20060214  
20060217  
20060310  
20060317  
20060324  
20060331  
20060407  
20060414  
20060421  
20060505  
20060519  
20060526  
20060530  
20060602  
20060606  
20060609  
20060612  
20060616  
20060620  
20060623  
20060627  
20060630  
20060703  
20060706  
20060711  
20060718  
20060721  
20060725  
20060731  
20060803  
20060810  
20060814 ....“golden day” (very high ozone concentrations by 2-5 km altitude)  
20060817  
20060822  
20060824  
20060831

20060907  
 20060921  
 20060928  
 20061005  
 20061011  
 20061018  
 20061025  
 20061102  
 20061109  
 20061116  
 20061201  
 20061208  
 20070109  
 20070112  
 20070115  
 20070118  
 20070123  
 20070126

### 3-) Data format and availability

Below is an example of the files, one for each sounding :

```

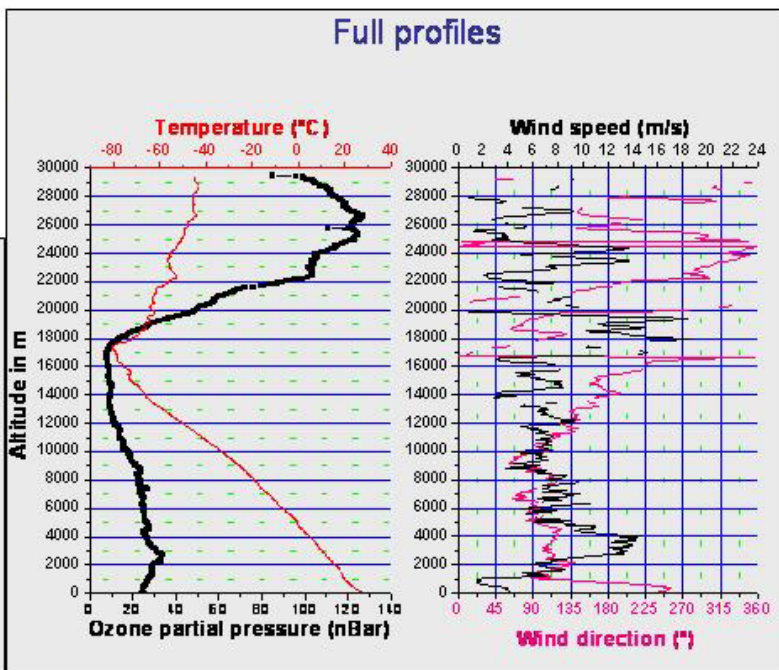
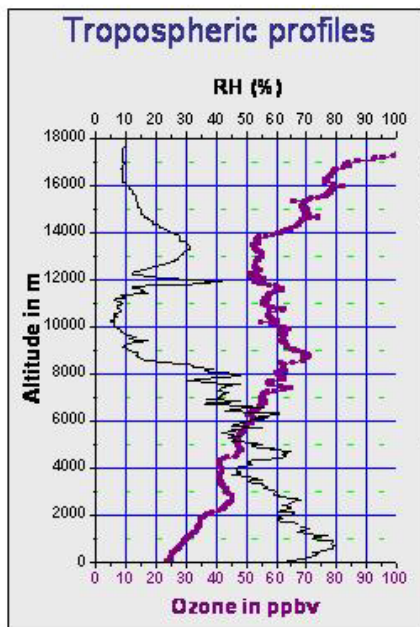
STATION : Cotonou, Benin
Station Principal Investigator : Valerie Thouret (UPS/CNRS, France)
Latitude (deg) : +6.21
Longitude (deg) : +2.23
Elevation (m) : 9.5
Launch Date : 20060112
Launch Time (UT) : 10:10
Sonde Type/KI Solution : 6A SPC, 1.0% buffered
Applied pump corrections : Komhyr, 1986
Burst Pressure (hPa) : 18.00
Integrated O3 (DU) up to 18mb : 108.53
SBUV Residual (DU) : 107.9
Const. Mixing Ratio Residual (DU): 9000.0
  
```

Time sec	Press hPa	Alt km	Temp C	RH %	O3 mPa	O3 ppmv	W Dir deg	W Spd m/s	Pump T C
20	1010.5	0.008	28.4	77	1.97	0.020	9000.0	9000.0	33.3
30	1008.0	0.029	27.3	81	1.95	0.019	246.0	4.6	33.4
40	1004.9	0.057	27.0	82	1.97	0.020	239.0	5.4	33.4
50	1001.4	0.087	26.1	86	2.00	0.020	241.0	5.0	33.4
60	996.5	0.130	25.6	89	2.05	0.021	250.0	4.7	33.5

The data are available as soon as validated by myself.

Below is an example of one profile recorded during the SOP :

Cotonou, 2006/06/23,  
08:45 am



### References :

Sauvage B., V. Thouret, J- P. Cammas, F. Gheusi, G. Athier and P. Nédélec, Tropospheric ozone over Equatorial Africa: regional aspects from the MOZAIC data. *Atmos. Chem. Phys.*, 5, 311-335, 2005.

Sauvage B., V. Thouret, A.M. Thompson, J.C. Witte, J- P. Cammas, P. Nédélec, and G. Athier, enhanced View of the "Tropical Atlantic Ozone Paradox" and "Zonal Wave-one" from the In-situ MOZAIC and SHADOZ Data, *J. Geophys. Res.*, January 2006.