### Actual Status and Future Purposes about Atmosphere Air Monitoring at BEO Moussala

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Actual status of atmosphere monitoring at BEO Moussala in real time

•Nitrogen Oxide Concentration Measurements

### •Nitrogen Dioxide Concentration Measurements

•Ozone Concentration Measurements

### **Devices for Gas Concentration Measurements**

Rise time: 7



Nitrogen oxides analyzer TECAN Method: Chemiluminescense with Ranges: 0-0.1; 0-1; 0-10; 0-100 ppl Sensitivity: 1 ppb



Ozone analyzer Dasibi 1003-AH Method: UV-Photometry Range: 0 – 1000 ppb Sensitivity: 1 ppb Interval of information update: 24 sec Flow rate: 2 LPM

# Some results from NO, NO<sub>2</sub> and O<sub>3</sub> concentration measurements







Upgrading and renewing of gas analyzers and putting in operation of automatic air monitoring station Environnement to the end of 2005 by BEOBAL Project, FP6 of EC



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Renewing of NO<sub>x</sub> analyzer
Renewing of O<sub>3</sub> analyzer
Installing new analyzer for CO
Installing new analyzer for SO<sub>2</sub>
Installing new data acquisition system
Installing new software

# **NO<sub>x</sub> concentration measurements**





NOx analyzer Environnement AC32M Method: Chemiluminescence in accordance with ISO 7996 and EN14211 User selectable ranges from 0 to 10 ppm or auto ranging Sensitivity: 0.4 ppb Response time: 40 sec Internal memory for last 4096 average values Data averaging from 1 to 9999 minutes Remote control and settings via PC

### $O_3$ concentration measurements





- O3 analyzer Environnement O342M
- Method: UV-Photometry in accordance with ISO13964 and EN14625
- User selectable ranges from 0 to 10 ppm or auto ranging
- Sensitivity: 0.4 ppb
- Response time: 30 sec
- Internal memory for last 4096 average values
- Data averaging from 1 to 9999 minutes
- Remote control and settings via PC

# **CO** concentration measurements





**BEO Moussala** 

CO analyzer Environnement CO12M Method: NDIR in accordance with ISO4224 and EN14626 User selectable ranges from 0 to 200 ppm or auto ranging Sensitivity: 0.05 ppm Response time: 30 sec Internal memory for last 4096 average values Data averaging from 1 to 9999 minutes Remote control and settings via PC

# **SO<sub>2</sub> concentration measurements**





SO2 analyzer Environnement AF22M

Method: UV-fluorescence in accordance with ISO10498 and EN14212

User selectable ranges from 0 to 10 ppm or auto ranging

Sensitivity: 1 ppb

Response time: 10 sec

Internal memory for last 4096 average values

Data averaging from 1 to 9999 minutes

Remote control and settings via PC

## **Data acquisition system and software**



Remote control is based on multi-port serial interface RS

Data collecting is based on 16 channels ADC isolated interface board

ENVIDA for Windows is a software for data acquisition system from Environnement SA



- •Multitasking operation
- •Sampling rate: every 1, 2, 5 and 10 sec (user sel.)
  - •Averages: 1, 5, 6, 15 or 60 min or user selectable •Automatic or manual corrections of zero and span drifts
  - •Automatic calibration check
  - •Automatic calibration corrections
  - •Complete remote configuration via PC
  - •General alarms
  - •Diagnostic cheks
  - •Data storage into database

### **Future purposes for aerosol research**

Physical parameters of aerosols

Optical parameters of aerosols

Chemical parameters and structure of aerosols

### **Planned aerosol measurements**

### Continuous Measurement

- Mass in two size fractions PM10 and PM2.5
- Major chemical components in two size fractions PM10 and 2.5
- Light scattering coefficient at various wavelengths

Intermittent Measurement

Aerosol size distribution Detailed size fractionated chemical composition

Devices for aerosol research that will start to operate in 2006

Cascade impactor with 9 stages

Dust meter for PM10 and PM2.5

Integrated nephelometer for light scattering coefficient measurements

Planned networking visits to European research centers

> Networking visit to Zugspitze, Hohenpaissenberg and Schneefernerhause – Germany, in November 2005

Networking visit to Monte Cimone and Testa Grigia – Italy, in first part of 2006

Networking visit to JRS IES – Ispra, Italy, in second part of 2006

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### http://beo-db.inrne.bas.bg