*G.J. Heij and J.W. Erisman (Editors). Acid Rain Research: Do we have enough answers?*



# Immission and Dry Deposition of $SO_2$ and Ozone lee side of the Conurbation of Leipzig in Eastern Germany

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## ABSTRACT

In 1991 the integrated research project SANA has been established to study the air pollution situation and its changing after the German unification in East Germany. In this project a measurement station was built at leeside of the strong air polluted city area of Leipzig. In the poster we presented results of the continously measurement of the immission of $SO_2$ and $O_3$ by the gradient technique. The ratio of dry to wet deposition[1)] of total S is between 0,5 to 2,3 and depends on the quantity of precipitation.

## EXPERIMENTAL AND RESULTS

Figure 1 shows the regions with much $SO_2$-Emission and the location of the measurement place Melpitz in Saxonia.

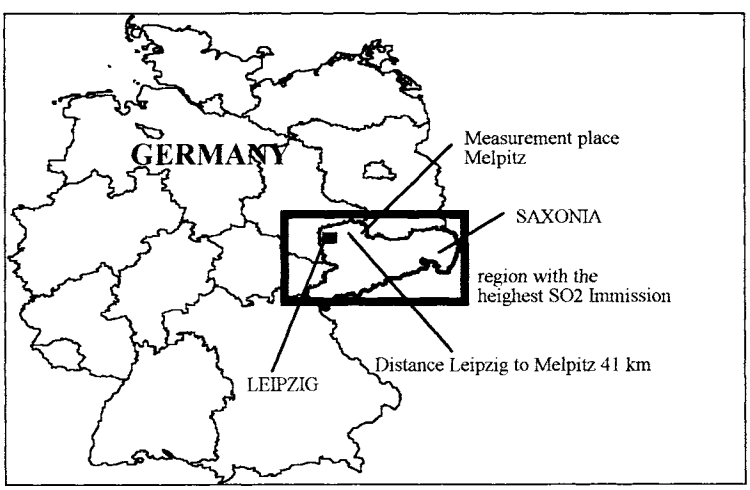


Figure 1: Location of the measurement place near Melpitz

1) Determination of sulphate S by E.Brüggemann (personal communication 1994)

The measurement station is placed in an old large meadow which is well suited for micrometeorological experiments. The gradient method is based on measurements of meteorological parameters such as wind velocity, temperature and relative humidity in different heights. The experimental realization of the measurement of the profiles for the concentration of trace gases in Melpitz in different heights is shown in figure 2.

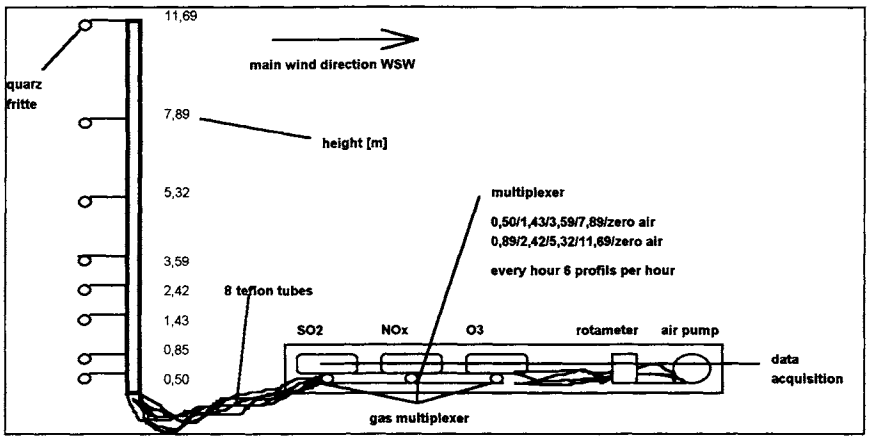


Figure 2: Gradient system for chemical species

The fluxes are calculated from hourly mean values by logarithmical fits of the profiles from concentration and wind speed. Results are presented in Table 1

Table 1 Fluxes calculated by gradient technique

| | Juli 92 | | Oktober 92 | | April 93 | |
|---|---|---|---|---|---|---|
| | $SO_2$ | $O_3$ | $SO_2$ | $O_3$ | $SO_2$ | $O_3$ |
| | *availability of hourly mean values [%][2)]* | | | | | |
| | *45,3* | *25,3* | *55,1* | *28,9* | *44,9* | *26,1* |
| **time of day [h]** | **Flux F [$\mu gm^{-2}s^{-1}$]** | | | | | |
| 0 - 6, 19 - 24(nigth) | -0,02 | -0,30 | -0,03 | -0,08 | -0,01 | -0,19 |
| 7 - 18 (day) | -0,07 | -0,39 | -0,07 | -0,15 | -0,04 | -0,29 |
| **monthly mean value** | **-0,04** | **-0,34** | **-0,05** | **-0,11** | **-0,03** | **-0,24** |
| | **monthly impact [$kgha^{-1}month^{-1}$] as S or $O_3$** | | | | | |
| | 0,58 | 8,94 | 0,66 | 2,97 | 0,34 | 6,33 |

2) depends on the quality of the measured profiles; they are influenced by instationarities