

**FOURIER ANALYSIS OF THE MEAN MONTHLY NO_x
CONCENTRATIONS IN THE ATHENS VICINITY**

P. Th. NASTOS^{*}, C. M. PHILANDRAS^{}, A. G. PALIATSOS^{***}**

^{*}Laboratory of Climatology, Geology Department, University of Athens

^{**}Research Center for Atmospheric Physics and Climatology of the Academy of Athens

^{***}General Department of Mathematics, Technological Education Institute of Piraeus

ABSTRACT

In the present work, Fourier Analysis is applied to the mean monthly NO_x concentrations of the period 1989-1999, for a network of 7 stations of the Ministry of Environment (Directorate of Air and Noise Pollution). The assessment of NO_x concentrations was succeeded by treating NO and NO₂ as a single primary pollutant. For that purpose, NO is converted to NO₂ and the unit used is $\mu\text{gr}/\text{m}^3$ "NO₂ equivalent". The main causes of NO_x emissions in urban areas are the road traffic and the industrial activity. The annual variation of NO_x concentration is well described with only two harmonic components, which explain over 90% of the total variance. In the process, for every harmonic component and for every station, the date of occurrence of maximum NO_x concentration was computed. Finally, the spatial distribution of the time of maximum in Athens vicinity is presented.