

INSTRUMENTAL RECORDING OF OZONE AND OTHER POLLUTANTS IN THE REGION OF MESOGIA OF ATTICA. BIOMONITORING OF OZONE PHYTOTOXICITY

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ABSTRACT

This paper focuses mainly on the phytotoxicity of ozone levels occurring in Athens and in the greater region of Mesogia – Attica (Glika Nera, Spata, and Markopoulo). The data come from the records of instrumental monitoring and from the biomonitoring exploration during the growing season (May 1 to August 31) of 2000. Besides, the diurnal patterns of several other pollutants (NO, NO₂, O₃, SO₂, CO, CH₄, NMHC and dust), recorded in the above-mentioned stations, are presented.

In all stations, ozone exhibited the usual diurnal pattern: maximized during midday and afternoon hours and minimized during night hours. The average hourly ozone concentration during midday hours (when ozone maximized) was about 50–60 ppb. The AOT40 (ppb.hours) index was very high in Athens (14437), Spata (19035) and Markopoulo (19209) - indicating that the ozone levels were highly phytotoxic – and relatively low at Glyka Nera (556). The ozone levels – and the corresponding AOT40s – were higher during May and June and lower during July and August. The ozone bioindicator plants of Bel-W3 and KK6/5 tobacco varieties confirmed the phytotoxicity of these ozone levels since they were highly injured at all biomonitored places.

Both NO and NO₂ levels maximized rapidly during the morning hours from 07:00 to 09:00 and remained low during the rest of the day. The characteristic maximization of these pollutants coincided with reduction of ozone concentrations. Dust levels maximized during midday hours but they did not follow any time-consistent pattern. The pollutants SO₂, CO, CH₄ and NMHC exhibited a sort term peak from 07:00 to 10:00 in the morning and a second one from 22:00 to 02:00. The levels of most pollutants recorded were in general lower than those usually occurring in Athens.