Observations of Ground-Level Ozone in Lithuania: Monitoring Network and Results

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Emissions of the ozone precursors, nitrogen oxides and hydrocarbons, have decreased in many parts of Europe but the trend in ozone concentration does not necessarily follow the changes in precursors. To date, for a variety of reasons (e.g., geographical, meteorological and even economical conditions) the ozone concentration in Lithuania is more dependent on the ozone and its precursor levels in the neighboring countries than on the emission of the precursors in Lithuania itself. 13 stations are integrated into the ground-level ozone monitoring network in Lithuania. Nine stations are located in urbanized territories and four at the rural sites. The longest time series of ozone data is from the background station Preila. The increase of 0.95 μg/m^3 per year was found during the monitoring period of 1982-2007. The analysis of data during warm and cold periods showed a different growth rate. The ozone level during a cold period increases more than during a warm period. The KZ filter was applied to separate the ozone series components and to obtain an estimate of the long-term trend due to changes in emissions, removing the effect of meteorological conditions.

The experiment near the high-voltage transmission lines was conducted in September of 2007. The obtained results showed that they can be an important local source of ozone under certain meteorological conditions in the rural locality.
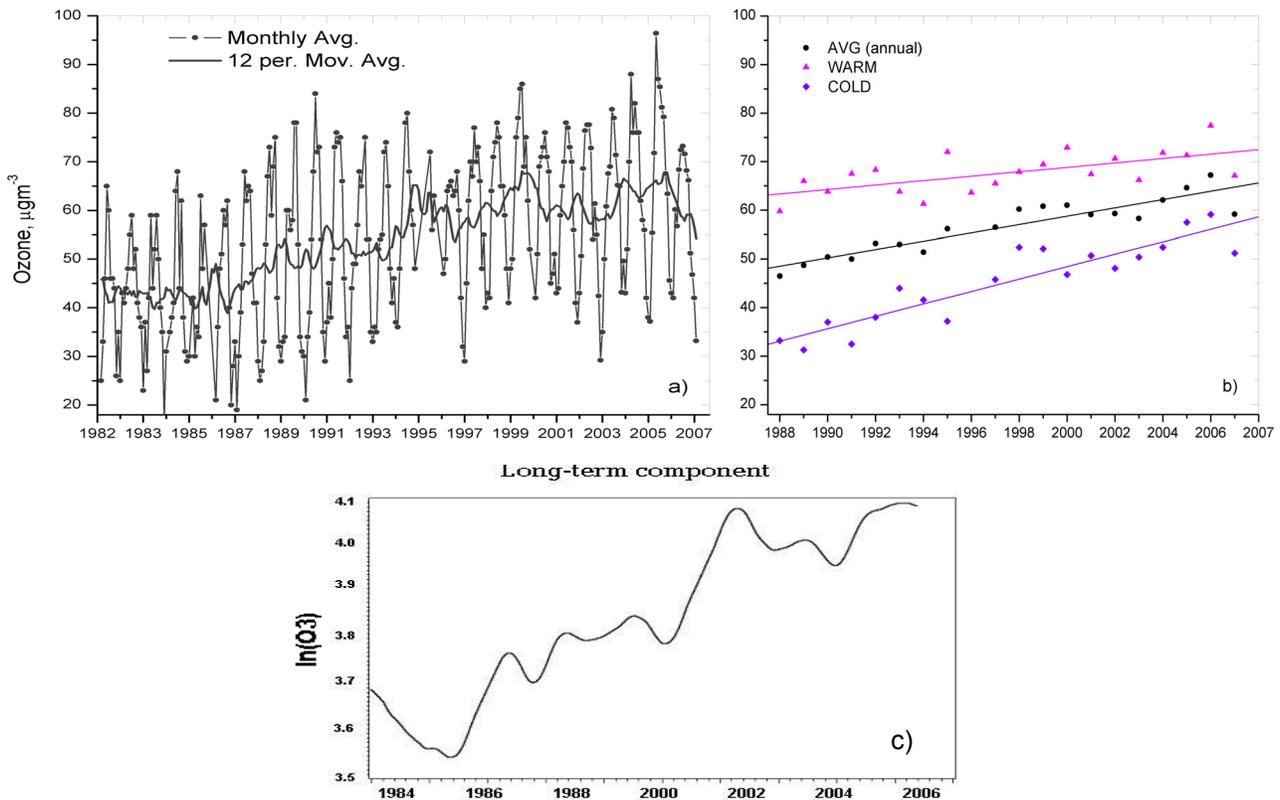
Figure 1. The variation of ozone concentration and its trend at the Preila station: **(a)** monthly average concentration and moving average, **(b)** linear trends of annual and average concentrations during warm and cold periods, **(c)** KZ filtered long-term component of ozone time series.