1. Introduction

The urban climate is an important part of life of rising number of people and it is therefore studied with increasing intensity. Large cities have their specific mesoclimate that is characterized mainly by higher air temperature and lower humidity. The reason is predominantly impermeable surface, for which there is rapid runoff of precipitation, and artificial materials, which causes the city to absorb heat during the day and generate it during the night. The other characteristics of the urban climate are influenced by decreased surface albedo, emissions of heat, increased surface roughness and air pollution. Together, all these factors have influence on the temperature and wind field over the urban area.

The aim of this work was to assess statistical characteristics of wind field and urban canopy air temperature on the area of Prague and its relation the air pollution. The first step was calculation and verification of surface wind field over the area of Prague using a numerical model. Furthermore, other variables were calculated such as mixing length and ventilation factor, which are connected to the air pollution. The wind field calculation was followed by assessment of heat budget of built-up urban surface. For that purpose, a widespread scheme was applied, which is capable to treat very complex surface of the city. In the last part of the work, the relation between calculated meteorological variables and measured pollutant concentrations is explored. The most important species with highest number of measurement sites were chosen for the analysis. Taking into account availability of data and homogeneity of time series, the selected data covered the decade 1997-2006.

In the past, a team from ČHMÚ (Czech hydrometeorological institute) studied the climate of Prague (Procházka et al., 1980). The classification was carried out using Boer's method, based on analysis of most important factors influencing the urban climate. In more recent years, the classification of the climate of Prague was carried out in the framework of the project "Classification of climate of Prague", finished in the year 2001. The resulting synthetic map was created using layers describing mean wind speed, deviation of mean temperature and other layers derived from the digital elevation model.