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Dependence of Pollutant Concentration in Fog Water Samples on the Air Flow Direction

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In this paper we summarize the latest results relating to the dependence of the pollutant concentration in fog water samples (eventually low cloud water samples) on the various air flow directions. In the years 2004 and 2005 fog water samples were collected at the meteorological observatory Milesovka of the IAP ASCR. The Mt. Milesovka (50˚ 33' 17" N, 13˚ 55' 57" E, 837 m n. m.) is located in the vicinity of one of the most polluted region in Czech Republic, North Bohemian brown coalfield.

58 samples in the year 2004 and 21 samples in the year 2005 were taken there. Fog water samples were collected by an active collector described e.g. by Daube et al. (1987) and Tesar et al. (1995). Also the meteorological data from the observatory Milesovka were used (namely wind direction, wind velocity, air temperature, air humidity, visibility, cloudiness, genus of clouds and atmospheric phenomena). Chemical analyses of selected components, pH and conductivity were carried out in laboratory by using of standard methods. Fog samples were distributed in 8 categories according to the air flow direction (N, NE, E, SE, S, SW, W, NW and N) and evaluated together. For purpose of this paper the data from the database REZZO (Register of Emissions and Air Pollution Sources) of Czech Hydrometeorological Institute were processed. For each of 8 sectors were selected main air pollution sources.

Most significant emission sources (thermal power plants, chemical factories, heating plants, coal-mine, etc.) are located in SW and W sectors, accordingly the highest pollutant concentrations in fog water samples are expected by the air flow from these directions. Our previous published results show the highest pollutant concentrations

at the transfer from S sector (Fisak et al., 2007), which is caused probably by the distant pollutant transfer from central Bohemia (Prague, Kladno, etc.) and west Bohemia (Pilsner), and at the transfer from N sector (Fisak et al., 2002). The air flowing from N sector reflects probably the pollution sources in Polish region, which is a part of the region called “black triangle”.

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