Deformation of air flow over a young spruce forest stand

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A b s t r a c t: Air flow in an air layer affected by vegetation cover is very strongly dependent on aerodynamic properties of its active surface. Deformation of air flow in such layer over a young spruce forest stand was investigated. With this aim the wind speed profiles measured in and above investigated forest stand in the framework of micrometeorological profile measurements (May - October 2001) were analysed. The Experimental Ecological Study Site is located at Bílý Kříž (N 49°30′17″, E 18°32′28″, 800-900 m a.s.l.), Moravian-Silesian Beskydy Mts, the Czech Republic, on the slope 13° with SSW orientation. The experimental site is represented by the monoculture of young Norway spruce stand with density of 2600 trees per ha on Fd plot and 1880 trees per ha on Fs plot. Plot areas cover 2500 m^2 each. The zero plane displacement d was 0.73 h for Fd plot with the mean height h = 8.86 m and d = 0.59 h for Fs plot with h of about 8.07 m. The mean dynamic roughness length for wind speed z_0 was found to be 0.61 m for Fd plot and z_0 = 0.70 m for Fs plot.

Key words: wind speed profile, wind rose, zero plane displacement, dynamic roughness length, spruce forest

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