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Magnetic monitoring of pollution deposited on leaves, bark and soil: preliminary results

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We report preliminary results of magnetic study of pollution deposited on leaves, bark and soil in six locations in Warsaw of various level of contamination. Leaves and bark samples were taken at about 1.5m height from different spots of tree crown and at about 0.5m from surface, respectively. Top-soil samples were taken at a distance of no more than 2.5 m from a tree. Samples of leaves and bark were collected from horse chestnut trees in spring and autumn after few rainless days. In spring in several places lime tree leaves were sampled. Dry leaves were crashed and closely packed in plastic boxes. Mass specific susceptibility was measured in three frequency of magnetic filed as a detector of magnetic particles of pollution.
Comparison of autumn and spring data provides information about the amount of pollution deposited during vegetation season. Data for horse chestnut and lime tree leaves show that horse chestnut is better collector of particulates. Because of that we decided not to collect leaves from lime tree in the autumn. The relationship of soil susceptibility (X) with X of leaves and bark reveal linear correlation with correlation coefficient R=0.97 and 0.5 for leaves and bark, respectively. Distribution of X values well agree with exposition on roadside particulate pollution. These preliminary results demonstrate that leaves and bark can be used for magnetic monitoring as detector of pollution level and can provide us with information about seasonal variation of this level.