On air pollution problems of Tbilisi in areas with heavy traffic

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At present Georgian industrial potential is vary low, a lot of plants and mills are not functioning. That is way the main pollutants of the air are exhaust gases in Georgia. So air pollution from exhaust gases is considered to be of the most serious environment problem in the capital city of Georgia Tbilisi with population of 1.5 million. Tbilisi air pollution problem is not different from other urban areas in the world. Aerosols are considered to be one of the most serious air pollution problems in Tbilisi. According to Georgian Government statistics data, in areas with heavy traffic the air pollution quality is exceeded than industrial areas. It is expected that the continuous economic growth in Tbilisi is inseparable with intensity of traffic and it wills more degrade the air quality. Unfortunately for last 15 years, owing to hard economical situation, net of meteorological stations and observation laboratories almost was destroyed in Georgia. At present there are functioning only six meteorological observation laboratories in Tbilisi up to 34 in 1992. Also Tbilisi has rather compound orography. Therefore, investigation of the exhaust gases dispersion in Tbilisi street canyons by mathematical modelling is very important for the health of population, for management of environment and future economic planning.

To learn the above-mentioned problem in the given work we have done the following activities: we have learnt background picture of air pollution in Tbilisi and the tendency of changing of the general level of pollution according to the years and seasons; we have learnt the meteorological conditions established in Tbilisi and the role of auto transport as a reason of air pollution; we have drowned a numerical model of exhaust gas spreading in Tbilisi streets canyons based on the integration of hydro-thermo dynamic equations with accounting of compound relief of Tbilisi.

With the help of the mathematical modeling NO_x harmful substances' concentration distribution at Rustaveli Avenue and at Agmashenebeli and King Tamar streets' crossing and for the whole complex of streets adjoined to this territory has been studied. Also the circumstance how does the existence of the light-signals at the streets' crossing point influence upon the harmful substances' concentration growth has been investigated.