

Modelling of Road Traffic Noise

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SUMMARY

In a daily routine of city life, noise is one of the most influential factors on human health. Noise, which may be denoted as undesired sound may also lead to physiological and psychological diseases. Particularly, metropolitan cities are the sources of relatively several noises such as transportation, industry and human voices. Developments of the cities in the world have accelerated after the World War II. Parallel to the developing cities, numbers of motor vehicles have increased significantly and relevant traffic issues have arisen due to inadequate road network. It is understood that the vehicle traffic has increased 10 folds between the periods of 1980 and 2012, in Turkey according to the statistical data. One of the most important issues in the developed and developing countries is the traffic noise due to the increasing number of the vehicles. Road traffic noise sourced by the vehicles present variety according to the density of the traffic, kind of vehicles, braking status, road surface and the air stream created by the vehicle. In order to determine and assess the road traffic noise sourced by the traffic density, it has been planned to measure the noise on the main street in front of the Erciyes University, Kayseri within 5 minutes intervals in the morning, evening and at night. Noise values have been measured within a period for 3 three weeks of time under the similar air conditions along the route approx. for 1 km and in cross section for 100 m by using Delta Ohm Type 1 noise measuring equipment. Location of the each point measured on the land has been transferred to the satellite map by determining using the Global Positioning System (GPS). It has also been recorded the vehicle numbers and types passed during the measurement duration for 5 minutes. Noise values of the day, evening and night noise levels measured on the same point have been translated into a single value that reflects the daily average noise. In this study, the relationship among the noise values obtained, road traffic density and the distance to the road have been studied by using the regression analysis. Besides this, noise values obtained as the result of the studies have been assessed by using interpolation methods and a Geographic Information System aided highway traffic noise model have been created.