

EXAMPLE OF ABSTRACT

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DETERMINATION OF METEOROLOGICAL PARAMETERS AND THEIR EFFECT IN OUTDOOR SOUND PROPAGATION MEASUREMENTS

David C Waddington, Salford University

email: d.c.waddington@salford.ac.uk

An increasing awareness of the environmental noise problems means that a better knowledge of the effects of weather on sound propagation is necessary. Measured sound pressure levels owe as much to near-surface weather as to ground shape and impedance and factors such as source and receiver heights and locations. Wind and temperature gradients in the atmosphere cause refraction that can increase or decrease sound pressure levels significantly. However, the variability in meteorological parameters over the propagation path and measurement duration creates uncertainties in the measurement of temperature, wind speed and direction in practical situations. To investigate these uncertainties experiments were performed using an omni-directional point source over flat grassland and tarmac and a barrier. These measurements were specifically performed at distances typical to community noise problems. However, automatic weather stations, SODAR and LIDAR were used to simultaneously collect detailed meteorological information at a number of locations along the propagation path. These detailed range-dependent meteorological and acoustical measurements are reported here, together with correlations between the meteorological and propagation data. Having assessed the difficulties arising from the effects of meteorology, suggestions are made concerning the practical measurement and prediction of noise levels.