



Sputtering and Nasal Indices for the Assessment of Annoyance due to Urban Road Traffic Noise

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Models proposed for noise annoyance assessment are mainly based on energy-related indices ($L_{Aeq,T}$, L_{DEN} , etc.). However, various studies have shown that the sound characteristics of environmental noises linked to temporal and spectral features, also affect noise annoyance responses. The challenge lies in the perceptual and physical characterization of these influential acoustical features. Based on a semantic differential test and a complementary verbalization task, this study shows the relationship between noise annoyance assessments and two specific modulation sensations “sputtering” and “nasal”, evoked by urban road traffic pass-by noises. It turns out that common psychoacoustical indices only correlate to a certain degree with these sensations. Hence, alternative “sputtering” and “nasal” indices are proposed to better model these two specific sensations evoked by urban road traffic noises. The two indices are based on specific estimations of the modulation index as a function of time. It is shown how noise annoyance assessments could benefit from taking these indices into consideration.