Noise as an indicator of residential areas' quality in the Municipality of Velenje, Slovenia

Natalija Špeh, Environmental protection College
Katarina Ostruh, Velenje Municipality
Blaž Barborič, Geodetic Institute of Slovenia

9th Conference
Cartography and Geoinformation
Zadar, 20th – 22nd of November 2013

Environmental Protection COLLEGE

www.vsvo.si

GEODETSKI INŠTITUT SLOVENIJE

Content

- Introduction
- Area of the research
- Methodology of work
- Results
- Discussion
- To conclude

Introduction

- The project was motivated by the Municipal Spatial Plan
- Noise measurements are preliminary
- Measuring upgraded the public opinion survey

Area of the research

Sound/Noise

- Physically, there is nodifference, but a fluctuation of material particles of the medium, which has a mass and elasticity and is in the range of the audible spectrum,
- Noise is only one form of a sound, his unwelcome variation,
- It may be slightly uncomfortable, so annoying that hinder our business or in extreme cases dangerous to health,
- The effect of noise depends on its level; prolonged exposure to noise between 80 and 90 dB (A) usually causes hearing damage

Measuring sites

Environmental Protection COLLEGE

www.vsvo.si

Methodology of work

- Field measurements were carried out with air pressure gauge,
- Locations were determined by GPS,
- Method of inverse spacer weights (IDW - inverse distance weighted) - point interpolation of measuring points.

Legal provisions

- Decree on limit values of noise in the environment (2005),
- Limit values of noise indicators caused by the use of road; A) resident area: 60 dB (day value), 6:00 a.m. to 6:00 p.m.;
  B) mixed land use: residential area, public infrastructure: 65 dB (day), 6:00 a.m. to 6:00 p.m.

Results I.

- Preliminary public opinion survey proved the noise as an annoying or a disturbing environmental factor for the majority of respondents (score 3 on a scale of 1-4),

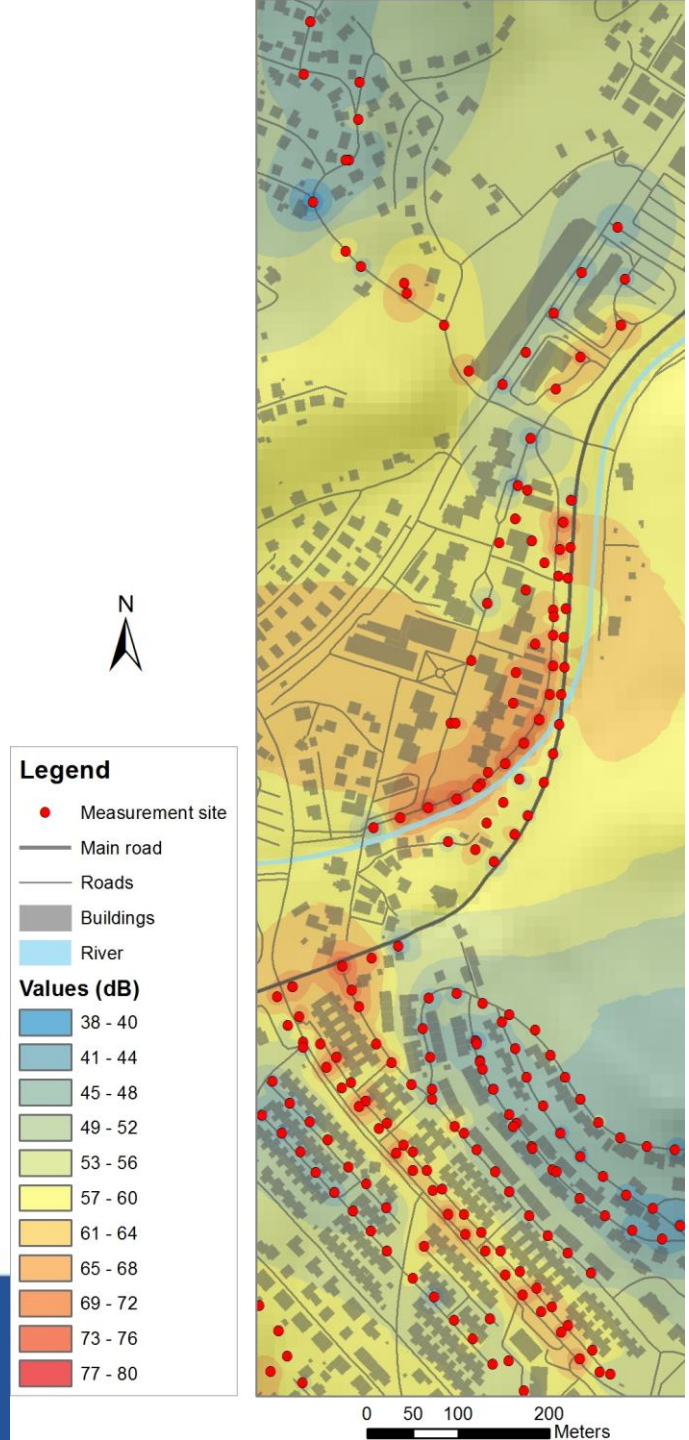
Results II.

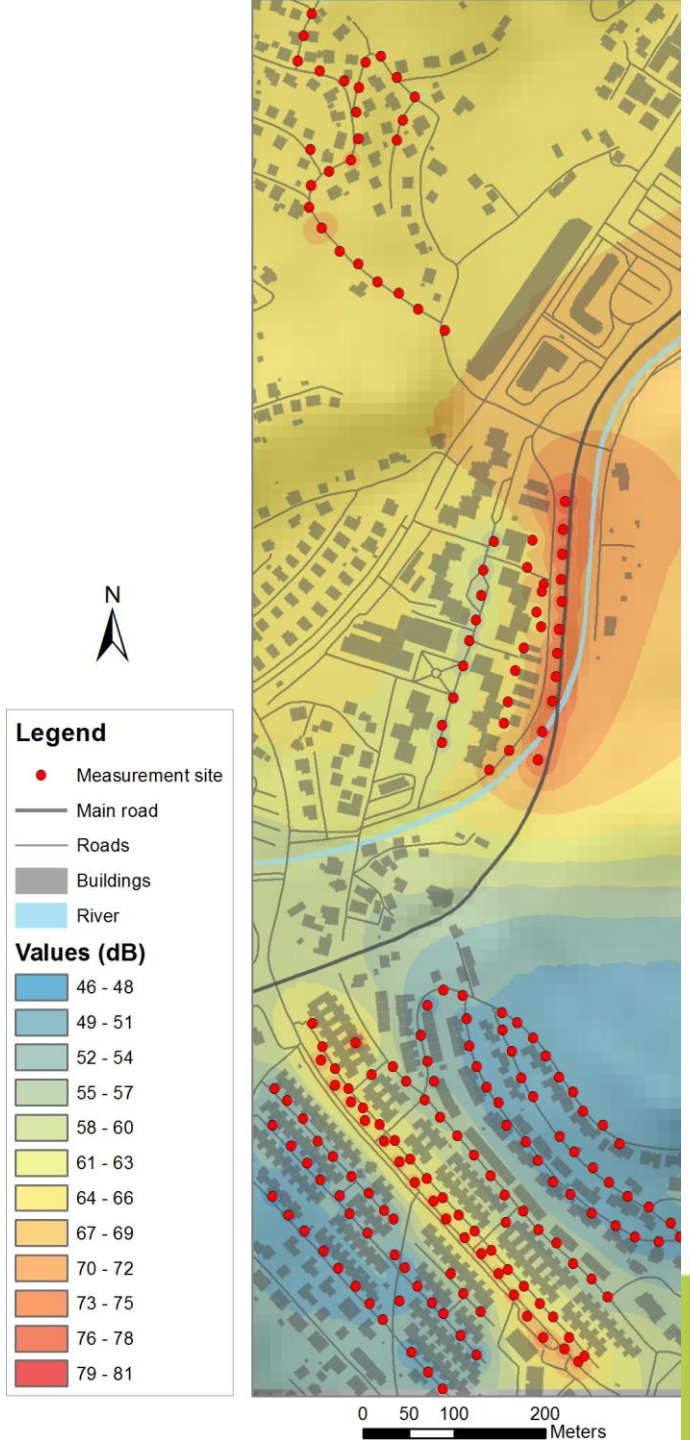
Table 1: Noise measurements 2012 (in dB)

Mediane	**53,2**
Average	57,8
maks	78,6

Table 2: Noise measurements 2013 (in dB)

Mediane	**57,15**
Average	58,34
Maks	78,1


N
Legend
Measurement site
Main road
Roads
Buildings
River
Values (dB)
38 - 40
41 - 44
45 - 48
49 - 52
53 - 56
57 - 60
61 - 64
65 - 68
69 - 72
73 - 76
77 - 80
0 50 100 200
Meters


N
Legend
Measurement site
Main road
Roads
Buildings
River
Values (dB)
46 - 48
49 - 51
52 - 54
55 - 57
58 - 60
61 - 63
64 - 66
67 - 69
70 - 72
73 - 75
76 - 78
79 - 81
0 50 100 200
Meters

Discussion I.

- The average values of noise measurement didn’t exceed the statutory limit values in both years’ sampling,
- Threshold were exceeded by maximum values (18,9 % cases in y. 2012,
- Max measurements in 2013: 51 % nearby the transit regional road and 21,9 % in single-family houses quarter by the local road, but 100 % in single-family houses quarter above regional road,

Discussion II.

- The Inverse Distance Weighted method (IDW) proved to be convenient for the interpolation of noise measurement values; enough dense net of measurement sites,
- Values in most noise polluted areas near roads quickly decrease with altitude increase,
- Measurements during the night would be welcome,
- Measuring present the peak periods' conditions.

To conclude – noise protection measures

- Installation of noise barriers,
- Speed limits and traffic diversion,
- Installation of a multi-layer windows and noise protection facades,
- Building bicycle lanes and limiting traffic in the city,
- Relocation of production plants, arrangement of venues.


Thank you
for your
attention.