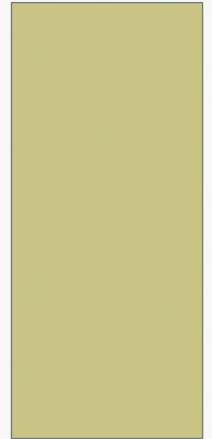# NOISE MAPPING USING GIS

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OUTLINE

- Introduction
- Noise Mapping
- Techniques
- Case Studies
- Conclusion

INTRODUCTION

- Noise can be defined simply as the disturbance evoked by sound.

- Noise can represent 1 type of environmental pollution. (NOISE POLLUTION).

- Noise in some cases can cause harm to human ears. In addition, it can have psychological effects on human performance.

INTRODUCTION

- Noise pollution is currently increasing at an alarming rate.

- Reasons include:
  - Increased population
  - Concentration in major cities
  - Increased traffic

- Many countries around the world are enforcing laws and directives to control noise pollution

- Reflecting noise levels on maps is the easiest way to represent the problem

NOISE MAPPING

• Noise map is a map the shows noise levels in a geographical area in a certain period of time (i.e. between 7:00am and 5:00pm)
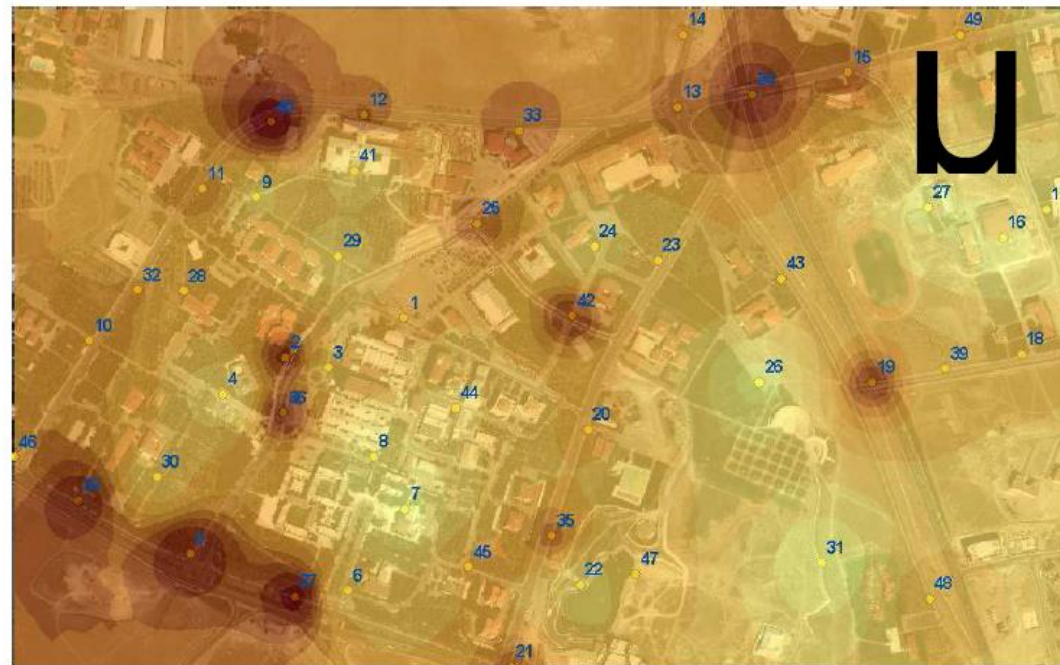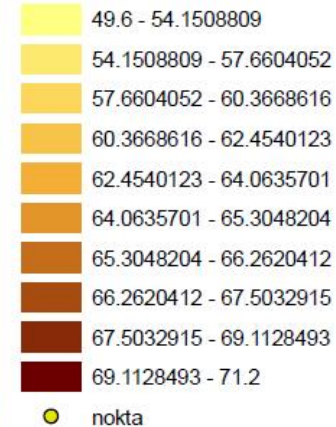
NOISE MAPPING

- European law states that cities with population of over 250,000 are required to have a noise map.
- This issue encouraged the use of GIS in creating such maps.
- The power of GIS provides:
  - Central Database management
  - Visual presentation

TECHNIQUES

- There are 2 types of data in noise mapping:
  - Field Measured Data
  - Modeling (predicted) Data
- Many techniques are used in noise mapping, and this includes:
  - 2D noise maps
  - 2 ½D noise maps
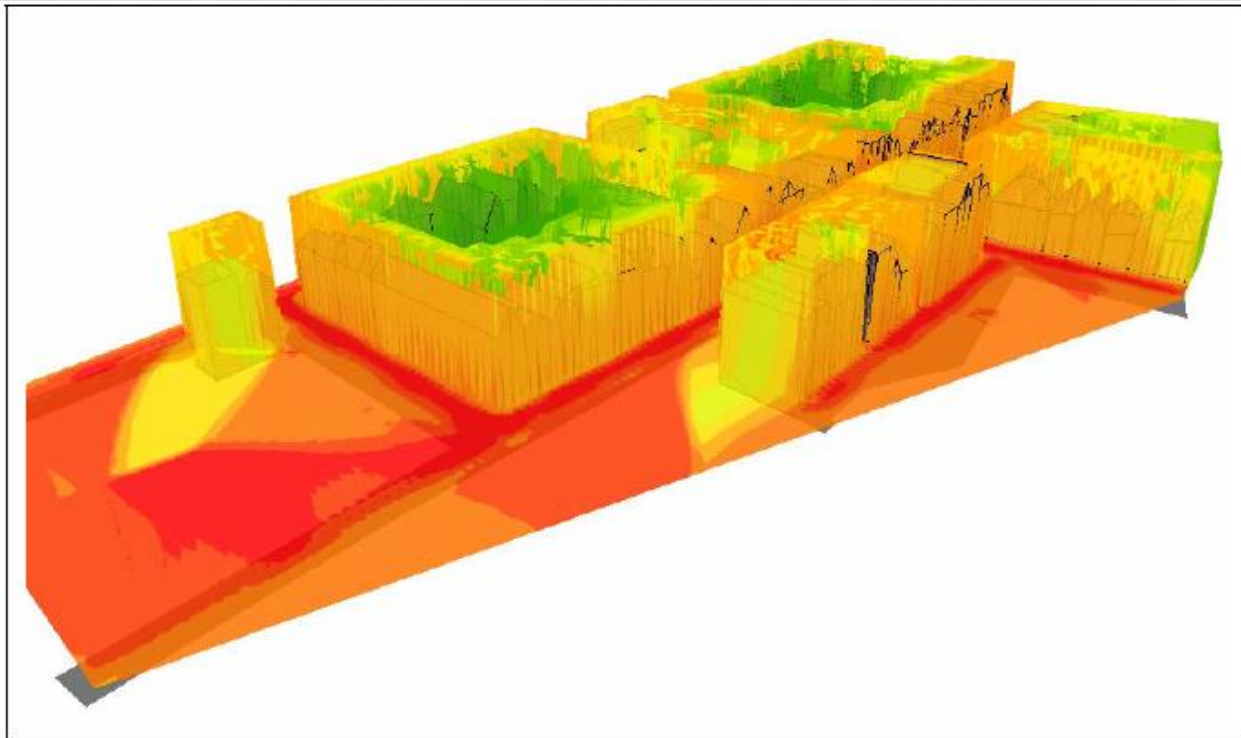 - 3D noise maps

TECHNIQUES

- 2D noise maps represent noise levels at one particular height

Legend
Noise level in dBA

High : 72.62

low : 17.24
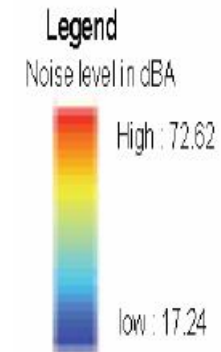
TECHNIQUES

- 2 ½ D noise maps represent noise levels at one elevation for the same x,y coordinates
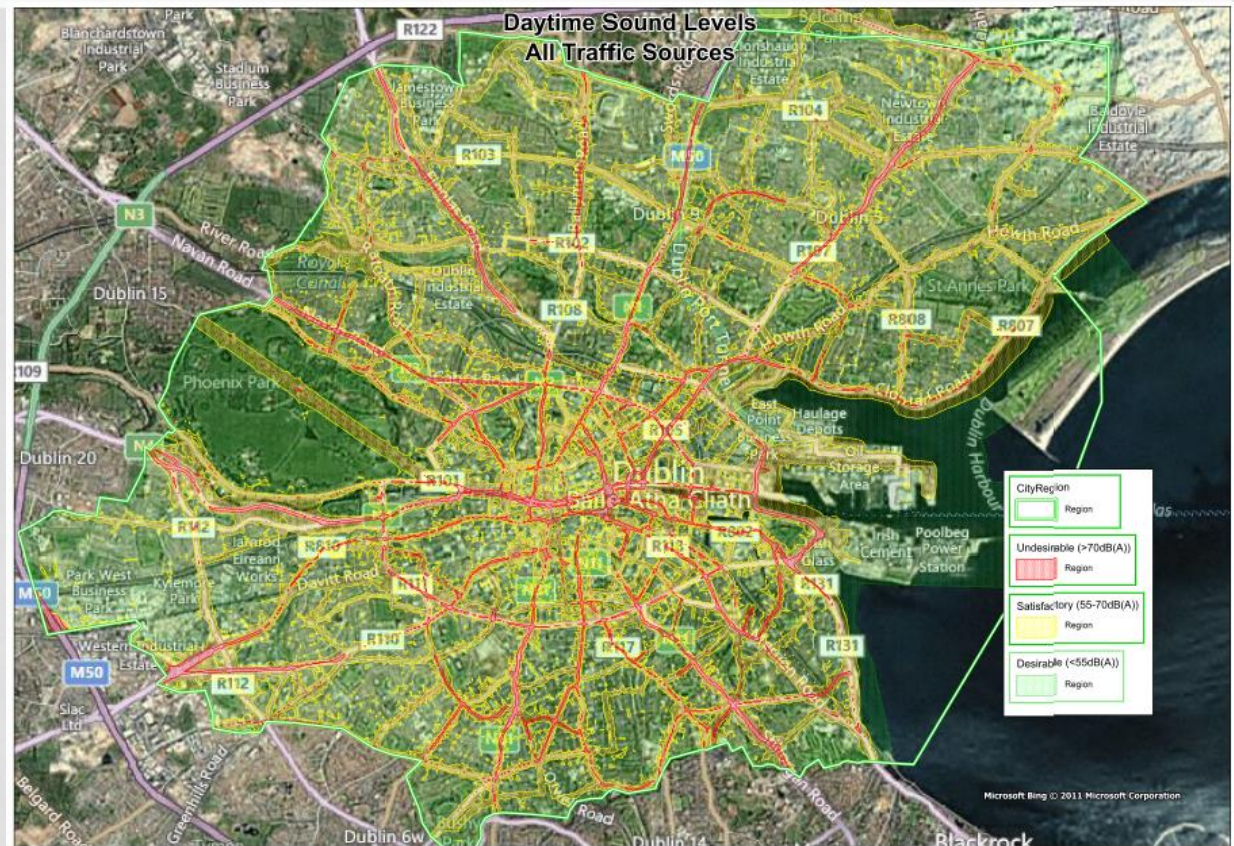- 3D maps show all the information on x,y,z axis.

CASE STUDIES

- Adeliade, South Australia, Australia
- 2d Map
- Based on Field Measurements
- Annual Update
- 2 Consultants:
  - GIS
  - Acoustics

CASE STUDIES

- Duplin City, Ireland
- Daytime and nighttime maps

CASE STUDIES

- San Francisco, California, USA
- Developed by the Department of Health

CASE STUDIES

- Barcelona City (Internet GIS)

CONCLUSION

- Implementation of GIS in noise mapping contributed positively of the control noise pollution.

- Many researchers now find it easier to conduct studies on noise levels.

- This has also helped urban planners to improve city and villages pollution.