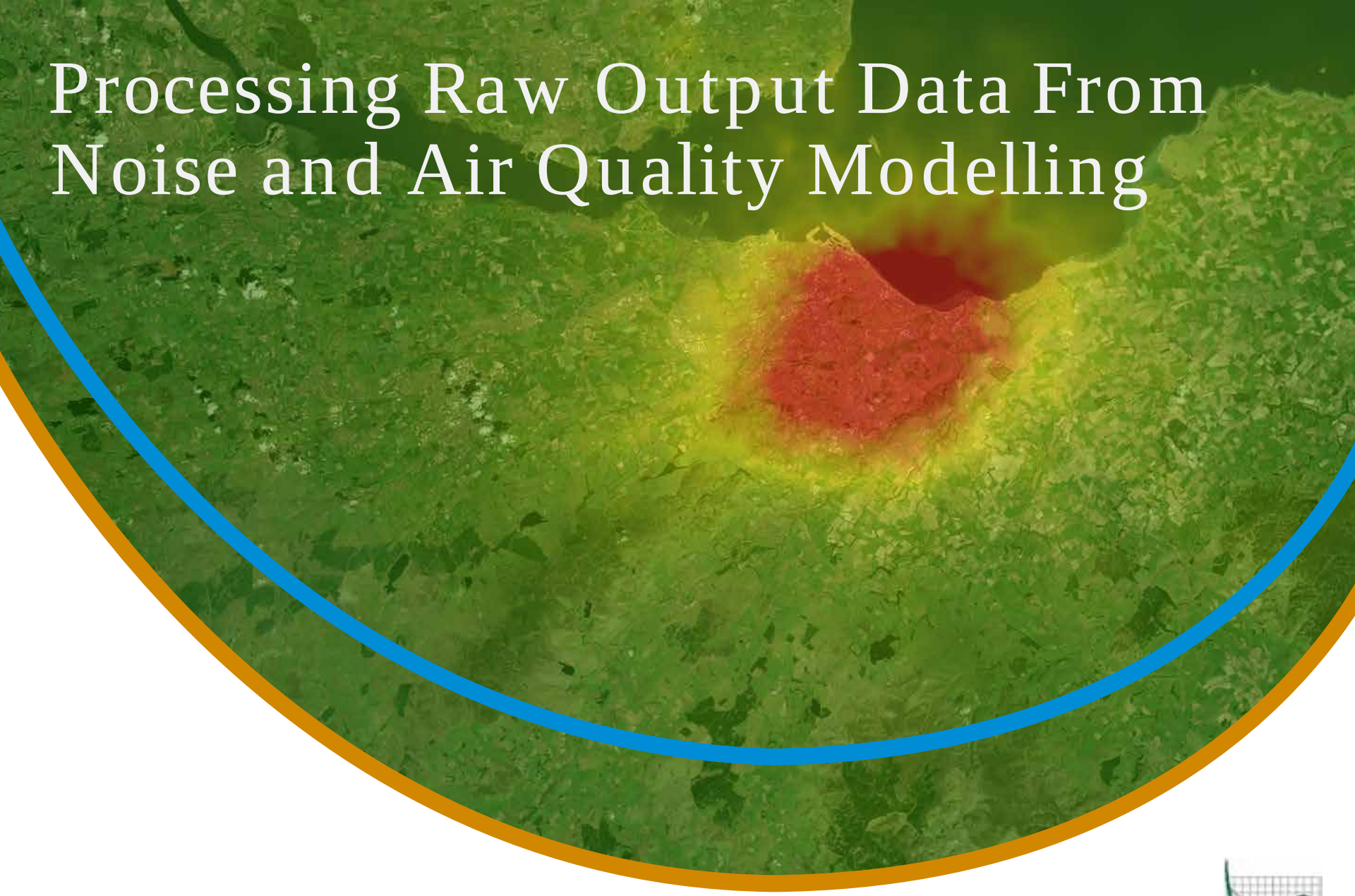
Processing Raw Output Data From Noise and Air Quality Modelling



The world's leading sustainability consultancy

ERM

Contents

About ERM

Environmental Resources Management (ERM) is a leading global provider of environmental, health, safety, risk, and social consulting services.

Oil & Gas

Transport

Renewables

Mining

Power

About Noise and Air Quality Modelling

Noise and air quality assessments form an integral part of Environmental, Social and Health Impact Assessment.

- What are noise and air quality assessments?
- Why do we do them?
  - Standards and regulations.
  - Funding prerequisites.

The Benefits and Challenges of Using GIS

Modelling of emission/transmission has a geography, it is spatial data.

However, there are challenges…

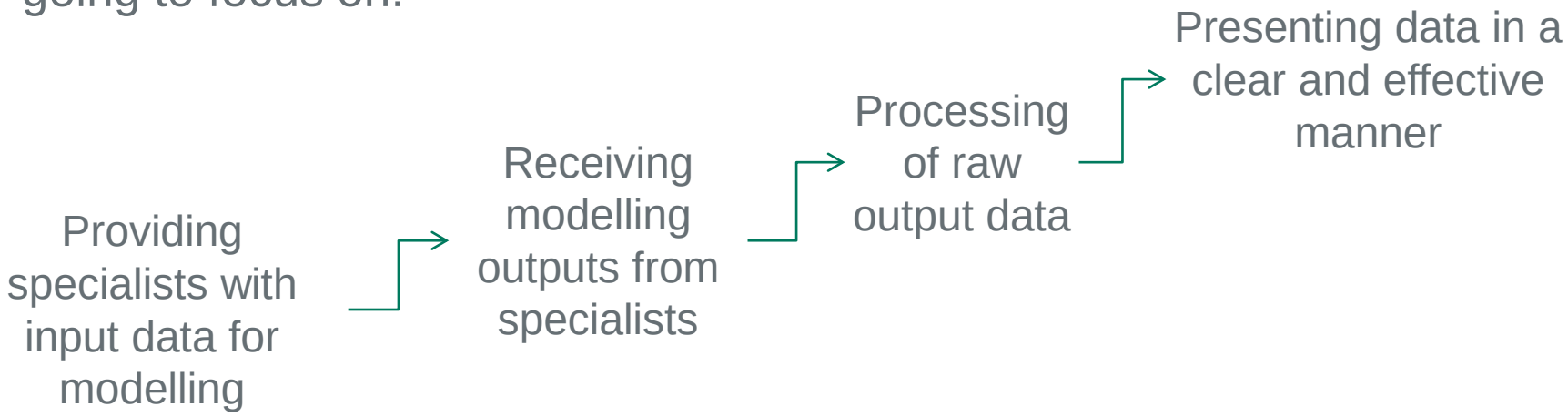
- Data volume.
- Data complexity.
- Interoperability.

But the benefits are significant…

- Geoprocessing
- Customization
- Versatility
- Visualization

Methodologies

There are 4 steps which I am going to focus on:



The Ultimate Goal:

To provide the client with clear, informative, and attractive visualizations of air quality/noise dispersion…

…as cost effectively as possible.

Step 1: Providing Modelling Inputs

Noise and air quality modelling is carried out using specialist software:

AERMOD CALPUFF FLARES

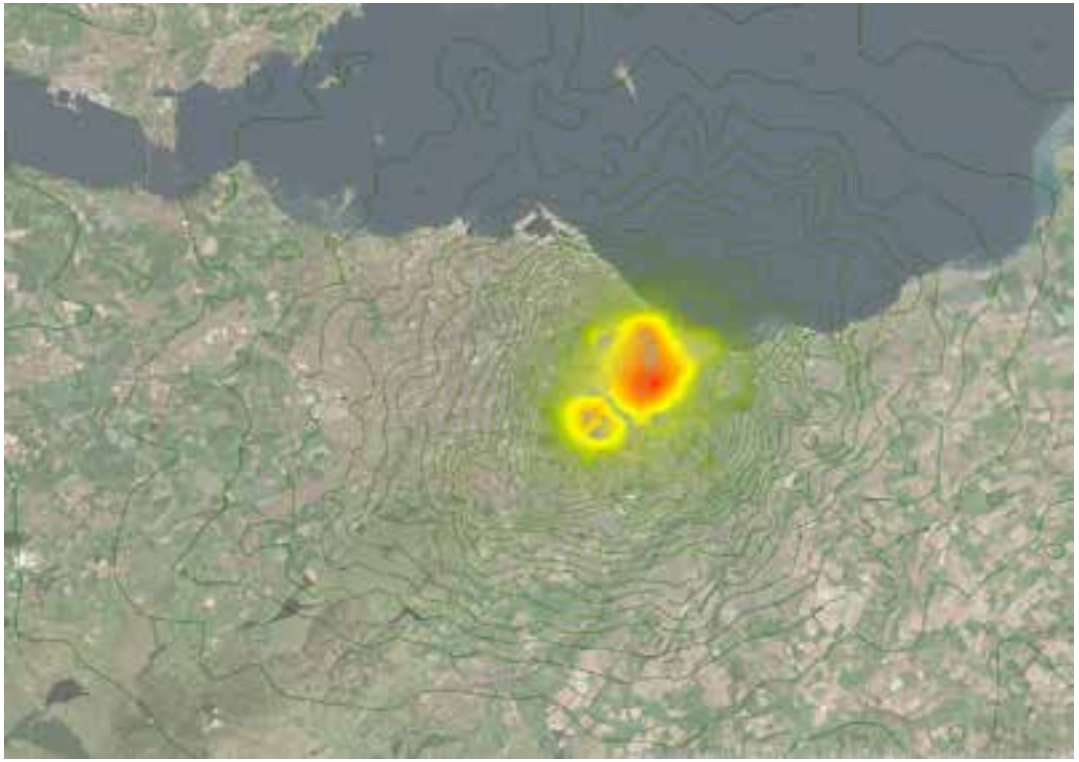
SoundPLAN PREDICTOR

The input data required includes:

- Transmission/emission source locations
- Project design
- Local topography

Step 2: Receiving Modelling Outputs

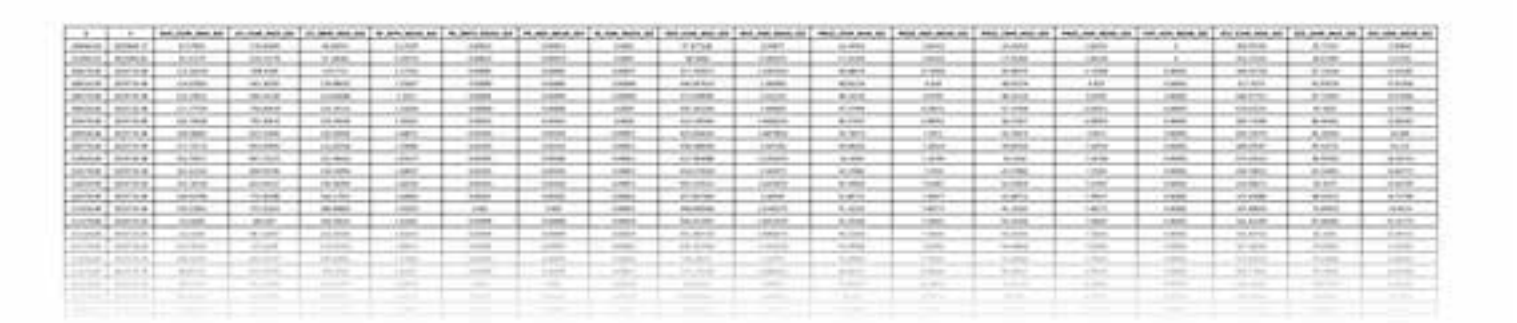
Different modelling software provide various different options for outputs.



Step 3: Processing of Model Outputs

The main benefits of x,y,z data as an output are:

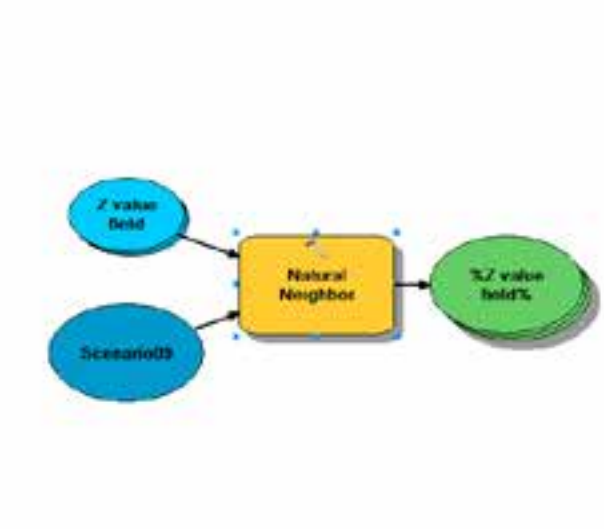
- Low storage requirements
  - High resolution modelling can output grids of 50,000+ points
- Ability to manipulate the raw data
  - Potential application of complex formulae
- Ability to combine scenarios into single GIS point layer
- Ability to generate any required format for visualization

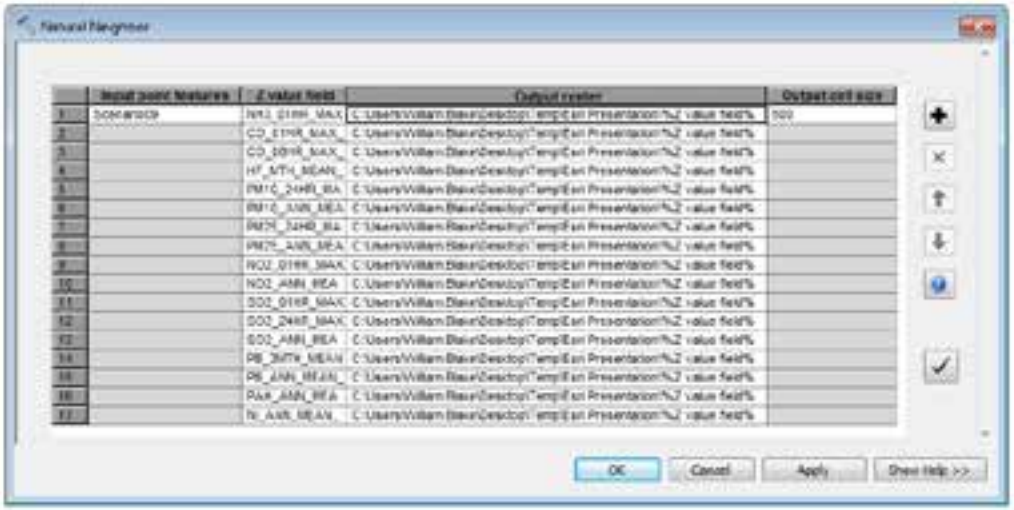


Once you have a point grid in GIS format you can begin to process the data to meet your specific needs…

Step 3: Processing of Model Outputs…cont.

ModelBuilder can be used to automate the process for generating rasters from the point data for multiple pollutants:

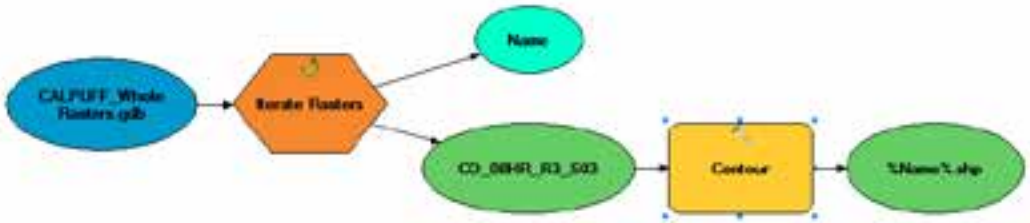


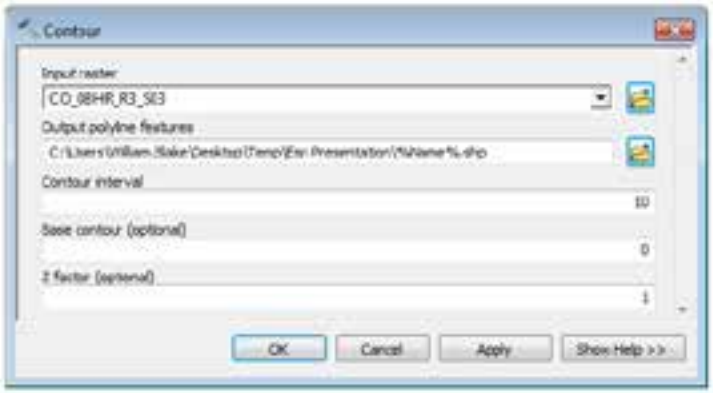


ERM

Step 3: Processing of Model Outputs…cont.

From the rasters you can generate contours:



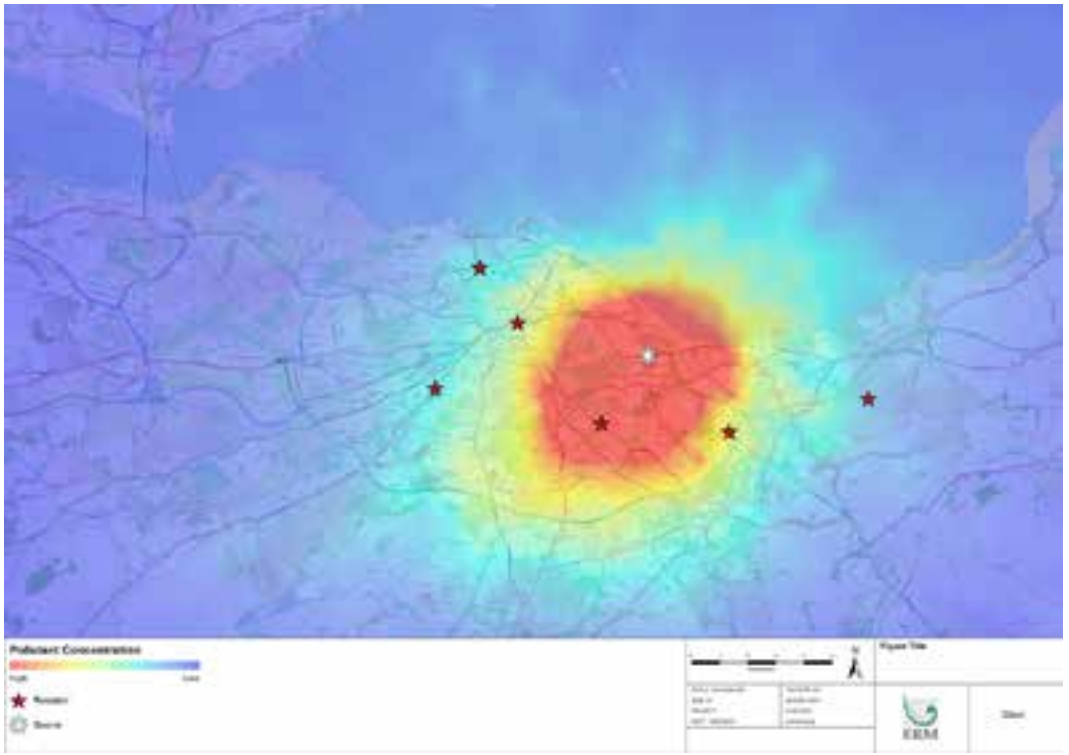


By using ModelBuilder you can significantly reduce the time that it takes to generate rasters and contours for all required dispersion datasets.

Step 4: Presenting the data

Now that we have our data in a suitable format for use in GIS, we can look at how to present as effectively as possible.

- Classified…
- Or Stretched…
- Customizable colours…
- Customizable basemap…
- Source and receptor locations…
- Other map elements…



Conclusions

Streamlining processes is a very effective way of saving time and subsequently reducing costs on projects.

However, there are challenges to this workflow.

- Data errors and interpolation.
- Responsibility.

But the positives outweigh the negatives.

- Time/Cost saving.
- Consistency.
- Scalability.

Any Questions?

Paper Author

William Blake

GIS Consultant | ERM UK

Edinburgh, Scotland

T| +44 (0)131 221 6768

E| william.blake@erm.com

www.erm.com