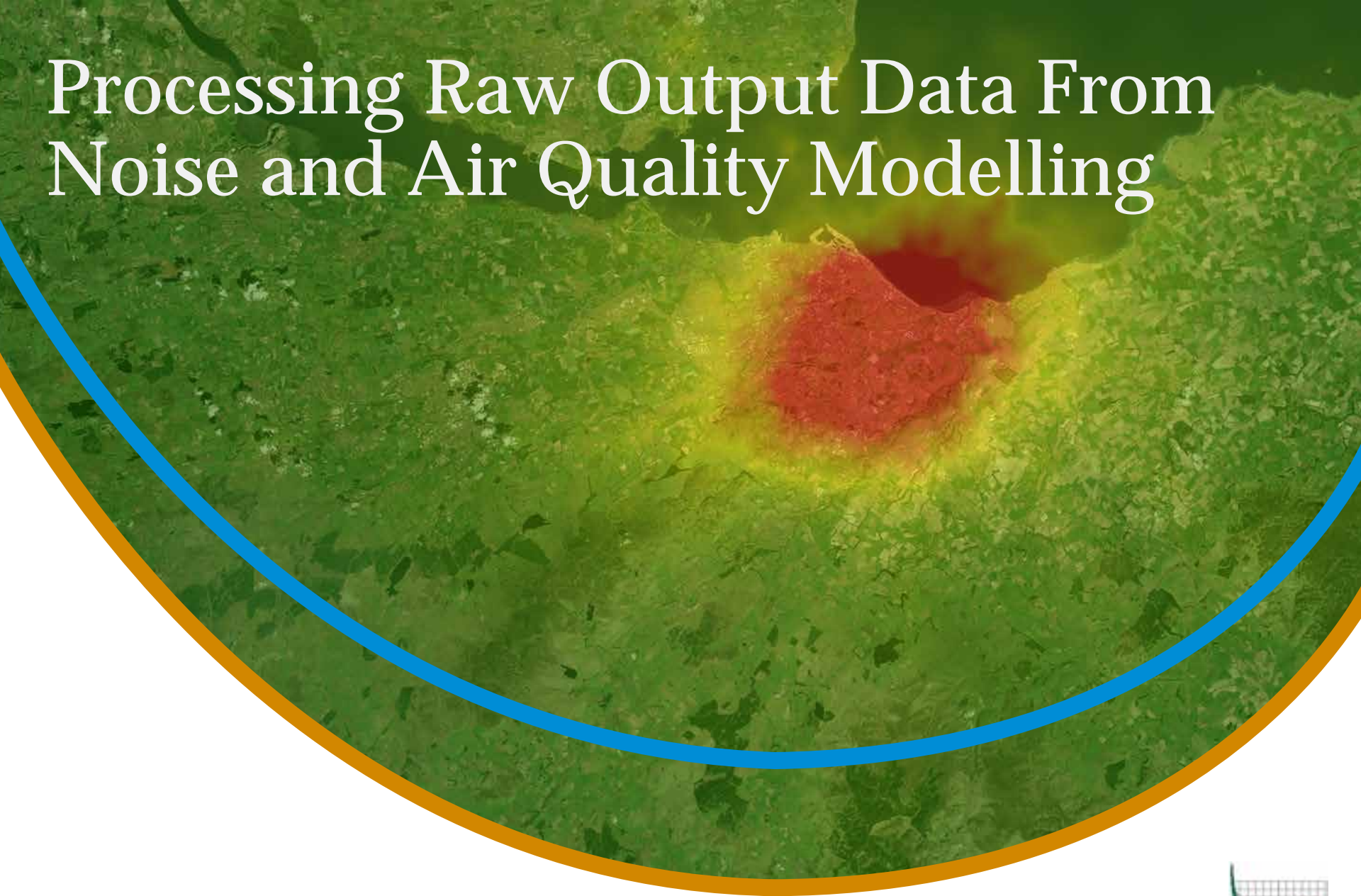


# Processing Raw Output Data From Noise and Air Quality Modelling



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# About ERM

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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

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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

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

However, there are challenges...

- Data volume.
- Data complexity.
- Interoperability.

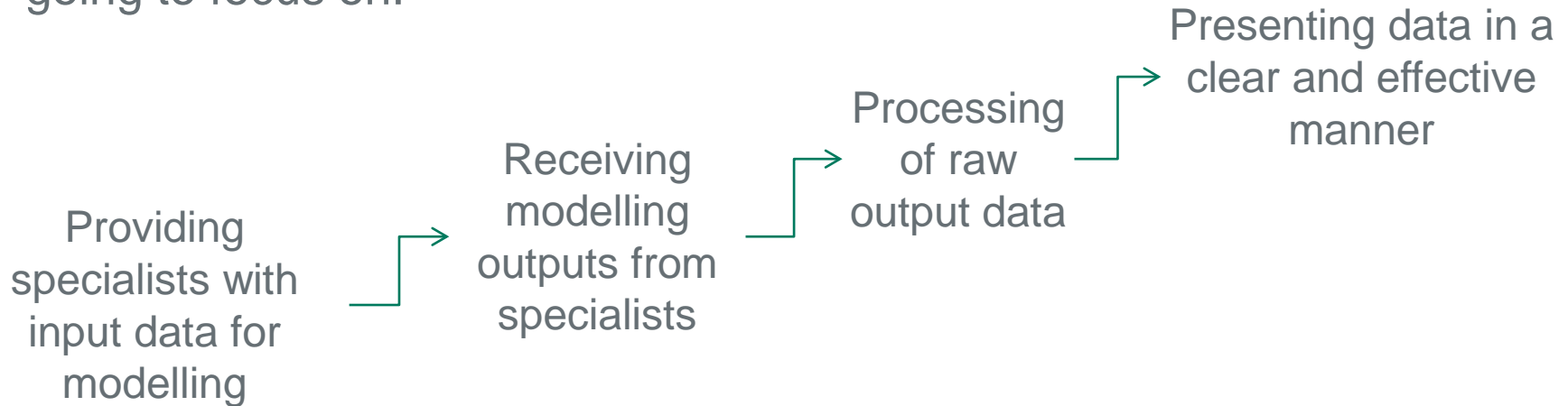
But the benefits are significant...

- Geoprocessing
- Customization
- Versatility
- Visualization

# Methodologies

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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

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

AERMOD

CALPUFF

FLARES

SoundPLAN

PREDICTOR

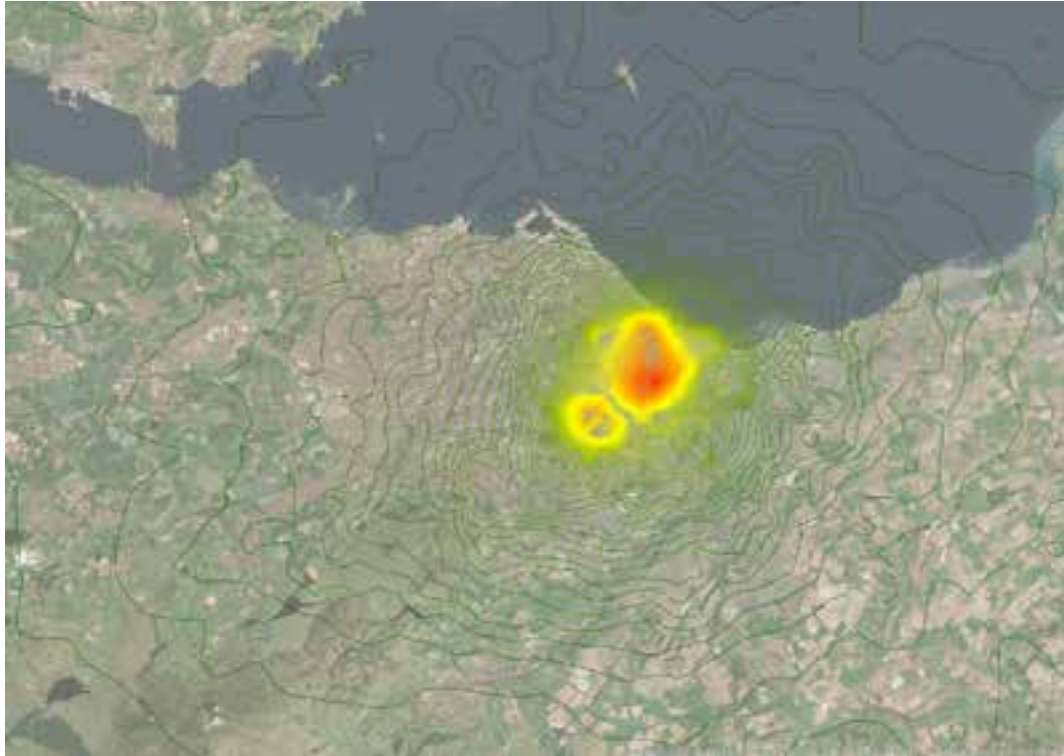
The input data required includes:

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

# Step 2: Receiving Modelling Outputs

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Different modelling software provide various different options for outputs.

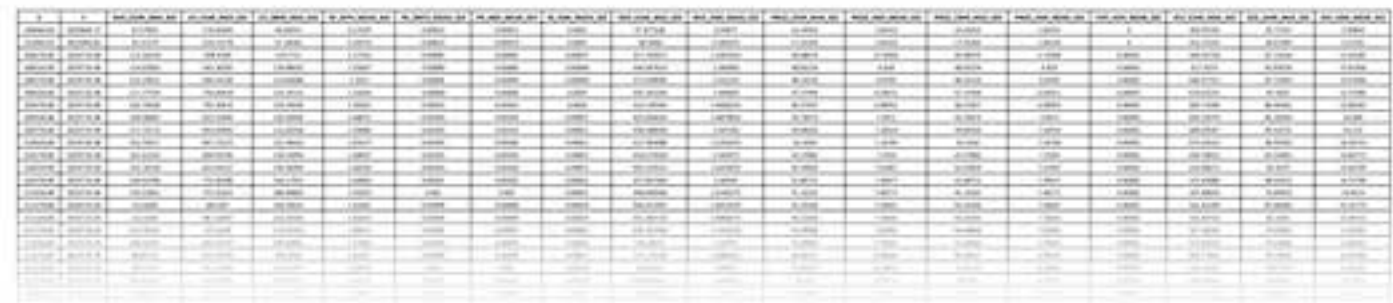




# Step 3: Processing of Model Outputs

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



The image shows a large, dense table representing a point grid in GIS format. The table has many columns and rows, with data points organized in a grid-like structure. The text is small and difficult to read, but it appears to be a list of coordinates and associated values for a high-resolution model output.

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:



Natural Neighbor

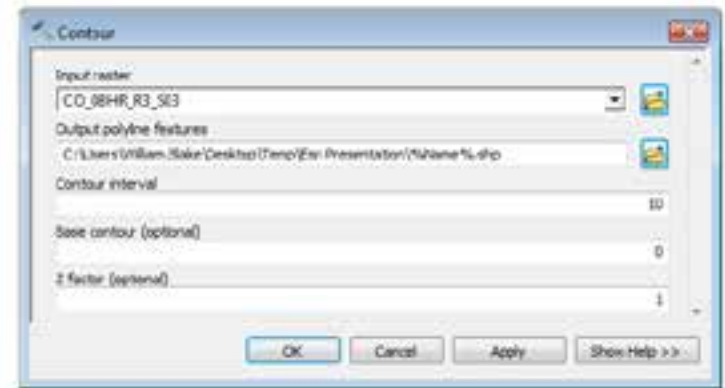
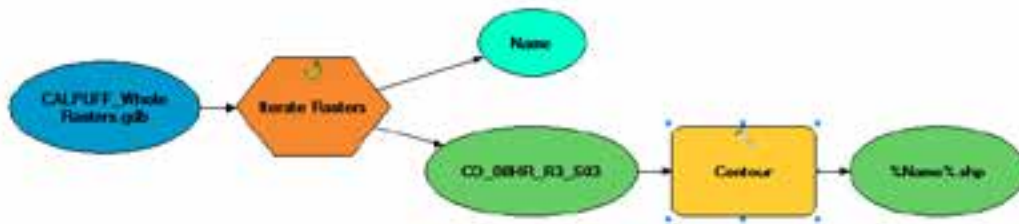
Input point features	Z value field	Output raster	Output cell size
1	ScenarioID	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	100
2	NO2_01HR_MAX	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
3	CO_01HR_MAX	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
4	HF_01HR_MAX	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
5	PM10_04HR_MEAN	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
6	PM10_01HR_MEAN	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
7	PM2.5_04HR_MEAN	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
8	PM2.5_01HR_MEAN	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
9	NO2_01HR_MAX	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
10	SO2_01HR_MAX	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
11	SO2_04HR_MAX	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
12	SO2_01HR_MEAN	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	
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17	N_01HR_MEAN	C:\Users\William.Dakin\Desktop\Temp\Earl Presentation\%Z value field%	

OK Cancel Apply Show Help >>



# Step 3: Processing of Model Outputs...cont.

From the rasters you can generate contours:

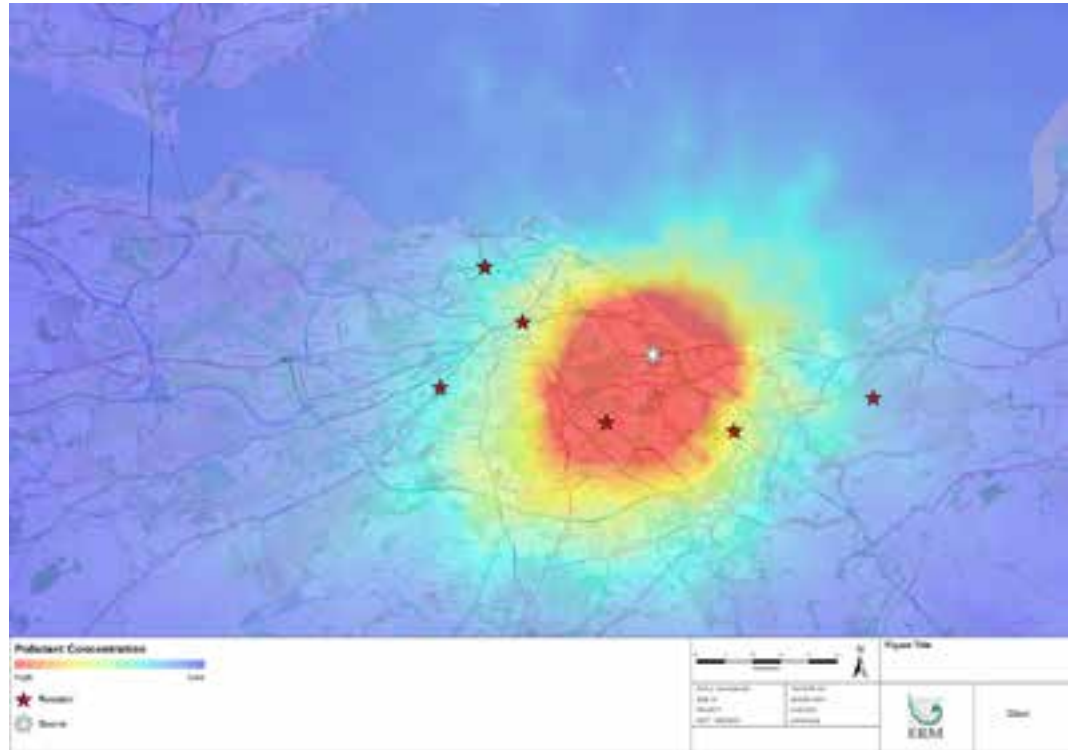


By using ModelBuilder you can significantly reduce the time that it takes to generate rasters and contours for all required dispersion datasets.

# 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

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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

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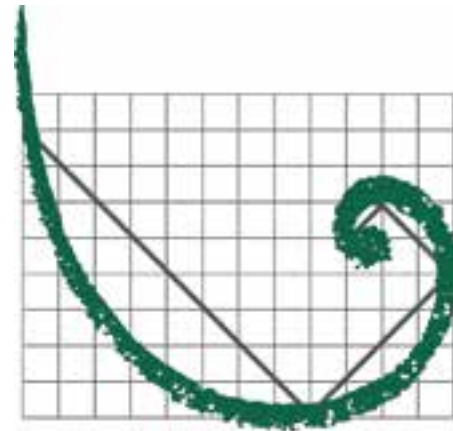
**William Blake**

GIS Consultant | ERM UK

Edinburgh, Scotland

T| +44 (0)131 221 6768

E| [william.blake@erm.com](mailto:william.blake@erm.com)



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[www.erm.com](http://www.erm.com)