Mike Spencer

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EDUCATION

UNIVERSITY OF EDINBURGH
PhD in Snow Hydrology
June 2016

LANCASTER UNIVERSITY
BSc in Environmental Science
June 2004

LINKS

Blog: scottishsnow
Twitter: @MikeRSpencer
LinkedIn: mikerspencer
GitHub: mikerspencer
StackExchange: mikerspencer

MEMBERSHIP

Royal Statistical Society fellow
Society of Research Software Engineers
EdinbR user group convener
Software and data carpentry trainer

SKILLS

COMPUTING
Operating systems:
Linux (Debian based) • Microsoft Windows
Programming:
R • SQL • LaTeX • Git • Bash • HTML
Spatial:
QGIS • GRASS • ArcGIS • MapInfo Pro
Other:
Microsoft/Libre Office • Desktop publishing, e.g. Scribus

DATA
Types:
Grids (e.g. satellite): NetCDF, rasters, hdf, images • SQL/databases • Time series • Numeric • Categorical (e.g. social) • Surveys • Qualitative/text
Abilities:
Mining • Extraction • Wrangling/munging • Management • Quality assurance • Reproducibility • Exploration • Analysis • Modelling: statistical/physically based/machine learning • Visualisation • Forecasting • Interpretation • Insight

ABOUT

OVERVIEW
Mike is a research data scientist. Open access to data and methods is important for transparency and equality and he helps enable this by encouraging open source software use and publication of open data. Mike enjoys diverse challenges and has worked in the public, private, academic and third sectors, giving him the edge in situations that require quick learning and adaptability.

Mike works as a data scientist in a fintech organisation for public good. His work involves linking and analysing quantitative and qualitative data, to provide insight for government policy. He helps the wider community with expert data advice on scaling workflows and visualisation, and runs training sessions on databases, programming, GIS and other tools.

INTERESTS
- Repurposing existing data to answer real-world questions.
- Understanding spatial dimensions of business problems.
- Using data science methods to improve workflows.
- Promotion of open source.
- Data literacy for all.

SKILLS PORTFOLIO

DATA ANALYSIS
- To improve resilience and efficiency in the beef industry, Mike is using social network analysis to interpret millions of location-based interactions across Scotland. This work will be used by the Scottish Government to develop a replacement for the EU common agricultural policy and explores farmer interactions, economic value-chains and efficiency metrics.
- In 2018 Mike analysed the social and economic benefits of hill farming. This combined open and national datasets. For example environmental, like land-cover and elevation, along with population and agricultural census. Writing code in R and GRASS GIS he used machine learning to classify landuse.

DATA VISUALISATION
- This interactive map shows the shortest road distances between 1.6 million GB postcodes and the closest train station. This analysis uses Ordnance Survey OpenData and led to subsequent projects with the National Centre for Resilience.
- Mike's blog contains many examples of data visualisation. He recently used a bump chart to help explain 65 years of voting patterns in Westminster elections.

TRAINING & CAPACITY BUILDING
- Mike developed and co-hosted a data visualisation workshop on behalf of the Scottish Environment, Food and Agriculture Research Institutes.
- During the 2018 DataFest Mike led a project to teach network analysis using R. He ran workshops attended by the public, private and third sectors.
- On Joining SSSC, Mike conducted a service review of data capability. This assessed the maturity of culture, skills, and infrastructure. The work made a number of recommendations, of which Mike led development.

OUTPUT

ARTICLES (SELECTED)

(Click titles for links, where available)

Pohle, I., Helliwell, R., Aube, C., Gibbs, S., Spencer, M. & Spezia, L., *Citizen science evidence from the past century shows that Scottish rivers are warming*, Science of The Total Environment, **2019**, 659, p53-65.

Spencer, M. & Thomson, S., *Scottish hill farming score by agricultural parishes [Data set]*, Zenodo, **2018**.

Ge J., Polhill J.G., Matthews K.B., Miller D.G. & Spencer M., *Not one Brexit: How local context and social processes influence policy analysis*, PLOS ONE, **2018**, 13(12): e0208451.

Spencer, M., *Snow Survey of Great Britain: transcribed data for Scotland, 1945 to 2007*, NERC Environmental Information Data Centre, **2016**.

Spencer, M. & Essery, R., *Scottish snow cover dependence on the North Atlantic Oscillation index*, Hydrology Research, **2016**.

Spencer, M., Essery, R., Chambers, L. & Hogg, S., *The Historical Snow Survey of Great Britain: Digitised Data for Scotland*, Scottish Geographical Journal, **2014**, 130, p252-265.

TALKS (SELECTED)

Mapping access to services to estimate community resilience, Edina geoforum, **Mar 2020**

Cartography with R and QGIS, which to choose?, FOSS4GUK, **Sep 2019**

Predicting snowmelt with R, Royal Statistical Society, **Apr 2017**

Snow, R and keeping people safe, EARL, **Sep 2016**

Reanalysis of Scottish mountain snow, EUBAP seminar, **Mar 2016**

Scottish snow cover and the North Atlantic Oscillation, British Hydrological Society (BHS) symposium, **Sep 2014**

POSTERS (SELECTED)

Beef efficiency - finishing systems., RESAS end of year, **Sep 2020**

Snowmelt frequency in a mountainous, temperate, maritime environment, International conference on alpine meteorology, **Sep 2015**

Snow survey of Great Britain: digitised data for Scotland, BHS symposium, **Sep 2014**

ZENODO (FULL)

Browse all Mike's uploads to the open science platform, Zenodo. These include code, datasets, posters, presentations and graphics.

EXPERIENCE

GLOBAL OPEN FINANCE CENTRE OF EXCELLENCE | Data scientist

Sep 2021 - ongoing | Edinburgh, Scotland

- Standard Life Foundation project data scientist, investigating financial difficulty and retirement
- Member of safe haven infrastructure development team.

SCOTTISH SOCIAL SERVICES COUNCIL | Data specialist

Nov 2020 - Sep 2021 | Dundee, Scotland

- Technical lead for workforce intelligence team
- Developed data capability vision and infrastructure options appraisal.

INDEPENDENT DATA SCIENCE | Consultant

Aug 2020 - ongoing | Midlothian, Scotland

- Client facing data science support for UK Government comprehensive spending review.
- Designed data architecture and wrote ETL tool.
- Development support for the Joint Funds Unit interactive dashboard.

AGRIMETRICS | Executive leadership team - data specialist

Aug 2018 - Oct 2020 | Rothamsted, England

- Provide data oversight for the UKs leading agri-food data science centre.
- Convened sessions between Agrimetrics, SRUC and Scottish Government on crop mapping from remotely sensed data.

SRUC | Research data scientist

Jan 2017 - Oct 2020 | Edinburgh, Scotland

- Expert data advice to 45 researchers and students.
- Linking and analysis of: animal movements, surveys, spatial data, etc.
- Developed and ran internal and external data skills training series.
- Producing high-quality visualisations, e.g. web-apps, leaflets, and posters.

HOSTELLING SCOTLAND | Board nominations advisor

Jun 2017 - Jun 2019 | Edinburgh, Scotland

- Process development and governance for board member recruitment.
- CV appraisal, interview and recommendation of potential board members.

SCOTTISH YOUTH HOSTELS ASSOCIATION | Director

Jun 2016 - Jun 2017 | Edinburgh, Scotland

- Advertised, interviewed and appointed a new CEO.
- Responsible for governance of SYHA.

UNIVERSITY OF EDINBURGH | PhD

Sep 2011 - Jun 2016 | Edinburgh, Scotland

- Stochastic time series snow modelling and model build.
- Extreme value statistics of snow cover and melt.
- Analysis of remote sensing veracity using machine learning.
- Data mining of historic Snow Survey of Great Britain dataset.

VARIOUS | Hydrologist

2005 - 2011 | England, Wales & Scotland

- Halcrow Group ltd - senior hydrologist
- Environment Agency Wales - hydrologist
- Arcadis GMI - consultant

PERSONAL

Mike has been based on the outskirts of Edinburgh since Autumn 2008. He balances his work commitments with a young family. When he's not at a computer Mike can be found on a bike, mountain, up a ladder doing DIY or gigging as a trombonist.