

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](http://scottishsnow.com)
Twitter: [@MikeRSpencer](https://twitter.com/MikeRSpencer)
LinkedIn: [mikerspencer](https://www.linkedin.com/in/mikerspencer)
StackExchange: [mikerspencer](https://stackoverflow.com/users/mikerspencer)

MEMBERSHIP

Royal Statistical Society
Research Software Engineers
Association

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 •
Repeatability • Exploration • Analysis •
Modelling: statistics/physically
based/machine learning • Visualisation •
Forecasting • Interpretation • Insight

ABOUT

OVERVIEW

Mike is a spatial data scientist. Open access to data and methods is important for transparency and equality and Mike helps enable this by encouraging on 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 supports an economics and social science research group within Scotland's Rural College (SRUC). His work at SRUC involves linking and analysing quantitative and qualitative data, to provide insight for Scottish Government policy. He helps colleagues with expert data advice on scaling workflows and visualisation, and runs training sessions for researchers and students on databases, programming, GIS and other tools.

INTERESTS

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

SKILLS PORTFOLIO

DATA ANALYSIS

- To improve resilience and efficiency in the beef industry, Mike is using network analysis to interpret millions of cattle movements across Scotland. This work for the Scottish Government is exploring farmer interactions, economic value chains and efficiency measures.
- Mike has analysed primary sector employment (e.g. agriculture) in Scotland. He combined many spatial datasets to build a picture of change in different landscapes. These datasets included environmental datasets like land-cover and elevation along with population and agricultural census data.

DATA VISUALISATION

- [This interactive network analysis](#) shows the shortest road distances between 1.6 million GB postcodes and the closest train station. This analysis uses Ordnance Survey OpenData.
- Following snowfall across Britain in April 2016, Mike wrote [this blog post](#), which shows the frequency of monthly snow cover. It contains plots which visualise complex spatial and temporal data.

TRAINING & CAPACITY BUILDING

- In 2018 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 featuring hands-on live coding which attracted public, private and third sector attendees.
- On Joining SRUC, Mike conducted a service review of data capability for his department. This included assessing the maturity of culture, skills, leadership and infrastructure. The work made a number of recommendations which Mike has been leading.

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**.

Reid, T., Spencer, M., Huntley, B., Hancock, S., Essery, R., Carle, J., Holden, R., Baxter, R. & Rutter, N., [Spatial quantification of leafless canopy structure in a boreal birch forest](#), Agricultural and Forest Meteorology, **2014**, 188, 1-12.

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)

[Predicting snowmelt with R](#), Royal Statistical Society, **Apr 2017**

[Snow, R and keeping people safe](#), EARL, **Sep 2016**

[Scottish snow](#), EdinbR, **Jun 2016**

[Reanalysis of Scottish mountain snow](#), EUBAP seminar, **Mar 2016**

[Time series rasters and the free and open source approach](#), QGIS user group, **Oct 2014**

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

[The Historical Snow Survey of Great Britain: Digitised Data for Scotland](#), Scottish hydrological group, **Oct 2013**

POSTERS (SELECTED)

[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**

EXPERIENCE

AGRIMETRICS | EXECUTIVE LEADERSHIP TEAM - DATA SPECIALIST

Aug 2018 - ongoing | Rothamsted, England

- Provide data oversight for the UK's leading agri-food data science centre.
- Represent the interests of SRUC at Agrimetrics.

SRUC | RESEARCH DATA SCIENTIST

Jan 2017 - ongoing | Edinburgh, Scotland

- Devised data strategy for research group.
- Expert data advice to 45 researchers and students.
- Data linking and analysis of: animal movements, qualitative surveys, spatial data, environmental data, and others.
- Developed and ran internal and external data skills training series.
- Architect and sys admin for research group data centre.
- Briefing executive team and board on data challenges and recommended solutions.
- Writing journal and policy briefing papers.
- Writing funding applications.

SCOTTISH YOUTH HOSTELS ASSOCIATION | DIRECTOR

Jun 2016 - June 2017 | Edinburgh, Scotland

- Advertised, interviewed and appointed a new CEO.
- Responsible for governance of SYHA.
- Co-opted to board.

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.
- Spatial statistics modelling of snow cover dependence on large scale atmospheric circulation indicators (NAO).
- Analysis of Scottish satellite snow observation veracity.
- Data mining of historic Snow Survey of Great Britain dataset.

HALCROW GROUP LTD | SENIOR HYDROLOGIST

Sep 2008 - July 2011 | Edinburgh, Scotland

- Project lead for Scottish hydrological work.
- Training and mentoring of staff.
- Project and package management.
- Flood forecasting model design and build.
- Hydrological, hydraulic and GIS modelling and analysis.

ENVIRONMENT AGENCY WALES | HYDROLOGIST

Dec 2005 - Sep 2008 | Haverfordwest, Wales

- Extreme value flood statistics.
- Hydrology, hydraulics and GIS modelling and analysis, with quality assurance.
- Data management of flood risk assessments, models and spatial data.
- Flood warning duty officer, both forecasting and dissemination.

PERSONAL

Mike has been based on the outskirts of Edinburgh since Autumn 2008. He balances his work commitments with a young family, spending a day a week with his son. 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.