**Samuel Valman**

**PhD researcher**

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**Personal Research statement**

I am a PhD student at the University of Nottingham in a multidisciplinary research group. I come from an environmental applications background with a BSc and a MSc in Geography focused on river systems. I now combine these applications with an engineering-based knowledge of Earth Observation (EO), AI and computing. I aim to continue in this vein working with new collaborations where possible at the intersection of water resources and geospatial technology.

**Education**

**PhD Candidate**

***Universities of Nottingham and Newcastle***

***September 2021 – December 2023***

Fully funded studentship from the Engineering and Physical Sciences Research council at the Geospatial Systems Centre of Doctoral Training***.***

Multi-institutional and interdisciplinary between the Universities of Nottingham and Newcastle and the departments of Geography and Engineering.

Writing a thesis on “An Earth Observation powered Digital Twin of river systems” using Artificial Intelligence, Python and high-resolution satellite imagery.

**Master of Research: Geospatial Data Science**

***Universities of Nottingham and Newcastle***

***September 2020 – September 2021***

Fully funded studentship at the Geospatial Systems Centre of Doctoral Training

Dissertation on Satellite monitored river surface temperature using Google Earth Engine Cloud Computing.

**MSc by Research in Geography (Distinction)**

***University of Nottingham***

***September 2019 – December 2020***

Tuition fee fully funded by the University of Nottingham, School of Geography.

Dissertation in “Hydrological, ecological, chemical, and morphological environmental variables result in inconsistent classifications of Anthropogenic streams”

**BSc Geography Hons (2:1)**

***University of Nottingham***

**September 2015 – July 2019**

**Publications**

* Pugh, B. E., Colley, M., Dugdale, S. J., Edwards, P., Flitcroft, R., Holz, A., Johnson, M., Mariani, M., Means-Brous, M., Meyer, K., Moffett, K. B., Renan, L., Schrodt, F., Thorne, C., Valman, S., Wijayratne, U., & Field, R. (2022). A possible role for river restoration enhancing biodiversity through interaction with wildfire. *Global Ecology and Biogeography*, 31, 1990– 2004. <https://doi.org/10.1111/geb.13555>
* Guiney, R., Santucci, E., Valman, S., Booth, A., Birley, A., Haynes, I., Marsh, S. and Mills, J. (2021). Integration and Analysis of Multi-Modal Geospatial Secondary Data to Inform Management of at-Risk Archaeological Sites. ISPRS International Journal of Geo-Information 10(9), 575.
* **Accepted: Conference Paper SEDHYD 2023**:The Alluvial Phase Space Diagram (APSD) and its potential application in the FRAME-RUBRIC model. Thorne, C., Biedenham, D., Dahl, T., Valman, S., Mayne, C., Cox, A., Chris, H., Little, C. and Soar, P.

**In progress**:

* Valman, S., Ives, C., Dugdale, S. and Johnson, M. The criteria conundrum: Hydrological, ecological, chemical, and morphological environmental variables result in inconsistent classifications of Anthropogenic streams. River Research and applications.
* Jackson, B., Rodríguez Huerta, E. Valman, S., Blair, B., Boyd, D. and Sparks, J. Aquaculture, labour, and emissions in the Southwest Bangladesh and the Sundarbans Reserve Forest. Marine Studies Journal.
* Regional Analysis of Swedish Permafrost Subsidence. Sjogersten, S., Siewert, M., Valman, S., Ledger, M. and Boyd, D. Global Change Biology.

**Grants**

**MiTACS GLOBALINK Academic internship** awarded for May 2023.

- £15,000 awarded by MiTACS and UKRI for a 3 month internship at the Institut National de la Recherche Scientifique in Québec. Working with Professor André St-Hilaire and Professor Normand Bergeron on satellite monitored ice-melt flood risk.

* Postgraduate research fund 2019 £750 awarded by the School of Geography at the University of Nottingham

**Research employment**

**Research associate on UK Space Agency-funded project: Permafrost in Sweden** (UoN Bioscience / UKSA/ Umeå University)

* Artificial Neural Network for satellite land use classification (trained with drone data)
* Comparison with Radar land deformation to measure pollution from melting permafrost

**Research associate on NERC Urgency Grant-funded project: Synergistic Fire and Floodplain Solutions** <http://gotw.nerc.ac.uk/list_full.asp?pcode=NE%2FV021443%2F1&cookieConsent=A>

Multi-disciplinary international team of researchers and data fieldwork assistants looking at how a restored river floodplain has coped with fire. Using Avian, aquatic, vegetation, soil, and remotely sensed data sources.

* Second paper scheduled to be submitted by August 2022

**Research associate on Stage Zero River Restoration** database/website (UoN, Portland University, NOAA, USFS, EA, Deschutes Watershed Council)

* Wrote and collated [www.StageZeroRiverRestoration.com](http://www.StageZeroRiverRestoration.com) with an international group of contributors, including webinar, and crowd sourced sitemap.
* Carried out fieldwork on Whychus Creek, USA Stage Zero project: Lidar total stations surveys, macro-invertebrates, and vegetation surveys. Provided fieldwork assistance on the Holincote, UK monitoring Stage Zero sediment dynamics.

**Research associate on UK Space Agency project: Slavery from Space - Slavery Risk Calculator**

* UK Space Agency, UoN Rights Lab
* Satellite monitoring palm oil plantations in Malaysia and Indonesia
* Monitoring illegal burn scars using high resolution imagery
* International forest loss estimates using cloud computing
* Ordering and processing proprietary high resolution satellite data

**World Wildlife Fund US: The Social and Ecological Impacts of Supply Chains**

* Finding illegal shrimp farms and development in Bangladeshi nature reserves using high resolution satellites and cloud computing
* Paper in process of being submitted to Marine Studies Journal

**Templeton World Charity fund: Disaster assessment Bahamas**

* UoN Rights Lab, Templeton Charity
* Batch processing and downloading Planet High Resolution imagery to monitor pre and post hurricane Dorian damage using Google Earth Engine.

**Mendrop Engineering Resources: FRAME – Channel change Model**

* USGS, US Army Core of Engineers, UoN Geography
* Worked in an international group creating a sediment balance and channel change model primarily for the Mississippi River
* Primarily data analysis and visualisation of model success through adapting the Alluvial Phase Space Diagram to enable its use in future projects.
* Conference paper accepted, US Army Core of Engineers report in progress.

**Research Excellence Framework (REF**) **Reports** – UoN Geography

* Contributed supporting evidence to REF reports for Blue-Green cities project
* Costa-Rica vs Nicaragua International Court of Justice Case REF Report evidence collation

**Conferences**

**UK Earth Observation conference September 2022:**

* **Poster**: Earth Observation and Artificial Intelligence for a river digital twin: first steps.

Samuel Valman1, Stephen J Dugdale2, Doreen S Boyd2

* Emissions, Modern Slavery and Identifying Avenues to Mitigate Climate Change.

Bethany Jackson1,2, Doreen S. Boyd1,2, Jess L. Decker Sparks1, Edgar Rodríguez Huerta1, Nicole Tichenor Blackstone3, Sam Valman4, Bobbie Blair2, Bertrand Perrat5, Giles M. Foody2

**Attendee**:

* Wavelength RSPSoc early career researcher conference 2022
* Northumbria Water Innovation festival 2021: Catapult Satellite Applications “sprint”
* Geo for Good 2021 Google Conference
* Introduction to python for remote sensing September 2021– Geological Remote Sensing Group
* Satellite data analysis and Machine Learning classification with QGIS workshop May 2020 AI for Good

**Research Skills and Training**

* Python: (Artificial intelligence, Neural Networks, Tensorflow, statistics)
* Google Earth Engine
* HTML and CSS (<https://github.com/SamValman>)
* GIS – QGIS, ArcOnline, ArcPro, Survey123
* Total station LiDAR
* RTK GPS

**Academic and Environmental outreach**

* Produced Wikipedia entries for the Blue-Green Cities water management to help increase public engagement
* Demonstrated fluvial processes to visiting Secondary school students using the UoN Geography’s flume facility.
* Demonstrated Cloud Computing introduction for Geospatial Data Science Masters students
* Presented tutorial for Cloud Computing using Google Earth Engine to Freshwater lab group
* Clean Rivers Trust Tar Pit restoration monitoring
* Nottingham Wildlife Trust Volunteer (2019-2020)
* Major to Minor Lizard monitoring (2019)

**Interests**

* Team Great Britain Kayaking (2016-2021)
* Helping organise Nottingham World Championships (July 2022)
* Coached Junior Development Squad kayaking (July 2021)

**References**

Dr. Stephen Dugdale: [Stephen.Dugdale@nottingham.ac.uk](mailto:Stephen.Dugdale@nottingham.ac.uk)

Prof. Doreen Boyd: [Doreen.Boyd@nottingham.ac.uk](mailto:Doreen.Boyd@nottingham.ac.uk)

Prof. Colin Thorne: [CThorne@wolfwaterresources.com](mailto:CThorne@wolfwaterresources.com)