Stuart William David Grieve

PhD Student

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Education

2013– **Ph.D. in Global Change** University of Edinburgh
Using high resolution topography and dated sedimentation rates to constrain the rates of sediment transport and landslide frequency.
Supervisors: Dr Simon M Mudd and Dr Tristram C Hales (Cardiff University)

2011–2012 **M.Sc. in Geographical Information Science** (Distinction) University of Edinburgh
Thesis Title: *An automated analysis of the southern San Andreas Fault to explore topography's relationship with tectonics.*
Supervisor: Dr Simon M Mudd

2007–2011 **B.Sc. (Hons.) in Geology and Physical Geography** (2:1) University of Edinburgh
Thesis Title: *The Influence of Climate Change on Landslide Sediment Yields in the Northern Lake District.*

Employment

2016 **Research Assistant**, University of Cardiff
2015 **GIS Consultant and Field Course Leader**, GeoBus, University of St Andrews
2012–2013 **GIS Trainee** Forth Crossing Bridge Constructors

Technical Skills

Accomplished programmer comfortable with object orientated concepts and a range of languages **(C++, Python, Java, Visual Basic, Perl)** and the use of version control **(git, subversion)** to manage large projects. Maintains documentation for research group's code base using **Doxygen** and **Unix** shell scripting. Extensive experience in desktop **(ArcGIS, FME, Whitebox, QGIS)** and web based **(MapBox, Mapguide)** GIS to solve complex spatial problems. Managing large spatial and non-spatial datasets using SQL databases **(Oracle, PostgreSQL, MySQL, SQLite)**. Processing raw LiDAR point clouds to produce bare earth DEMs.

Involved in developing new topographic analysis routines within **LSDTopoTools**, including the development of data objects to efficiently analyse drainage basin properties, to identify landslide initiation zones and the integration of the **ESRI shapefile** format within the software package. Additionally has experience supporting users in the use of **LSDTopoTools**, through training and the production of chapters of a user guide via **asciidoctor**.

Research Interests

A primary component of my research is the development of open source tools which facilitate reproducible topographic analysis, with a particular focus on the processing of high resolution LiDAR data. Such software allows repeatable experiments to be performed on landscapes, which I use to develop an understanding of how sediment transport processes are reflected in landscape morphology, particularly how sediment is transported from hillslopes into channels. The mechanisms of this transport range from the motion of individual particles through to large scale slope failures and debris flows.

Publications

2016 **Grieve, S.W.D.**, Mudd, S.M., Hurst, M.D., *How long is a hillslope?* Earth Surf. Process. Landforms. doi:10.1002/esp.3884

2016 **Grieve, S.W.D.**, Mudd, S.M., Hurst, M.D., Milodowski, D.T., *A nondimensional framework for exploring the relief structure of landscapes.* Earth Surface Dynamics Discussions 1–41. doi:10.5194/esurf-2015-53

2014 Mudd, S.M., Attal, M., Milodowski, D.T., **Grieve, S.W.D.**, Valters, D.A., *A statistical framework to quantify spatial variation in channel gradients using the integral method of channel profile analysis.* J. Geophys. Res. Earth Surf. 119, 2013JF002981. doi:10.1002/2013JF002981

Conference Presentations

Invited Talk

2015 **Grieve, S.W.D.**, *Reproducible geographic analysis: Insights from geomorphology.* Presented at GIS Update, Edinburgh.

Oral Presentations

2015 **Grieve, S.W.D.**, Mudd, S.M., Hurst, M.D., *Constraining hillslope sediment flux using high resolution topographic data.* Presented at the BSG Annual General Meeting, Southampton.

2015 Clubb, F.J., Mudd, S.M., Attal, M., Milodowski, D.T., **Grieve, S.W.D.**, *The Relationship between Drainage Density, Erosion Rate, and Hilltop Curvature: Implications for Sediment Transport Processes.* Presented at the BSG Annual General Meeting, Southampton.

Poster Presentations

2015 Mudd, S.M., **Grieve, S.W.D.**, Milodowski, D.T., Hurst, M.D., Clubb, F.J., Valters, D.A., *LSDTopoToolBox: Open source geomorphology.* Presented at the BSG Annual General Meeting, Southampton.

2015 Clubb, F.J., Mudd, S.M., Attal, M., Milodowski, D.T., **Grieve, S.W.D.**, *The Relationship between Drainage Density, Erosion Rate, and Hilltop Curvature: Implications for Sediment Transport Processes.* Presented at the AGU Fall Meeting, San Francisco.

2015 Parker, R.N., Hales, T.C., Mudd, S.M., **Grieve, S.W.D.**, *Precipitation and soil accumulation history modifies future landslide hazard.* Presented at the AGU Fall Meeting, San Francisco.

2015 Parker, R.N., Hales, T.C., Mudd, S.M., **Grieve, S.W.D.**, *Climate change has limited impact on soil-mantled landsliding.* Presented at the EGU General Assembly, Vienna.

2014 **Grieve, S.W.D.**, Mudd, S.M., Hales, T.C., *How long is a hillslope?* Presented at the AGU Fall Meeting, San Francisco.

2014 Mudd, S.M., Attal, M., Milodowski, D.T., **Grieve, S.W.D.**, Valters, D.A., *A statistical technique for identifying channels of different steepness in transient landscapes.* Presented at the EGU General Assembly, Vienna.

Service

2015 **Currency Reviewer**: Reference Module in Earth Systems and Environmental Sciences, Elsevier.

2014–2015 **Session Chair** M.Sc. GIS postgraduate conference, University of Edinburgh.

Funding Received

2014 British Society for Geomorphology Student Travel Grant
Award: **£750**

2014 NERC Cosmogenic Isotope Analysis Facility: *Hillslope-channel coupling in a steady-state landscape.*
P.I.: Tristam Hales (Cardiff University)
Co. I. Simon M. Mudd, Robert Parker (Cardiff University) and Stuart W. D. Grieve.
Award: **£19,320**

2013 Safe Software Grant Program
Award: **Software licence for FME Desktop Edition**

2014 SAAS Postgraduate Students' Allowances Scheme
Award: **£3400**

2014 University of Edinburgh Postgraduate Bursary
Award: **£1300**

Teaching Experience

Undergraduate Courses (Course Level)

2016 Quantitative Methods in Earth Sciences, Laboratory Demonstrator (3rd year)
2015 Geomorphology, Laboratory Demonstrator and Tutor (2nd year)
2014–2015 Cyprus field course (4th year honours)
2014 Earth Surface Systems Course Assistant (1st year)
2014 Fundamental Methods in Geography, Laboratory and Field Demonstrator (2nd year)
2013–2014 Earth Surface Systems, Laboratory Demonstrator and Tutor (1st year)

Postgraduate Courses (Course Level)

2014–2015 Object Oriented Software Engineering Principles, Laboratory Demonstrator (M.Sc.)
2014–2015 Object Orientated Software Engineering: Spatial Algorithms, Laboratory Demonstrator (M.Sc.)
2014–2015 Principles of Geographical Information Science, Laboratory Demonstrator (M.Sc.)
2014–2015 Introduction To Spatial Analysis, Laboratory Demonstrator (M.Sc.)

2014–2015 Distributed GIS, Laboratory Demonstrator (M.Sc.)
2014–2015 Spatial Modelling, Laboratory Demonstrator (M.Sc.)
2013–2015 Advanced Spatial Database Methods, Laboratory Demonstrator (M.Sc.)
2013–2015 Further Spatial Analysis, Laboratory Demonstrator (M.Sc.)
2013–2016 Geo-Visualisation, Laboratory Demonstrator (M.Sc.)

Professional Memberships

2014– American Geophysical Union
2014– British Society for Geomorphology