Dr Sallie L. Burrough

School of Geography and the Environment, Oxford University, South Parks Rd, Oxford OX13QY

sallie.burrough@ouce.ox.ac.uk, www.eci.ox.ac.uk/people/sburrough

www.sallieburrough.com

Professional Summary

Quaternary environmental and climate change scientist with 10 years of higher education teaching experience and excellent record of publications in international journals. My research has particularly focused on long-term hydro-climate variability, landscape dynamics and ecological change in dryland systems. Key research findings include i) establishing the dynamics of megalake systems in Africa including the timing and magnitude of extreme events; ii) identifying earth surface processes/dynamics responsible for driving them and iii) assessing the impact of these changing hydrological processes on human occupation and landscape use over the last 100 thousand years.

Specific Expertise

Specialist skills include geomorphology and landscape change during the late Quaternary, geochronology - in particular Optically Stimulated Luminescence (OSL) dating; long-term ecosystem change (including the application of pollen, charcoal and molecular isotope analyses).

Academic Posts

2014-2019	**Trapnell Research Fellow in African Environments**, Environmental Change Institute, University of Oxford (part-time from July 2017 following maternity leave in 2016/17). **Co-Director,** Oxford Luminescence Dating laboratory, University of Oxford Research Associate, Long-term Ecology Laboratory, Zoology, Oxford
2010-2014:	**Leverhulme Post-Doctoral Researcher (Researcher Co-I)**, *Floods and droughts: environmental dynamics in the Upper Zambezi Valley*. School of Geography and the Environment & Long-term Ecology Laboratory, Zoology, Oxford.
2009-2010:	**Drapers Company Junior Research Fellow (stipendiary),** Hertford College, University of Oxford, *Palaeolithic mega-lakes & early human occupation of the Kalahari.*
2009:	**Lecturer** (sabbatical cover) Department of Geography, Kings College London, Desert Environments**.**

Education

2019-:	MSc, UWE, Science Communication (part-time, ongoing)
2015:	Fellow of the Higher Education Academy (**PGCert in Teaching and Learning in Higher Education**)
2005-2008:	**D.Phil., Geography, Oxford University.** *Late Quaternary Palaeolacustrine Environments of the Kalahari, Botswana.*
2002-2003:	**MSc., Quaternary Science, University of London** Distinction and Elsevier prize for the best overall MSc performance. *Thesis title: Establishing a Chronology for Lynford Mammoth site using OSL and U-Series dating.*
1999–2002:	**BA (Hons) Geography, Oxford University.** 1st Class Gibbs prize for the best overall performance in FHS Geography. Henry Beckit dissertation prize (best undergraduate dissertation in physical Geography)

Research Funding

Over the last 5 years I have led or co-led a number of international research projects, that have collectively raised a total of £1.8m of external funding and £28k of competitive research income from within the University.

2019: NERC UK Research and Innovation Capital Grant: (£173k) OSL Single Grain Machine and Violet Stimulation Source, OLD Lab, Oxford (Co-I)

2017: Public Engagement with Research Knowledge Exchange Grant, Oxford and British Geomorphological Society Outreach Fund (£4.6k): Megalakes and Stone Age Humans: Telling the Story of the Makgadikgadi (PI).

2017: National Science Foundation Grant (£1.1m): Interactions between Incipient Continental Rifting, Fluvial Systems, and Regional Climate in Southern Africa: The Okavango-Makgadikgadi Complex, Botswana (collaborative partner with Woods Hole Oceanographic Institution, Penn State University, Coastal Carolina University, University of Botswana and ETH Zurich).

2016: Leverhulme Trust Research Project Grant (£235k) Landscape archaeology of the Kalahari: How did major hydrological shifts affect Stone Age mobility and landscape use in the late Quaternary? (Co-I).

2015: INQUA Project Award for International Research Collaboration "Palaeolakes of the Arid Southern Hemisphere (PotASH)" (£5k) (PI).

2015: Oxford University Fell Fund (£7k): Testing the asymmetry of African humid periods.

2015: Leverhulme Trust Research Project Grant (£145k) Testing the importance of lake-climate feedbacks for African hydroclimate variability (Co-I).

2014: National Geographic Global Exploration Award (£18k) "Megalake records of Kalahari climate change" (PI)

2014: Quaternary Research Association Award "Dating the desert" In conjunction with RLAHA.

2012: Oxford University Fell Fund (£4.5k) "People and environment in western Zambia" (PI).

2010: Leverhulme Trust Research Project Grant (£140k) "Floods and droughts in the Upper Zambezi Valley" (PDRA)

2009: Boise Fund, Oxford University (£12k) (Co-I).

2009: Royal Geographical Society Small Grant (£3k) (PI).

Awards and Prizes

2020: University of Oxford Award for Excellence for exceptional individual contribution to University life "having consistently demonstrated exceptional performance, significantly above that which might reasonably have been expected."

2017: Returning Carers Award, University of Oxford (£4.8k): Financial support to take active leadership role in fieldwork in Africa.

2015: Award for Excellence – Oxford University Reward and Recognition Scheme, for an outstanding and exceptional contribution to the University.

2009: Royal Society International Travel Grant (£1.3k)

NERC Studentship (DPhil), Geography, Oxford

St Catherine's College **Graduate Scholarship**

CC Reeves **Graduate Scholarship**

Royal Society **Dudley Stamp Memorial Award**

QRA **New Researchers Award**

Elsevier Prize, RHUL, London

Full **NERC MSc Studentship**, RHUL, London

Gibbs Prize, Oxford (*highest 1st Class Geog BA Hons*)

Henry Beckit **Dissertation Prize**, Oxford

Kaye Scholarship (Geography), St Catherine's, Oxford

Shell Prize, Oxford (*outstanding field-based coursework)*

Expedition Leader's Award, Wilderness Medical Training (RGS), Military Training Awards: Qualifications 1 & 2 (Leadership and Management; First aid at work (St Johns). Science-based field leadership roles in Indonesia, Indian Himalayas, Sudan, Botswana, Namibia and Zambia. National Geographic Explorer.

Institutional and Professional Responsibilities

Teaching

I have taught a broad range of lecture courses and tutorials at undergraduate, MSc and PhD levels**.**

Undergraduate lecture series taught include: 'Earth System Dynamics', 'Desert Environments' 'Quaternary Environmental Change' and 'Quaternary Environmental Reconstruction'. These courses focus on both climate/environmental change and earth surface processes from the geological to the decadal scale.

Student Supervision: I have previously supervised 9 undergraduate and 2 MSc dissertations. Current DPhil Students:

Ella Walsh (NERC DTP): *A Systematic Assessment of Late Quaternary Hydrological Change from Valley Fill Complexes in Namibia.*

Matjie Lillian Maboya (Commonwealth Scholarship): *Reconstructing Namibian Late Quaternary Environmental and Climate Dynamics from Palaeolake Sediments.*

Sam Woor (SEAHA CDT, formal advisor): *Reconstructing palaeoenvironmental changes in north western Oman from alluvial and fluvial deposits in response to Late Quaternary climate change (Advisor)*

Field courses taught: Geography 1st year undergraduate field course, Tenerife; MSc Biodiversity and Conservation field course, Tenerife.

Examination assessor: Final Honours School and DPhil Transfer/Confirmation of Status**,** School of Geography, Oxford

Positions of Responsibility

Co-Director, Oxford Luminescence Dating laboratory (OLD Lab), University of Oxford. Responsible for overseeing all research and commercial projects run through OLD Lab. Responsibility for maintenance of machines and equipment, laboratory safety (including radiation, laser and HF use); student and laboratory technician training and management.

Adjunct Fellow, Linacre College, Oxford.

Committee Responsibilities: Departmental (SoGE Committee, Equipment and Laboratory Committee, Safety Committee); College (Sustainability Committee).

Scientific Advisory Board Member (2016-2018), Humans and the Biosphere, International Union for Quaternary Science

Chair, Early Career Researcher Committee (ECR) (2013-2015), International Union for Quaternary Science

Governing Body Fellow (2009-2013), Hertford College, Oxford

Reviewer for *National Geographic, Nature Geoscience, Quaternary Science Reviews, Quaternary Research, Quaternary International, Palaeo Palaeo Palaeo, Geomorphology, Journal of Arid Environments, Journal of Archaeological Science*, *Quaternary Geochronology*, *Z. fur Geomorphologie*.

Junior Dean, St Catherine's College (2004-2007) Responsible for the pastoral care, welfare and discipline of 700 students, working closely with Oxford University counselling service.

Professional and Society Memberships

Fellow of the Royal Geographical Society, London.
Member of the Quaternary Research Association.
Member of the British Society for Geomorphology.
Member of the International Union for Quaternary Science.

Organisation of Scientific Meetings

Recent Session Convener Roles: INQUA Dublin, July 2019 "Hydroclimate Change in Drylands" and "Frontiers in drylands research"; AFQUA Nairobi, Kenya 2018 "African archaeological Landscapes"; EGU, Vienna, 2018 "European Geosciences Union: "Late Quaternary palaeoenvironments of African drylands"

Workshop Leader: Palaeolakes of the Arid Southern Hemisphere, Oxford, 2017

Conference Organising Committee Chair: UK Luminescence and Electron Spin Resonance Dating Meeting, Oxford, September 2010**;** 3rd International Southern Deserts Conference, Upington, South Africa, September 2008

Major Publications

Burrough SL, Barham, L, Thomas DSG (2019) Implications of a new chronology for the interpretation of the Middle and Later Stone Age of the upper Zambezi Valley. *Journal of Archaeological Science 23,* 376-389

Stone, A. E., Bateman, M. D. , **Burrough, S. L.** , Garzanti, E. Limonta, M., Radeff, G., Telfer, M. W. (2019) Using a portable luminescence reader for rapid age assessment of aeolian sediments for reconstructing dunefield landscape evolution in southern Africa. *Quaternary Geochronology*

Lancaster, N., Bristow, C., Bubenzer, O., **Burrough, S**. *et al* (2016) The INQUA Dunes Atlas Chronologic Database. *Quaternary International*

Burrough SL, (2016) Late Quaternary environmental change and human occupation of the southern African interior in Jones, S & Stewart B (Eds) Africa from MIS 6-2: Population Dynamics and Paleoenvironments. Springer

Singarayer JS and **Burrough SL**, (2015) Inter hemispheric dynamics of the African rainbelt during the late Quaternary. *Quaternary Science Reviews 124, 48-67*

Burrough SL, Willis KJ; (2015) Ecosystem resilience to late-Holocene climate change in the Upper Zambezi Valley. *The Holocene* 25, 1811-1828

Burrough SL, Thomas DSG, Willis KJ (2014) Landscape sensitivity and ecological change in western Zambia. The long-term perspective from a Zambian dambo. *Journal of Quaternary Science* 30 (1), 44-58

Thomas DSG, **Burrough SL** (2014) Luminescence-based dune chronologies in southern Africa: analysis and interpretation of dune database records across the subcontinent. *Quaternary International*

Burrough SL and Thomas, DSG (2013) Central southern Africa at the time of the African Humid Period: A new analysis of Holocene palaeoenvironmental and palaeoclimate data. *Quaternary Science Reviews* 80, 29-46

Willis KJ, Bennett KD, **Burrough SL**, Macias-Fauria M, Tovar C (2013) Linking long-term perspectives to 21st century management of African landscapes. *Philosophical Transactions of the Royal Society B*, 368 (1625).

Burrough SL, Thomas DSG, Bailey RMB, Davies L, (2012) From landform to process: Morphology and formation of lake-bed barchan dunes, Makgadikgadi, Botswana. *Geomorphology* 161-162,1-14

Thomas DSG, **Burrough SL** (2012) Interpreting geo-proxies of late Quaternary climate change in African drylands: implications for understanding environmental and early human behaviour. *Quaternary International*, 253, 5-17

Burrough SL, Breman, E and Dodd, C (2012) An insight into past vegetation of the Middle Kalahari Palaeolakes during the late Quaternary. *Journal of Arid Environments* 82, 156-164

Thomas DSG, **Burrough SL** and Parker AG (2012), Extreme events as drivers of early human behaviour in Africa? The case for variability, not catastrophic drought. *Journal of Quaternary Science* 27, 7–12

Thomas DSG and **Burrough SL** (2011) Climatic frameworks: legacies from the past. In Thomas D.S.G. (Ed) Arid Zone Geomorphology. 3rd Edition. Wiley, 648 pp.

Telfer MW, Bailey RM, **Burrough SL**, Stone AES, Thomas DSG, Wiggs GSF (2010) Understanding linear dune chronologies: Insights from a simple accumulation model. *Geomorphology*, 120 (3-4), 195-208

Burrough SL, Thomas DSG, Singarayer J (2009) Late Quaternary hydrological dynamics in the Middle Kalahari: Forcing and feedbacks. *Earth-Science Reviews* 96, (4), 313-326

Burrough SL, Thomas DSG, Bailey, RMB (2009) Mega-Lake in the Kalahari: A Late Pleistocene record of the Palaeolake Makgadikgadi system. *Quaternary Science Reviews* 28, 1392-1411

Burrough SL, Thomas DSG (2009) Geomorphological contributions to palaeolimnology on the African continent. *Geomorphology* 103, 285-298

Burrough SL, Thomas DSG (2008) Late Quaternary lake-level fluctuations in the Mababe Depression: Middle Kalahari palaeolakes and the role of Zambezi inflows. *Quaternary Research* 69 (3), 388-403

Burrough SL, Thomas DSG, Shaw PA, Bailey RM (2007) Multiphase Quaternary high-stands at Lake Ngami, Kalahari, northern Botswana. *Palaeogeography, Palaeoclimatology, Palaeoecology* 253, 280–299

Recent Invited Lectures and Conference Presentations

Burrough, SL, Singarayer, JS, Williams, C, Hipondoka M, Bryant, R, Eckardt, F, 2019 Desert lakes in the late Quaternary: Hydroclimate variability in the southern African interior. INQUA, Dublin

Burrough SL & Thomas, DSG, 2019. The People of the Lake: The remarkable story of the Makgadikgadi pans and its Stone Age inhabitants. **Public Lecture** given in Maun and Gaborone, Botswana

Burrough, SL, Staurset, S, Nash, DJ, Thomas, DSG, Coulsen S, Mothulatshipi S, 2018. Salt, mud and stones: Unpicking archaeological landscapes in the southern African interior. **Invited Keynote**. EGU General Assembly, Vienna