Robert Bryant Narrative CV (R4R1 format)

1. Personal Details

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2. Contributions to the Generation of Knowledge

As an Earth Observation (EO) Scientist, my research [spanning 100 refereed journal articles, and > £2.5 Million in research funding Co-I/PI) focuses on addressing a range of Grand Challenges; including aspects of Landscape Dynamics and key Earth/Atmosphere interactions. In my career to date I have contributed significantly in *three* areas of endeavour

- **Development new observing techniques for aeolian processes and dust hazards.** Through implementation and use of EO data, technology and innovative processing methods I have worked to generate some of the first inventories of dust sources regionally and globally. I have collaborated widely, leading to the generation of inventories of dust emissions and controls from sources in Southern and Northern Africa, Argentina, Australia, Western USA and have aided their use to inform large scale modelling efforts. This research has been supported by funding from UKRI, Royal Society etc.
- **Development of methods to derive benchmark understanding of landscape dynamics:** I have used innovative data and tools to qualify LCLU change (e.g., flooding, geomorphic change, deforestation, mining impacts) and associated ecological impacts (e.g. spatial ecology of protected or endangered species). Recently, I have been leading efforts to implement the use of EO tools to monitor the impacts of mining and selective logging. This has involved collaboration with WRI [World Resources Institute; https://www.wri.org/] and OSINFOR [Organismo de Supervisión de los Recursos Forestales y de Fauna Silvestre, Peru]. Funding and support from this work has come from UKRI (NERC and STFC), WRI, The Grantham Centre etc.
- **Pioneering use of new Earth Observation and Geospatial Technologies**. I have extensive experience in use and deployment of airborne and ground-based Remote Sensing and Unpiloted Airborne Systems (UAS) platforms to monitor dynamic terrestrial systems and operates a SHRIF-funded spectrometry laboratory at Sheffield to underpin algorithm development. My research has led to fundamental measurement and understanding of a range of otherwise unrecorded and documented Earth systems, and landscape dynamics (from dunes, wetlands and rivers to volcanos) - and has attracted funding and support from ESA, UKRI ARSF, UKRI DSRS, UKRI GEF, Royal Society, Carnegie Trust etc.

3. Development of Individuals

I have a strong track record of successful supervision of PhD students [n = 39] and managing/mentoring of Early Career Researchers [n = 10]. These individuals cover 15 different nationalities and 50:50 male/female. In my career, I have largely worked with others to use and exploit EO data and techniques, and these projects have involved research with global collaboration and locations (e.g. USGS, NASA), and often with an end-goal that includes understanding of landscape dynamics or process quantification. My role as a supervisor/mentor has often been to foster and encourage skill development, effective dissemination practices, and ethical/responsible research collaboration. I also collaborate widely across disciplines, and this is often underpinned via effective co-supervision of researchers (e.g., via ACCE UKRI DTP and Grantham Centre for Sustainability,

both at Sheffield). My supervision approach is inclusive, and focused on mentorship. I support independent research, critical thinking, and professional growth by encouraging students to present their work at conferences and submit to peer-reviewed journals. May of my students and ECRs have gone on to publish widely and pursue successful academic and professional careers. I currently lead supervise one PhD student and co supervise six more internally plus one external student. At present, I am a mentor to one probationary colleague and act as an Academic Line Manager to six other ECRs. In 2021 I was recognised as a 'Great Supervision All-rounder' by my students in the recent #SuperVisionaries “Name and Acclaim campaign” at the University of Sheffield. I’m, currently an academic line manager, probation mento etc.

4. Contribution to the Wider Research and Innovation Community

I believe strongly in my profession and discipline and have actively sought to support the wider scientific community through service with key academic institutions and learned/professional bodies. These have included contributions and academic service to learned societies [e.g. RGS, BSG, ISAR, GA, and RSPSoc]. I have undertaken multiple invited overseas research/academic visits. My academic standing has also led to numerous appointments at peer-level Universities as examiner for degrees at all levels both nationally and internationally. I have acted as a journal editor [RGS-AREA] and associate editor and are regularly asked to review journal articles for a wide range of high-quality journals [e.g. Nature Comms, Science etc]. For UKRI, I served two terms on the UKRI Peer-Review College. As part of this, I contributed to specialist panels [e.g. NERC EO Mission Support Scheme] and the steering committees for the UKRI Satellite Receiving Station (DSRS) and the UKRI-Remote Sensing Data Analysis Service [RSDAS]. In addition to grant review for UKRI I have regularly reviewed grants and fellowship applications for the Leverhulme Trust and other charitable trusts (e.g. Royal Society, Royal Geographical Society) as well as grant applications for overseas funding agencies in the field of Applied Remote Sensing: NSF (USA), NOW (Netherlands) and FWF (Austria), QNRF (Qatar). As part of the Research Excellence Framework, I acted as an expert **REF2021** reviewer in Earth Observation. In terms of contributions to other Institutions, I have acted as External examiner for degrees at a number of UK and overseas institutions, and I have also acted as external examiner for 17 PhD students. At Sheffield, I have successfully undertaken academic roles [e.g. Director of Education/Student Experience, Director of Recruitment, Director of One University, Programme Director, Research Cluster lead etc], and have led EDI committees and made direct contributions to our Athena Swan charter success.

5. Contributions to Broader Society

In my research I have sought to address real-world problems, and to work with stakeholders. My work on Dust Emissions and Dust Hazards has led to collaboration with the Met Office, ESA, NASA, NCAR, USGS, FutureEarth, and collaboration with a range of overseas academic institutions. In 2021 I was awarded a CAS Presidents Fellowship to undertake dust research in China, and this involved work with local/regional governments seeking to minimise the impact of dust emission. My work on landscape dynamics has recently led to research in Peru to design/implement software to detect the removal of individual trees. We have worked with the government [via OSINFOR], and our tools have so far been responsible for identifying as much as 37% of all reported illegal logging across 1.8 million ha of its rainforests. This has helped enable Peru to prosecute offenders, leverage fines and build capacity to fight the illegal logging that is a real threat to the valuable rainforest. In 2025 I received an award from the Peru government for my contribution to conserving their rainforest. My work on the use of new EO/Geospatial technologies has also involved broad collaboration over many years [e.g. BNFL, RSPB, Forest Enterprise, Moors for the Future etc]. Recent efforts have included the design and implementation of novel techniques for monitoring volcanic gases, providing vital data for diagnosing activity and eruption forecasting, and work with SheffieldAir on the development of novel Air Quality network in Sheffield to monitor and mitigate the impacts of moorland burning and wildfires.