FutureWater

Curriculum Vitae

Name:	J.E. Beard MSc.
First Name:	Jack
Date of Birth:	20 November 1993
Nationality:	British
Main Disciplines:	Nature Based Solutions, Water Resources, Climate Data, Drought.
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Key Qualifications

Jack Beard (MSc) is a hydrologist and researcher with seven years experience in climate change, drought and water resources. His key interest is exploring how water resources challenges interface with ecology, climate and society. Over recent years, Jack has developed strong interest and expertise in Nature Based Solutions to water and climate challenges and works on developing modelling and remote sensing approaches to guide their implementation.

Professional Experience

2019 – present	Hydrologist / Water Management Advisor, FutureWater, Wageningen, The Netherlands
2021 – present	Science Technical Lead, Nature for Water Facility, United Kingdom
2019 – 2019	Research Assistant, KWR Watercycle Research Institute, Nieuwegein, The Netherlands
2018 –2019	Teaching / Research Assistant, Utrecht University, Utrecht, The Netherlands
2016 – 2017	Graduate Flood Risk Consultant, Katherine Colby Hydrologists, Stroud, United Kingdom

Educational Background

2017 – 2019	MSc. Water Science and Management, Utrecht University, Utrecht, The Netherlands (cum laude)
	Thesis: "Following the Water: Characterising de facto Wastewater Reuse in the Netherlands"
	Supervisors: Dr. Ruud Bartholemeus, Prof. dr. ir. Marc Bierkens
2013 – 2016	BSc. Geography, University of Bristol, Bristol, United Kingdom (first class honours)
	Thesis: "Re-Imagining the Severn: A comparative study of hydrodynamic modelling techniques in data rich and data sparse areas"
	Supervisor: Dr. Jeffrey Neal

Assignments and Projects

Selected projects:

Duration: 2023-present **Position:** Science Technical Lead **Location:** Nigeria **Client:** Diageo, the Coca Cola Company	***Pre-feasibility assessments for the development of watershed investment programmes in Nigeria*** **Main Project Features:** This project involves the assessment of water security challenges across key catchments in Nigeria, and the prioritisation and targeting of Nature-based Solutions (NbS) to address them. This involves the collation and review of relevant datasets and high-level modelling activities to assess the feasibility of funding the large-scale delivery of NbS. **Activities Performed**:

	• Project management activities for science and technical workstreams • Coordination of scoping activities relating to NbS and water quality / resources • Review and analysis of globally available datasets relating to water security challenges and NbS • Supporting stakeholder engagement and engagement activities
Duration: 2021-present **Position:** Technical Lead **Location:** Norfolk, UK **Client:** The Nature Conservancy (TNC), Water Resources East	***Developing a Water Fund for Norfolk*** **Main Project Features:** TNC and Water Resources East aim to create Europe's first "Water Fund" for the region of Norfolk, UK. This will help define a portfolio of nature-based solutions (NbS) to be implemented in the county, aiming at addressing key water security challenges of water resources availability and water quality. The Water Fund will leverage payments for ecosystem services and large scale private investment to fund the catchment scale implementation of NbS. This project requires extensive technical activities including GIS analyses and modelling alongside working with a range of stakeholders to create a knowledge base which supports the implementation of NBS in the county. **Activities Performed:** • Coordination of modelling activities relating to NbS and water quality / resources • Review and analysis of numerous datasets relating to water security challenges and NbS • Development of a consultation process with stakeholders to help co-design a portfolio of NbS for selected catchments • Project management activities
Duration: 2022 **Position:** Provider, Co-developer **Location:** Zambia **Client:** Nuffic	***Tailor-made training on Ecosystem Services Assessments with InVEST*** **Main Project Features:** This training involved devising and delivering training content for the Ministry of Agriculture of the Government of the Republic of Zambia (GRZ) on the InVEST ecosystem services assessment model. The focus of the training, requested by staff, was to help promote ecosystem conservation and improve soil water management and crop productivity at the national level. **Activities Performed:** • Developed training materials on downloading and processing climate datasets using GEE (including python API) • Developed an ecosystem services model based on openly available climate and soil datasets • Delivered a week of face-to-face training culminating in a symposium for participants to share their work
Duration: 2020-2021 **Position:** Remote sensing expert **Location:** Kyrgyzstan **Client:** World Bank	***Restoration Opportunities Assessment Methodology in Kyrgyzstan*** **Main Project Features:** The government of Kyrgyzstan has expressed its interest in forest landscape restoration (FLR). This project supports these ambitions, as well as several ongoing national and regional initiatives requiring identification of feasible and effective landscape and watershed restoration measures in Kyrgyzstan. The objective of the work is to perform at the national-level an analysis of feasible integrated landscape restoration and catchment area management measures, with a focus on reducing sediment flows into the Toktogul reservoir. The project combines (i) an innovative land degradation mapping approach based on remotely sensed / GIS data and local hydrometeorological and cartographical information, with (ii) the ROAM methodology for narrowing down feasible FLR measures in the landscape. **Activities Performed:** • Development of a comprehensive methodology for assessing land degradation and soil erosion patterns • Analyses of satellite-derived, GIS and locally-sourced environmental data • Mapping baseline conditions, vulnerability and risks related to land degradation, erosion and sedimentation in the Toktogul / Naryn River Basin and nationwide • In cooperation with local partner CAIAG, calibration and validation of above-mentioned mapping assessment

Further projects:

2023   Water Accounting Principles and Application in South-East Asia. Client: **Food and Agriculture Organisation**, Role: **Training Provider, Co-developer**

2023   Climate Risk Assessment for the development of Water Harvesting Infrastructure in Meghalaya, India. Client: **Asian Development Bank**, Role: **Hydrologist / Climate Data Expert**

2023	Training on Nature- and Culture-based Solutions for Water Management. Client: **International Centre for the Study of the Preservation and Restoration of Cultural Property**, Role: **Training Provider, Developer**
2022	Building data-driven capacity for ecosystem services and management in Iran. *Client:* **Nuffic**, *Role:* **Training Provider, Co-developer**
2021	Climate Risk Screening: Water Availability Indonesia. *Client:* **Nuffic**, *Role:* **Hydrologist / Climate Data Expert**
2021	A Practical Farmers' Toolkit – Geodata for Climate Smart Agriculture in Egypt. *Client:* **RVO**, *Role:* **Hydrologist / Climate Data Expert**
2021	WAT4CAM: Mekong-Bassac Hydrological and Hydraulic Study, Cambodia. Client: **MoWRAM, AFD**, Role: **Hydrologist / Remote Sensing Expert**
2020	Creating a bias corrected, downscaled climate model ensemble to provide future climate change projections for Morocco. Client: **IMWI**, Role: **Climate Data Expert**
2020	Robust Decision Making for Land Use Planning in the Panama Canal River Basin. Client: **Asian Development Bank**, Role: **Hydrologist**
2020	InfoSequia-4CAST: Forecasting and Quantifying Risks of Crop and Water Supply Failures using Machine Learning and Remote Sensing. Client: **European Space Agency**, Role: **Technical Assistant**
2020	Water Resources assessments for Irrigation and Drainage Modernization Projects Tajikistan. Client: **Asian Development Bank**, Role: **Technical Expert**
2020	Preparing Climate Adaptive Water Resources Management in the Aral Sea Basin Project, Uzbekistan. Client: **Asian Development Bank**, Role: **Technical Expert**
2019	Incorporating Flying Sensors to Increase Agricultural Productivity in Central Mozambique. Role: **Remote Sensing Expert**
2019	Climate Risk Assessment in support of surface water infrastructure investments in the Tonle Sap and Mekong Basins, Cambodia. Client: **Mekong River Comission**, Role: **Hydrologist**

Training Experience

2023	In-person training 'Water Accounting Principles and Application' for water management professionals. *Location:* **Indonesia, Vietnam and Thailand**, *Length:* **1-2 weeks**, *Role:* **co-developer and provider**
2023	In-person training 'Nature- and Culture-based Solutions for Water Management' for groups developing culture-based climate adaptation strategies in a number of geographies globally *Location:* **Rome, Italy**, *Length:* **2 days**, *Role:* **developer and provider**
2022	In-person training 'Building data-driven capacity for ecosystem services and management in Iran' for professionals in the conservation sector *Location:* **Wageningen, Netherlands**, *Length:* **2 days**, *Role:* **developer and provider**
2022	In-person training 'InVEST Modelling for Ecosystem Services Assessments' for professionals in the Zambian Agricultural ministry *Location:* **Lusaka, Zambia**, *Length:* **1 week**, *Role:* **developer and provider**
2021	Online and in-person training 'A Practical Farmers Toolkit' for professionals and academics in the Egyptian agriculture and water sector *Location:* **Fayoum, Egypt**, *Length:* **1 week**, *Role:* **co-developer and provider**

Selection of Technical Reports and Publications

Technical reports
- **Beard, J.E**., Tremolet, S., Skurtis, T., Beeden, J.. 2022. Norfolk Water Strategy Progress Report. Available at https://wre.org.uk/wp-content/uploads/2022/06/NWSP-June-2022-Progress-Report-FINAL.pdf.
- Van Opstal, J.D., M. de Klerk, A. Kaune, C. Nolet, **Beard, J.E..** 2020. Water Productivity Analysis: Rainfed Season 2019-2020. FutureWater Report 204.

- Van Opstal, J.D., **Beard, J. E.**, M. de Klerk. 2020. Analysis of the Agricultural Crop Productivity Using Flying Sensors. Technical report - Rainy season 2019 – 2020. FutureWater Report 203.
- Van Opstal, J., **Beard, J.E.**. 2020. Cadastre mapping with flying sensors and satellite imagery in Zambezia, Mozambique. FutureWater Report 220.
- Nolet, C., **Beard, J.E.**, A. Green, J.E. Hunink, G.W.H. Simons. 2019. Climate Risk Screening for the Tonle Sap River Basin and the Mekong Delta River Basin, Cambodia. FutureWater Report 20

Journal papers and conference proceedings
- Schot, P., **Beard, J. E.**, Hissink, R., Silberbauer, M., & Griffioen, J. (2022). Adapting classical water quality diagrams for ecohydrological and policy applications. Journal of Hydrology X, 100137.
- **Beard, J. E.**, Bierkens, M. F., & Bartholomeus, R. P. (2019). Following the water: Characterising de facto wastewater reuse in agriculture in the Netherlands. Sustainability, 11(21), 5936.

Language Skills

English:	Native Speaker
Dutch:	Intermediate
Spanish:	Intermediate

Computer Skills

Programming:	**R, Python, Google Earth Engine Javascript interface**
Spatial analysis:	QGIS, ArcGIS, Erdas Imagine
Hydro Modelling:	LISFLOOD, WEAP, SPHY, SWAT
Standard software:	MS Office