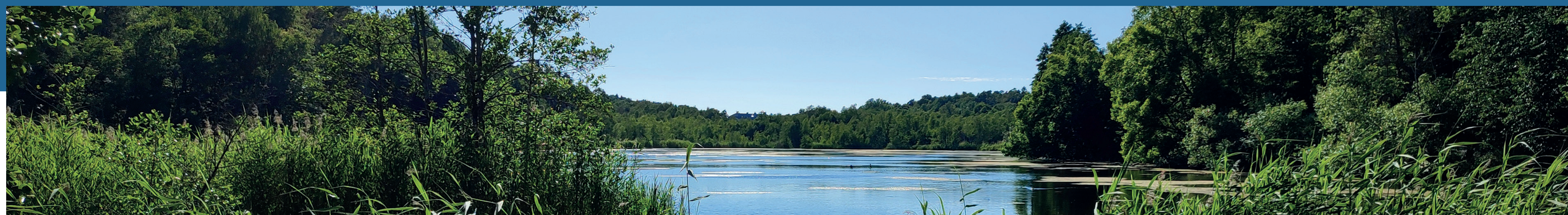


JULES and a Sustainable Digital Research Infrastructure

A case study of modelling and AI in the “Reimagining digital research infrastructure in environmental science for a sustainable future” project

Carolynne Lord, Marcia Tavares Smith, Kelly Widdicks, Gordon Blair, Lily Gouldsbrough, Joe Marsh Rossney, Oliver Bates, Adrian Friday, Alison Stowell, Michael Stead, Mike Berners-Lee, Tom Higgs and Marika Glasby



Digital Research Infrastructure (DRI) refers to the physical devices and technological infrastructures (e.g., data centres, high-performance computers, networks and sensors) as well as the software aspects (e.g., datasets, algorithms and parameters) that underpin science. While innovations in DRI such as models, AI, digital twins and IoT have the potential to positively transform environmental science, they also create significant and growing impacts for the environment, from carbon emissions to e-waste, and to society through issues of equity and social justice.

‘Reimagining digital research infrastructure in environmental science for a sustainable future’, is a project run by a team of experts from UK Centre for Ecology & Hydrology, Lancaster University, and Small World Consulting. It explores the environmental impacts of DRI for environmental science, balancing these with scientific needs. The project works across disciplines and closely with stakeholders through a co-design approach in a series of case studies focused on ‘land use for net zero’. It draws on innovative cross-disciplinary expertise and methods such as mobile ethnology and gigamapping.

Starting with an initial case study on modelling and AI, we are focusing on JULES as a way to explore modelling in environmental science. We would like to understand how JULES is used in the community, explore its values and costs, and identify opportunities (e.g., new tools, innovation processes, or data science and AI techniques) to create more sustainable DRI.

We need your help!

We are looking for people that use JULES (*newbies, intermediaries or experts, regardless of skill level*) to take part in a range of research activities, including interviews and participatory creative workshops to map the current system and envision the future of Digital Research Infrastructure.

If you would like to participate, please contact us at **carlor@ceh.ac.uk** or **marcia.smith@lancaster.ac.uk** to help us learn about the use and development of JULES.

