

## HUTTON OPEN SCIENCE AWARDS

### Best Example of Progress in Open Science Across Multiple Stages in the Research Cycle

#### Using Wikis as Collaborative Knowledge Management Tools in Socio-Environmental Modelling

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##### **Brief description of the project (aims, objectives etc)**

The data requirements of many socio-environmental system (SES) modelling studies have increased substantially in recent years. This has made the already challenging task of data compilation, retrieval, and sharing progressively more difficult. Recognising this, I wrote a paper – that was recently published in *Environmental Modelling and Software*<sup>1</sup> – outlining the potentially significant benefits of using wikis as collaborative knowledge management tools in the SES modelling field. The paper discusses how wikis can be utilised at each stage of the modelling cycle, from planning and conducting data collection, through to coding and justifying model design, and facilitating model extension and knowledge reuse.

##### **How does this research go beyond previous open science efforts by the participating individual (student) or team?**

I first experimented with wikis as a tool for fieldsite knowledge management during fieldwork in Nepal in 2015. However, at the outset I viewed the benefit of the method primarily as facilitating participatory research. Only later, after reflecting on the vast trove of knowledge I had gathered and the format's ability to bring together diverse types of information in a readily searchable and shareable format, did I recognise the broader potential of wikis as SES knowledge management and sharing tools. That prompted me to develop guidance around use of wikis as tools for facilitating open SES science, among other things.

##### **How does this research progress beyond standard expectations of open science in the respective disciplines/areas of research?**

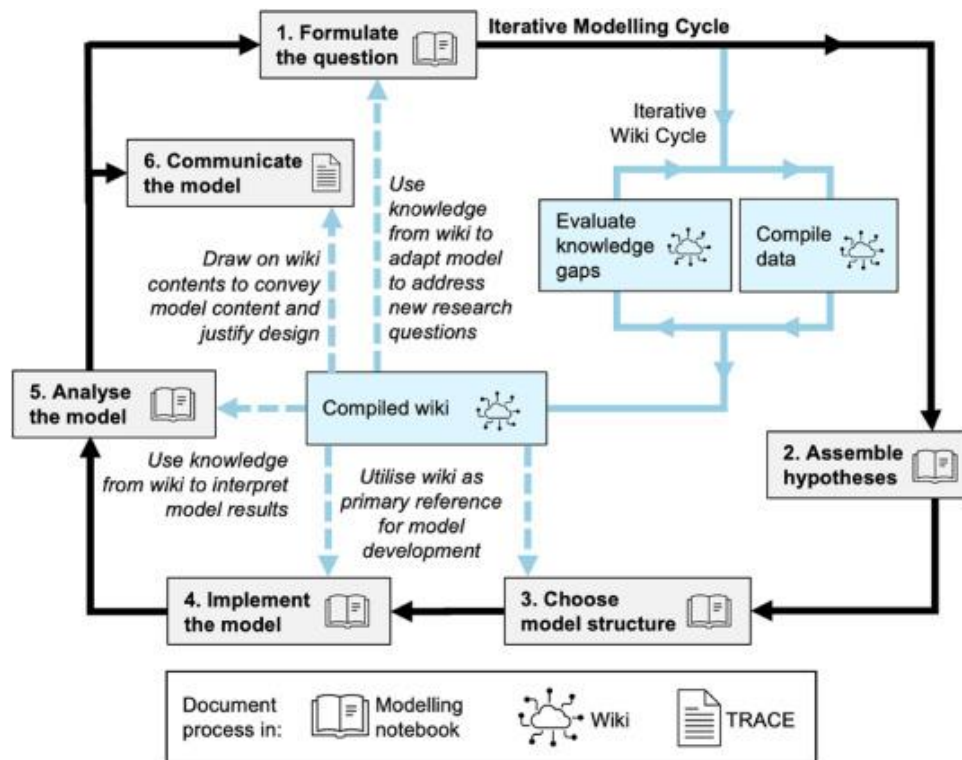
At present, there is a dearth of knowledge sharing in the social-environmental system (SES) modelling community, which is at least partly attributable to the lack of suitable formats for packaging and distributing mixed-methods SES knowledge. Typically, what is shared is limited to the data directly used in the models themselves, plus a summarised description of a fieldsite. However, it is not possible to assess the appropriateness of model design from this information alone. Furthermore, this information is rarely enough to allow for adaptation or extension of models by third party researchers. Through providing greater contextual knowledge, SES wikis can help overcome these issues.

##### **What lessons about the processes of opening up science have been learned?**

The process of developing the SES wiki method taught me that there can be a multitude of benefits to engaging in more participatory and open science – benefits that will often extend beyond those anticipated at the outset. For example, by making my knowledge base transparent to our research participants through use of the wiki, those participants were able

to promptly alert me to incorrect and contested understandings which I could resolve while still in the field. I discuss the lessons learnt while developing and putting into practice the SES wiki method further in my paper.<sup>1</sup>

**Image for use in publicising the award winners**



Overview of the SES wiki approach and interface with iterative modelling cycle and documentation processes (Source: Authors).

**References**

<sup>1</sup> Roxburgh, N., Stringer, L.C., Evans, A.J., Williams, T.G. and Müller, B., 2022. Wikis as collaborative knowledge management tools in socio-environmental modelling studies. *Environmental Modelling & Software*, 158, p.105538. <https://doi.org/10.1016/j.envsoft.2022.105538>