



Minding the gap: Thinking through spatiotemporal scaling challenges in Earth surface dynamics research

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Research into the dynamics of Earth's surface is diverse, interdisciplinary and challenging, but also an important geoscience contribution to understanding human-landscape interactions in the Anthropocene. Scale issues often thwart our ability to provide answers to important questions of how the Earth's surface has changed in the past and may change in the future. This paper reflects on four major common components of Earth surface dynamics research projects (i.e. how to identify and frame a research question, how to design a study to answer that question, difficulties with data, how to use data to answer the question) and identifies the most important spatiotemporal scale challenges. A case study of an experimental study of rock breakdown in arid environments is used to illustrate these challenges, and to demonstrate the importance of clear conceptualisation and critical thinking in overcoming them.