Biogeomorphological research frontiers: from ant mounds to Mars

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Biogeomorphology is a vibrant area of scientific research which focuses on the two-way interrelationships between ecological and geomorphological processes across a wide range of temporal and spatial scales. Whilst ecological influences on geomorphology were often perceived in the past as a rather niche topic, most geomorphologists now consider the ecological dimension as being crucial to the evolution and behaviour of geomorphological systems. However, there is still much to be done to explore the intersections between ecology and geomorphology. It is now timely to investigate what frontier research in biogeomorphology might look like over the coming years. This paper explores some characteristics of frontier research (addressing scientific controversies, focusing on hard-to-answer questions, employing atypical methods and concepts, being paradigm-challenging, and having a high risk of failure) in the context of tomorrow's biogeomorphology. As examples, the paper addresses current progress in research on the geomorphological contributions of ants on Earth, and microbial biosignatures on Mars.