

## **Geomorphic control of ecosystem processes in river systems**

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Rivers are increasingly recognized as hotspots of ecological processes on landscapes, playing critical roles in elemental cycles and energy flows that are disproportionately large relative to the land area they cover. Changing climate and land-use fundamentally alter how river systems function, though our understanding of these responses is substantially limited by our weak ability to scale from individual sampling sites to entire river basins. Existing conceptual models of how rivers are organized across space and time remain distinctly incomplete. I will summarize evidence showing that many ecosystem processes, expressed at both local and river basin scales, are controlled predictably by basic geomorphic features of watersheds. Approaches that meld simple ecological models with spatially explicit geomorphic data provide new insights about how changing climate and land-use patterns will affect the ecology of river systems.