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# An approach to evaluate the dominant river biogeomorphic succession phase at the reach-scale

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The Fluvial Biogeomorphic Succession phase model (FBS model) differentiates Geomorphic (G), Pioneer (P), Biogeomorphic (B) and Ecological (E) phases of hydro-geophysical-biological interactions in river systems. To date, quantitative applications of this model have been restricted to field surveys of vegetation composition analysis at the patch-scale. Here we develop a biogeomorphic landform mapping approach to determine the dominant biogeomorphic succession phase at the reach scale. We categorize river morphology into four biogeomorphic landform types (G-, P-, B- and E-landforms) that have particular geomorphic, substrate and vegetation cover characteristics. Ratios of these landforms are used to calculate the dominant succession phase in a given reach. A test of this method conducted for two contrasting anabranching reaches of the Upper Yellow River indicates that landform ratios provide an efficient and reliable approach to assess river biogeomorphic succession phase. The approach can be adapted to support systematic cross-scalar analyses across the range of river environments.

**Key words:** FBS model, Biogeomorphology, river processes, riparian vegetation, geomorphic mapping, interdisciplinary method