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Connecting Regional-scale Tree Distribution Models with Seed Dispersal Kernels.

Regional scale forest distribution models take climate and geographic variables as input and are therefore helpful for long-term decision support and climate adaptation planning. Generally local processes of germination and seedling survival are resolved probabilistically with explanatory variables such as elevation, and regional presence-absence data. Without having detailed site-level mechanistic processes, these models accurately reflect the fate of seedlings after seeds have arrived at a site. How seeds are distributed in these models, however, is far more problematic since it is difficult to accurately parameterize dispersal models using large-scale presence-absence data, particularly for actively dispersed tree species. The challenge is that variables conditioning vertebrate seed are not represented in large scale distribution models, and in fact vary much smaller than the smallest pixel size for the distribution model. The homogenized seed dispersal kernel (HSDK) offers a tool to make use of this scale separation. In this paper we develop scenarios for seed dispersal on landscape scales, linking small-scale variables with dispersal probabilities on large scales as predicted by HSDKs. (Received September 18, 2016)