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Agricultural colonization of dynamic riverine islands in a tropical wandering river

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We investigate the interplay between riverine islands dynamics in a large tropical wandering river and their use by local communities for agricultural production. The study focuses on a piedmont reach of the Huallaga river, which drains the Peruvian Amazon. Riverine islands are characterized by a high space-time variability in active wandering river systems like the Huallaga, which results from biophysical interactions among flow, sediment transport and riparian vegetation. Despite the rapid rates of planform changes, islands in the Huallaga are extensively used by local farmers who mainly rely on rainfed, low tech agriculture. Thanks to the high nutrient availability in their soil, dynamic riverine islands are offering a natural solution to the advancing degradation of soils due to the progressive increase of intensive monoculture in nearby floodplain areas. The possibility of using intact fields, rich in organic matter, pushes the local populations to colonize riverine islands, challenging their dynamism and high erosion. Through a combination of participatory surveys, field measurements and remote sensing analysis of the recent (30 years) reach-scale island dynamics we investigate whether the benefits of cropping in a riverine island are more relevant than the damages related to their intense morpho-dynamics. Challenges to such biophysical-social system are posed by planned and ongoing infrastructural development in the catchment, affecting the flow and sediment supply regimes.