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004 EPA STAR Graduate Fellowship Conference *Next Generation Scientists—Next Opportunities*

iver networks influence patterns of productivity and soil respiration in arid landscapes

ject summary: River networks are prominent, yet little lied features of arid landscapes. I ask how landscape patterns cosystem structure and function vary among desert uplands riparian zones adjacent to increasingly large, more permanent ams of the upper Sonoran Desert. Surveys of plant cover and duction, as well as monitoring of soil moisture and respiration e been used to describe ecological patterns in upland and rian habitats. Results indicate that the stream networks that n arid basins influence where and when important ecological cesses occur in desert landscapes. These patterns exist at es similar to those at which humans develop watersheds; efore understanding the ecological role of streams in arid dscapes will help us design more effective management tegies in this rapidly growing, water stressed region.

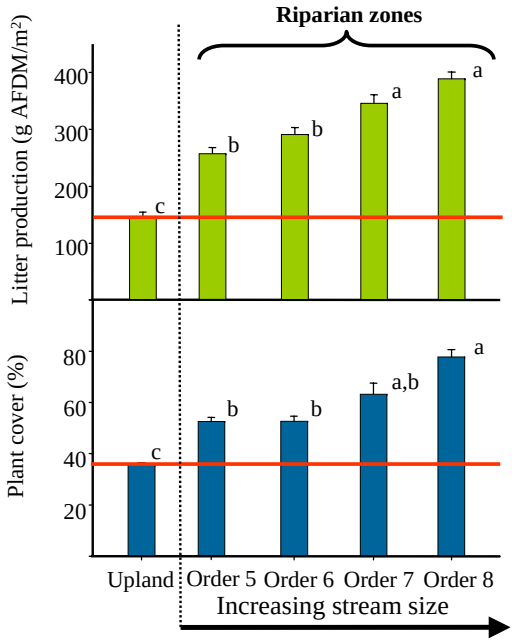
sults and conclusion:

Total plant cover and aboveground productivity was higher in rian vs. upland habitat, and increased among riparian zones as nction of stream size (here = channel order).

Seasonal patterns of soil respiration, as well as annual fluxes of $_2$ beneath plants, vary considerably among upland and riparian itats. These appear to reflect phenological properties of the getation itself.

At broad spatial scales, stream networks that drain arid dscapes impart a strong influence on spatial and temporal terns of vegetation structure, productivity, and soil respiration.

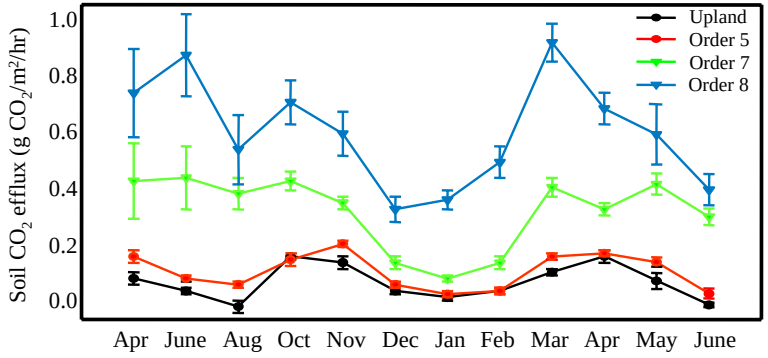
Part A: Patterns in plant cover and production

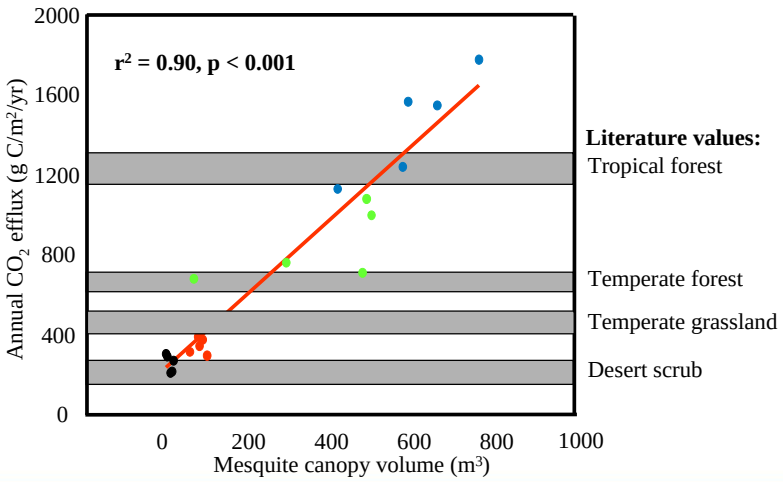


Figures: Part A shows plant cover and total litter production plotted for upland and riparian habitats.

Part B shows (1) temporal patterns in soil respiration beneath vegetation in upland and riparian habitats, and (2) annual belowground C gas flux plotted against plant size from different sites. Note that the range of annual flux values is equal to that found globally

Part B: Patterns of soil respiration beneath upland and riparian plants





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