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Problem Statement
It is important to understand the C cycle in the context of how our ecosystems are evolving and how much C is being held or lost from semiarid lands and other ecosystems.

1. Decomposition is a key part of understanding the C cycle, but most of what is known about decomposition, is based on studies from more mesic forest ecosystems rather than semiarid shrublands, which are globally extensive.
2. New developments suggest that decomposition in semiarid shrublands may be very different from that in forests and in particular may depend on soil and litter moving around and mixing together to provide nutrients. Yet there are few if any studies that have evaluated the degrees to which soil and litter are mobile on the soil surface.

1. What are the differences in decomposition between individual shrub vs. shrub clusters?
2. How does the C cycle change from 2009 to 2010?
3. What are the effects of wind and water erosion on litter decomposition?

Methods

An assessment of instruments were used for data collecting. For photographing we used a Nikon Coolpix 5400. All photographs were taken on the north side of the photo plots to reduce effects of shadowing. To create the plots in the canopies and intercanopies, 8” nails and kite string were used and were color coded with nail polish to depict cardinal directions.

Results

There were some interesting changes for the individual shrub. From 2009-2010 gravel cover increased from 33.9% to 57.0% in the intercanopy area, and dead grass cover decreased from 47.5% to 34.3% beneath the canopy. Soil crust is another interesting factor, with an increase from 0% to 11.6% for intercanopy and canopy, respectively.

Conclusions

- Most decomposition occurred in the intercanopy areas where the largest percent changes occurred. It appears that temperature plays a large role in soil respiration which in turn affects C release.
- Soil litter movement is less active beneath canopy areas, thus leaving more litter to slowly decompose and more nutrients to be absorbed.
- There was a more dynamic percent change amongst individual shrubs then under shrub clusters. Shrub clusters appear to be larger communities that hinder soil litter movement and decomposition.

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