Spatial Relationships of Selected Above-and Below-Ground Carbon in a Peten, Guatemala Tropical Forest. (S07-brennan110928-Oral)

Authors:

- E.W.Brennan* Kansas State University, Manhattan, KS
- C.W.Rice Kansas State University, Manhattan, KS
- L.Villar Centro de Estudios Conservacionistas, Guatemala, CA
- M.Barrios Centro de Estudios Conservacionistas, Guatemala, CA

Abstract:

A study was initiated in June 2000 within a transitional moist/dry forest of Biotopo Dos Lagunas, located in the 1.5 million ha Maya Biosphere of northern Guatemala, Central America, for the purpose of evaluating aboveand below ground carbon stocks along a topographical sequence. Crest, toeslope, and footslope positions were sampled in a Cretaceous-derived Karst landscape dominated by Typic Rendolls. We characterized C (carbon) stocks using a BDH (breast height diameter) biomass model for above-ground C and measuring SOC (soil organic carbon) at 5-cm increments to a 30-cm depth for belowground C. Based on 30 sites measuring 0.125 ha each, aboveground C decreased with lower landscapes along the topographic sequence. Mean above-ground C estimates for above-ground C were 139, 101, and 69 Mg C ha-1 for crest, toeslope, and footslope positions respectively. For the same sequence, mean SOC estimates to 30-cm were 121, 96, and 85 Mg C ha-1, resulting in a ratio of below-ground C to above-ground C ratio of 0.87, 0.95, and 1.23. These results reveal that within this forest a greater proportion of C is stored below-ground when compared to other temperate and tropical forest ecosystems.

Corresponding Author Information:

Edward Brennan Kansas State University 2004 Throckmorton Manhattan , KS 66506-5501 phone: 785-532-7105 e-mail: ebrennan@ksu.edu

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