

Poster #1-64**Homeostasis of Tropical Forest Carbohydrates**

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BER Program: TES

Project: NGEE-Tropics

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Non-structural carbohydrates (NSCs), the organic compounds that drive plant metabolism, have rarely been studied in moist tropical forests, so their regulation in these systems is poorly understood. These compounds may modulate tree drought response and can become depleted if demand (i.e. growth, defense, respiration) exceeds supply (i.e. photosynthesis). As a result, Earth System Models (ESMs) rely on carbohydrates as a metric for vegetation survival. We measured foliar and branch NSCs of 23 canopy tree species across a large precipitation gradient in Panama during the 2015-2016 El Niño drought to examine how short- and long-term climatic variation impact carbohydrate dynamics. There was large variation in NSCs across species, however there was no change in total NSCs as the drought progressed nor across the rainfall gradient. Some NSC variation could be explained by easily and ubiquitously measured traits, providing potential for improved model benchmarking. These findings suggest that NSCs are an allocation priority in moist tropical forests and should improve our ability to capture vegetation dynamics in ESMs.

Reference:

Dickman LT, McDowell NG, Grossiord C, et al. Homeostatic maintenance of nonstructural carbohydrates during the 2015–2016 El Niño drought across a tropical forest precipitation gradient. *Plant Cell Environ.* 2018;1–10.

<https://doi.org/10.1111/pce.13501>.