

TITLE **TROPICAL UNDERSTORY HERBACEOUS COMMUNITY RESPONDS MORE STRONGLY TO HURRICANE DISTURBANCE THAN TO EXPERIMENTAL WARMING**

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ABSTRACT	<p>The effects of climate change on tropical forests may have global consequences due to the forests' high biodiversity and major role in the global carbon cycle. In this study, we document the effects of experimental warming on the abundance and composition of a tropical forest floor herbaceous plant community in the Luquillo Experimental Forest, Puerto Rico. This study was conducted within Tropical Responses to Altered Climate Experiment (TRACE) plots, which use infrared heaters under free-air, open-field conditions, to warm understory vegetation and soils + 4°C above nearby control plots. Hurricanes Irma and María damaged the heating infrastructure in the second year of warming, therefore, the study included one pretreatment year, one year of warming, and one year of hurricane response with no warming. We measured percent leaf cover of individual herbaceous species, fern population dynamics, and species richness and diversity within three warmed and three control plots. Results showed that one year of experimental warming did not significantly affect the cover of individual herbaceous species, fern population dynamics, species richness, or species diversity. In contrast, herbaceous cover increased from 20% to 70%, bare ground decreased from 70% to 6%, and species composition shifted pre to post hurricane. The negligible effects of warming may have been due to the short duration of the warming treatment or an understory that is somewhat resistant to higher temperatures. Our results suggest that climate extremes that are predicted to increase with climate change, such as hurricanes and droughts, may cause more abrupt changes in tropical forest understories than longer-term sustained warming.</p>
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