

Assessing GPS Accuracies in a Southern Hardwood Forest

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Interest in Global Positioning Systems (GPS) has grown widely in recent years, due in part to improved acquisition of GPS signals, development of more effective GPS technologies, increased accuracy, and lower equipment costs. While these developments have been made for applications under open sky conditions, how these improvements affect applications under forest canopies is not clearly understood. We assessed the performance of several receivers ranging from recreation- to mapping-grade for signal acquisition, accuracy, and precision. Data was collected over 24 closed and 3 open sites at the Warnell GPS Test Network, Athens, Georgia. Multiple sampling events were used to account for the impact of changing satellite geometry, and seasonal variation in canopy openness. Vegetation sampling was also conducted at each point to capture the effect of stand type, density, and height. Data were compared using Root Mean Square Error (RMSE) of first 10, 20, 50 and 100, and 200 average position fixes, and linear regression to assess the effect of stand variables.

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