Evaluation of GPS signal reception under tree canopies using different antenna heights

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Abstract: Global Positioning Systemôs signal was observed under tree canopies using four different antenna heights (1.5, 5, 8 and 11m) by static observation in four different forest environments in a mountain area on the north of Kyoto city, Japan. The positional errors and signal interruption probability (SIP) were analyzed after post-processing. Results shown that due to high interference of the canopy, the mid-heights provided stable results as long as the antenna pole could be properly fixed, what was not possible at 11 meter height due to the pole being more subject to bending and wind. SIP also is shown more stable between 5 and 8 meters and, for the interruption is smaller above the lower shrubs and branches. As desirable precision is becoming an important issue in forestry, we recommend surveys using taller antenna heights for more reliable results.

Keywords: Antenna Pole, SIP, Canopy, GPS, Survey