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Typhoon Haiyan's Effects on Interception Loss from a Secondary Tropical Forest near Tacloban, Leyte, the Philippines

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Typhoon Haiyan made landfall in the central Philippines on November 8, 2013. It was one of the strongest tropical cyclones ever recorded with maximum wind speed of 314 km h-1 and affected humans, infrastructure and forests, including the 22-year-old community-managed secondary forest at Manobo near Tacloban on Leyte island. The canopy was damaged for all trees in the 10 m by 60 m monitored plot in the forest; the top of the canopy was pruned for 11% of the trees in the plot.

As part of a larger investigation on hydrological processes in secondary, gross rainfall (P), throughfall (TF) and stemflow (SF) were monitored between June 2013 and June 2014. Measurements included 2 tipping bucket rainfall gauges, 2 large (200 cm by 30 cm) throughfall gutters connected to tipping buckets, 24 roving throughfall gauges (491 cm2 each) and 12 stemflow collectors. The leaf Area Index (LAI) was measured regularly above each of the throughfall collectors using a canopy analyzer. Average throughfall, stemflow, and interception losses (I) were determined for three different periods:(i) pre-Haiyan period (reference; 5 months), (ii) the damaged canopy period post Haiyan (3 months), and (iii) the recovered canopy period (4 months). The median TF/P, SF/P and I/P ratios during the reference period before Haiyan disturbed the canopy were 81%, 1% and 18%, respectively. During the damaged canopy period, the respective ratios were 91%, 0.8% and 8%. Three months after the passage of Haiyan, the forest canopy had recovered more or less in terms of leaf surface area and the TF/P, SF/P and I/P ratios were 88%, 0.8%, and 11%, respectively. These trends reflected the changes in mean LAI, which dropped from 5.24 $\pm$ 0.79 to 3.80 $\pm$ 0.80 right after Haiyan, recuperating to 4.69 $\pm$ 0.62 after recovery. These changes in rainfall partitioning after typhoon Haiyan are less pronounced than those reported previously for hurricane-affected forests in the Caribbean and the Pacific, possibly because the Manobo forest was relatively sheltered topographically.