Estimates of global aboveground litterfall based on random forest and comparison of model simulations

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Aboveground litterfall plays an essential role in the process of forest carbon and nutrient cycles, therefore it is quite important to simulate aboveground litterfall for improving ecosystem models. In this study, we used a machine learning method (i.e. random forest, RF), to generate a global map of aboveground litterfall fluxes at 0.5 degrees spatial resolution with observations at 379 sites of different forest ecosystems globally. Our study demonstrated that the random forest model is effective for global aboveground litterfall simulations. Moreover, we worked on model-data comparison and found out that there are large differences in the aboveground litterfall simulations among major ecosystem models. This study provides a spatial continuous dataset of aboveground litterfall simulations and provides useful information for advancing ecosystem models.