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The estimation for temporal and spatial fluctuations of litter moisture in three forested areas, Japan

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Mapped estimates of the risk of forest fire would benefit forest management, and could be used to decide restrictions on the public use of forest areas.

In this study, the litter moisture contents were predicted with the tank model and the degrees of hazards of forest fire hazard were estimated at each 8-9 forest stands in three forested areas, Tatsunokuchi-yama Okayama, Tatsuta-yama Kumamoto, and Tsukuba-san Ibaraki, in Japan. Model was adapted to 8-9 forest stands in each area.

Fuel moisture decreased with each speed for each forest stand among simulated days depending the solar radiation on the each forest floor. Litter moisture was less than 0.2g g⁻¹ and fire risk is judged to be highest in almost forest stands on the day after long drought period. On the other hand, spatial variation of litter moisture was widest to be 0.19 - 0.80g g⁻¹ on the day during the drying process. This means that litter drying speed and fire risk is different between forest stands. Thus, it is significant to construct the system to warn forest fires for each forest stand to manage the people's activities in this public forested area for preventions of the forest fire.

The data of precipitation and net radiation in Tsukuba-san is provided by Dr. Shin'ichi Iida. We appreciate his work for this study.

Keywords: Tank model, Solar radiation on the forest floor