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Budget of Plant Litter and Litter Carbon in the Subalpine Forest Streams

编号 010032503

推送时间 20220110

研究领域 [森林生态](#)

年份 2022

类型 期刊

语种 英语

标题 Budget of Plant Litter and Litter Carbon in the Subalpine Forest Streams

来源期刊 forest

期 第325期

发表时间 20211213

关键词 [litter input and output;](#) [litter carbon budget;](#) [mountain forest stream;](#) [riparian zone;](#)

摘要

Investigations on the budget of plant litter and litter carbon in forest streams can provide a key scientific basis for understanding the biogeochemical linkages of terrestrial-aquatic ecosystems and managing forest catchments. To understand the biogeochemical linkages among mountain forests, riparian vegetation, and aquatic ecosystems, the changes in litter input and output from the subalpine streams with stream characteristics and critical periods were investigated in an ecologically important subalpine coniferous forest catchment in the upper reaches of the Yangtze River. The annual litter input to the stream was 20.14 g m⁻² and ranged from 2.47 to 103.13 g m⁻² for 15 streams during the one-year investigation. Simultaneously, the litter carbon input to the stream was 8.61 mg m⁻² and ranged from 0.11 to 40.57 mg m⁻². Meanwhile, the annual litter output varied from 0.02 to 22.30 g m⁻², and the average value was 0.56 g m⁻². Correspondingly, the litter carbon output varied from 0.01 to 1.51 mg m⁻², and the average value was 0.16 mg m⁻². Furthermore, the average ratio of litter carbon input to output was 270.01. The maximum and minimum values were observed in the late growing season and the snowmelt season, respectively. Additionally, seasonal variations in temperature, together with the stream length, dominated the input of litter and litter carbon to the stream, while the precipitation, temperature, water level, and sediment depth largely determined their output. Briefly, the seasonal dynamics of litter and litter carbon were dominated by stream characteristics and precipitation as well as temperature patterns. View Full-Text

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