

Topographical variation of soil respiration in a warm-temperate evergreen forest in Kumamoto Prefecture, western Japan.

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The soil respiration rate was measured in four plots in different topological locations at the top, upper, middle, and base of a south-facing slope in the Kahoku Experimental Watershed, located in Yamaga, Kumamoto Prefecture. The soil moisture content ratio and soil temperature were also monitored. No large difference in soil temperatures was recognized among the four plots. By contrast, very large differences in soil moisture were found in the four plots. The soil was wetter in the plots located lower on the slope. The estimated annual soil respiration rate was much lower (around 60%) in the base plot, compared with the middle plot. This was thought to occur because the decelerating effect of soil characteristics on soil respiration exceeded the accelerating effect of wetter soil.

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