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Changes in dissolved organic matters in streamwater during a stand development of Japanese cedar plantations

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In order to elucidate the regulating factors of dissolved organic matter in streamwater, we examined dissolved organic carbon and nitrogen (DOC and DON, respectively) concentrations and the 3-dimensional fluorescence in more than 30 watersheds covered with planted Japanese cedar of different stand ages. A remarkable increase in the DOC concentration was found 3 years after clear-cutting, and the DOC concentrations decreased from 3 to 38 year-old stands. Afterward, DOC concentrations reincreased accompanied with an increase in fulvic acid-like substances, suggesting that soil organic matters and humic substances accumulated during the stand development. We will discuss this change in stream DOM concentration and its quality during the stand development, and an implication for carbon and nitrogen cycling in this forest ecosystem.

Keywords: Dissolved organic matter, Fluorescence, Japanese cedar plantation, Stand age, Streamwater chemistry