

# Development of Innovative Technologies for Enhancing Low Flow Discharge and Reducing Turbid Material from Overcrowded Forest Plantations by Intensive Thinning in Japan

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## ABSTRACT

In Japan, about 67% of the land is covered by forests and about 41% of them consist of plantations. About 35% of the plantations consist of old-aged plantations of older than 50 years and the percentage is projected to 67% in ten years' time. Although the trees of these plantations are supposed to be cut for timber production, most of them remain unmanaged and thus overcrowded mainly due to declining domestic forest industry. Since the forests are mostly located in headwater watershed, there are growing concerns about the degradation of water resources by these unmanaged plantations. To understand the ecohydrological processes in these plantations and examine the effect of intensive 50-60 % thinning to increase infiltration rate and reduce overland flow and soil erosion by recovering understory vegetation, the JST-CREST project "Development of Innovative Technologies for Increasing in Watershed Runoff and Improving River Environment by the Management Practice of Devastated Forest Plantation (Representative: Yuichi Onda)" has been launched since 2009. The ultimate objective of this project is to provide potential scenario to enhance low flow discharge in drought period and reduce turbid material in high flow period. We have been conducting intensive field observation campaign in five research sites across Japan. In Fukuoka site, integrated ecohydrological observations have been conducted in two contrastive watersheds since 2010. Intensive 50% thinning was conducted from January to April 2012 and comparative studies of ecohydrological processes before and after thinning have been started. The interim results from all the sites of this project will be presented in the 3rd International Congress for Forest and Water in a Changing Environment held in Fukuoka during 18-20 September, 2012 (<http://www.forest.kyushu-u.ac.jp/~ecohydrol/3ForestWater/index.html>).

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