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[\[PDF \(2067K\)\]](#) [\[References\]](#)**Analysis of Formation of Nocturnal Cold-air Currents in Satoyama Using Airborne MSS data and CFD**Akira HOYANO<sup>1)</sup>, Jiang HE<sup>1)</sup> and Hiroshi KITA<sup>2)</sup>

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**Abstract**

This paper discusses a method to make a good use of airborne MSS data as input data for simulating cold currents formed within a valley with forest during the summer nighttime. A suburban area surrounded by Satoyama (urban-neighboring hills and forest, suburban forest) was selected for analysis. The analysis method is as follows. The first step is to classify actual conditions of land cover using the MSS data and GIS data. The second is to analyze the relationship between topographic features and surface temperature distributions at night. From the results of the above analysis, a valley where a residential area is located and the nocturnal cold current occurs was selected for CFD simulation. The 3D model for CFD simulation was created based on the MSS data and GIS data. The surface temperatures from the MSS data were used in CFD simulation as input data. As a result, it was found that the cold current developed above the valley slopes flows down to the bottom of the valley, and the air temperature distribution can be quantified. In order to easily understand the simulated results, the cold current distribution can be visualized in a 3D color image.

Keywords: Airborne MSS data, CFD simulation, Cold air current, Suburban forest, Vegetative surface temperature

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