



THE MEASUREMENT OF IMITATION SNOW DEPTH BY IMAGE ANALYSIS

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KEYWORDS:

Main subjects: imitation snow flow visualization

Fluid: solid-liquid flow

Visualization method(s): optical transmission

Other keywords: image analysis, snow depth distribution, imitation snow, water tank

ABSTRACT: The removal of the snow drifts resulting from snow storms is often physically intensive work. Therefore, it is important to consider snowdrifts around buildings in construction planning. The snow cover around a cube model resulting from a snow storm was examined through small-sized water tank experiments.

Then, measurements were depth of imitation snow by image analysis.

The validity of the small-sized water tank experiments were verified by comparison with Oikawa's field observation results¹⁾.

The cube model was established in the small-sized water tank, particle of white Aluminium-oxide were sprinkled imitation snow, and the snow cover around a cube model was visualized.

Furthermore the depth of imitation snow coverage was computed from the image.

Figure 1 shows snow drift around cube.

Figure (a) is Oikawa's field observation¹⁾ and Figure (b) is imitation snow drift around the cube in experiment.

The result of small-sized water tank experiment and Oikawa's field of observation have the same distribution of snow coverage.

Figure (c) is the result of image analysis of snowdrift around a cube model, that was visualized imitation snow cover around a cube model.

The small-sized water tank experiment were able to reproduce the snow coverage of field observation and imitation snow coverage visualized of around the cube model.

Moreover, we applied to the same experiment method for a high-floored building in Antarctic base.

It is expected that work involved in removing snow drift can be reduced for a high-floored building by this method.

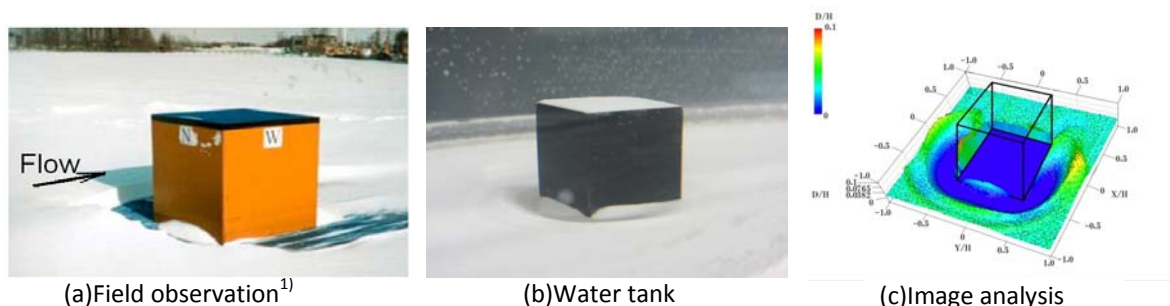


Fig. 1 Snow coverage around the cube

References

1).S. Oiwka, T. Sato, K. Kosugi, 2002, "Wind tunnel similarity of snowdrift with artificial snow," 2001 COLD REGION TECHNOLOGY CONFERENCE, 129-132.