

Research on sudden visibility impairment associated with gaps in snow fences  
視程急変をもたらす防雪柵開口部に関する研究

2018年10月7日～2018年10月12日

International Snow Science Workshop (ISSW)

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The prevalent winter snowstorms and snowdrifts of Japan's Hokkaido prefecture often impair visibility and cause traffic problems, such as multiple vehicle collisions and traffic jams. Forty percent of national highway closures in Hokkaido are caused by snowstorms. The government has installed snow fences along many major roads to deal with snowstorms. However, drivers continue to experience suddenly deteriorating visibility at the edges of snow fences and in gaps between them. As a result, traffic accidents, including multiple vehicle accidents, still occur. This issue urgently needs to be resolved to improve winter driving conditions. The mechanisms of sudden visibility deterioration at the edges of snow fences and at gaps between them have not been determined, and such impaired visibility which affects driving has not been characterized. Various snow fence schemes have been implemented in attempts to prevent sudden visibility impairment. For example, secondary snow fences were installed at the edges of snow drift fences at an angle, and the slat spacing in snow fences was widened. However, the effect of these measures remains undetermined quantitatively. Although it is desirable to determine the mechanisms of sudden visibility impairment in situ, such an approach would not allow us to control environmental conditions while taking measurements. We constructed snow fence models, placed them in a wind tunnel and took measurements under various fixed environmental conditions, with an aim of quantitatively grasping the sudden harmful effect of snow fence edges and gaps on visibility and the effect of measures currently being taken in response. In this research project, we constructed models of snow fences in actual use with modifications to address the sudden visibility impairment issue and models of snow drift fences installed along multilane roads. We then assessed the effect of difference in snow fence gaps width on visibility, and the effect of measures to prevent sudden visibility impairment, which are presumably seen on the road, with various wind directions in the wind tunnel. We present the results of these studies.

本論文閲覧ご希望の方は、当該学会等にお問い合わせください。