**Snowstorm countermeasures for highways in Hokkaido**

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**- Snowbreak forest in Okhotsk Area -**

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**Abstract**

 Recently, snowstorms have become extremely severe in the Okhotsk Area of Hokkaido, Japan. They have ................................................................................................................... ...................... ..................................... and by the Civil Engineering Research Institute for Cold Region.

**Key words:** road, snowstorm countermeasure, snowbreak forest, snowstorm, traffic hindrance

**1. Introduction**

Hokkaido is designated as a snowy cold region, and the Okhotsk Area has particularly severe weather in winter. In recent years, snowstorm frequency has been increasing, as have snowstorm disruptions. During snowstorms, many cars become stranded, ...........

**2. Snowstorm damage in the Okhotsk area**

***2.1 Storm paths over Hokkaido***

 Low-pressure systems that bring heavy snowfall and snowstorms to Hokkaido have various characteristics, depending on their paths (Fukamachi and others, 2004).

 There are three major types of low-pressure systems: 1) a low-pressure system .......................................... over the Pacific Ocean as shown in Fig. 1. ..........

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Fig. 1 Low-pressure system with two centers near the Okhotsk District

***2.2 Snowstorms and road traffic hindrances in Okhotsk area***

Roads in Eastern Hokkaido are frequently closed due to blowing snow. ........ on national highways in Hokkaido (Kawamura and others, 2007; Takahashi and Kosugi, 2010).

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**5. Conclusion**

 This paper has explained road traffic disruption in the Okhotsk Area, which has particularly...........

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(If possible)

**Summary in Japanese**

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