

# 吹きだまり対策に関する研究

## Snowdrift Countermeasures

積雪寒冷地の冬期道路では、吹雪による吹きだまりの発生が、視程障害と並んで交通障害の主要要因のひとつとなっています。このため、寒地土木研究所では吹きだまり災害の防止に向けて、石狩吹雪実験場における現地観測や車両走行実験、そして風洞を用いた模擬実験を行なっています。これらの結果に基づき、吹雪時の吹きだまりの成長や車両の走行限界、車内の安全限界に至る経過を明らかにすることにより、吹きだまりによる犠牲者の発生防止に向けた研究を行なっています。

On winter roads in cold, snowy regions, snowdrifts and poor visibility are the main causes of traffic hindrance. For prevention of disasters caused by snowdrifts, the Civil Engineering Research Institute for Cold Region has been conducting onsite observations and driving experiments at its Ishikari Blowing-Snow Test Field, and model experiments using a wind tunnel. Based on the observation and experiment results, the institute has been conducting research on preventing casualties caused by snowdrifts through efforts toward clarifying the growth process of snowdrifts under blowing snow, the limit of a vehicle's ability to travel in blowing snow and the phenomenon whereby the safety limit in a snowbound vehicle is exceed.

## 吹きだまり災害の近年の事例について

### Disasters caused by snowdrifts in recent years

近年の例では、2008年には2月と4月に大規模な吹雪により通行止めが多発し、2月の例では豊浦町で雪に埋もれた車両で1名の死者を出す惨事となりました。また、今年には1月にえりも町で車両50台が、2月には新潟市で車両100台が吹きだまりにより立ち往生しており、吹きだまり災害の防止が喫緊の課題となっております。

In 2008, heavy snowstorms caused road closures in February and April. In the case of the February snowstorm, one driver died in a trapped vehicle in Toyoura. In January this year 50 vehicles were trapped in snowdrifts in Erimo Town, and in February 100 vehicles were trapped in Niigata City. The prevention of disasters caused by snowdrifts is a pressing issue.

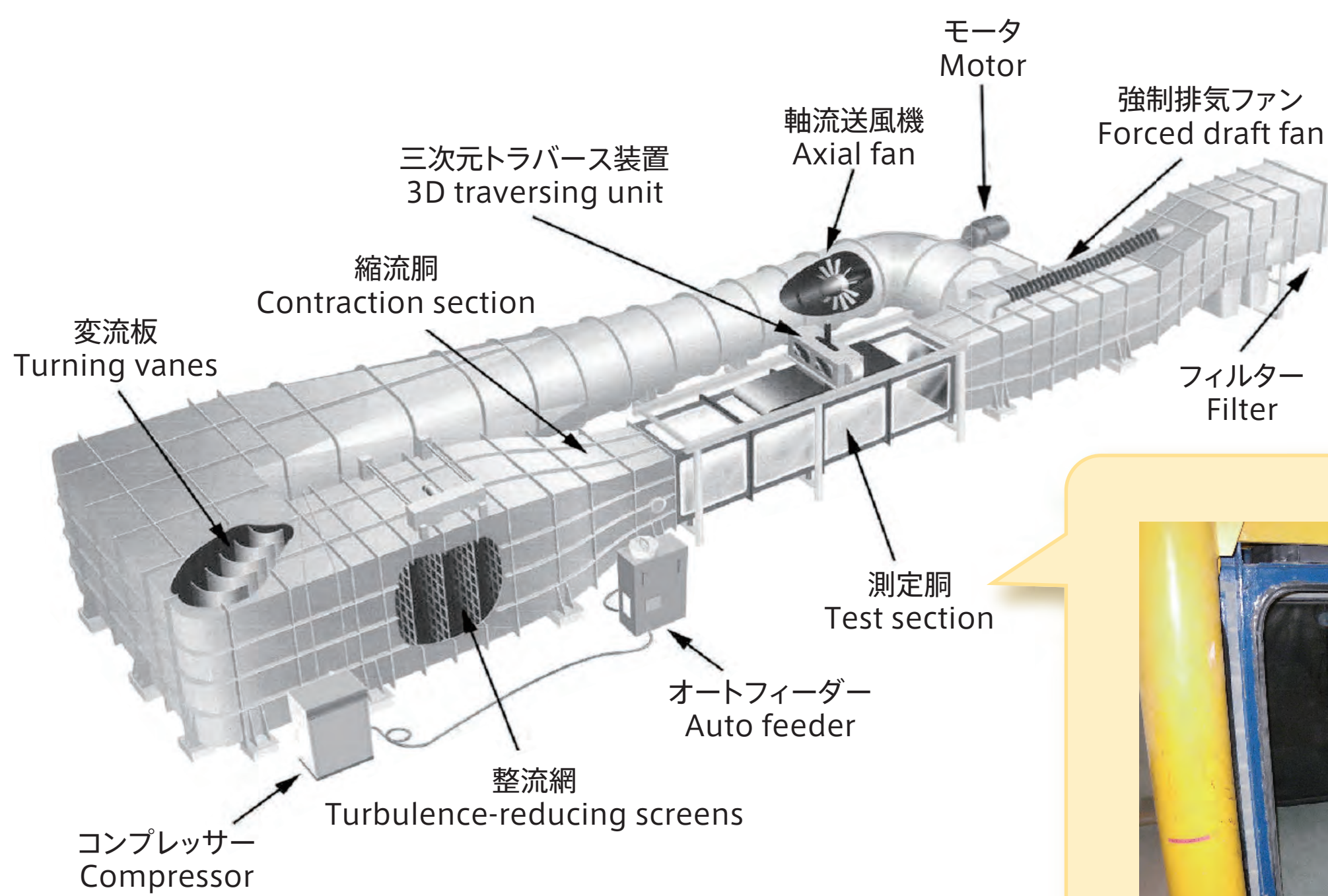


▲吹きだまりによる車両の立ち往生 国道336号えりも町(H22.1.5-6)(室蘭開発建設部提供)  
Vehicles trapped in snowdrifts  
National Highway 336 in Erimo Town (January 5 - 6, 2010)  
Source: Muroran Development and Construction Department

## 風洞を用いた模擬実験

### Wind tunnel experiment

実験場等の現地で、地形や防雪施設の条件を変化させて実験を行うことは、非常に規模が大きくなるため困難です。このため、様々な地形や防雪施設を模型により再現して風洞実験を行い、吹きだまり災害発生に至る過程を解明します。



▲風洞実験装置(寸法：L=21.3m×W=6.4m×H=3.0m)  
Wind tunnel experimental apparatus  
(Dimensions: L=21.3m, W=6.4m, H=3.0m)



▲風洞測定洞部分(寸法：L=6.0m×W=1.2m×H=1.2m)  
Test section of the wind tunnel (Dimensions: L=6.0 m, W=1.2 m, H=1.2 m)

## 石狩吹雪実験場における実験観測

### Experiments and observations at the Ishikari Blowing-Snow Test Field

吹きだまり災害の防止に向けて、どの程度の吹きだまりにより被害が生じるのかを明らかにするため、石狩吹雪実験場において、吹雪の状況と吹きだまりの発生状況の観測や、自動車の走行限界に関する実験等を行っています。

For the prevention of disasters caused by snowdrifts, it is necessary to clarify the relationship between the growth of snowdrifts and the severity of disasters. Observations on blowing snow and occurrences of snowdrifts and experiments on the limit of a vehicle's ability to travel in blowing snow have been conducted at the Ishikari Blowing-Snow Test Field.



▲吹きだまりの発生状況の観測(左：切り土道路)(右：盛り土道路)  
Observation on growth of snowdrifts (Left: At the cut section) (Right: At the embankment)



▲自動車の走行限界に関する実験(写真：吹きだまり高さ15cmの例)  
Experiment on the limit of a vehicle's ability to travel through snowdrifts  
(Photos: experiment at 15-cm-deep snowdrifts)

It is impossible to create various topographic features at a test site and to frequently change the conditions of drifting-snow control facilities there, because such modifications must be on an extremely large scale. Clarification of the growth processes of snowdrifts that lead to disaster is done through wind tunnel experiments in which various topographic features and models of drifting-snow control facilities can be simulated.

### 模擬実験状況(切り土道路での吹きだまりを再現) Model experiment (Simulating the growth of snowdrifts at the cut section of a road)



15 実験開始15分後  
15 min. elapsed



30 実験開始後30分  
Right: 30 min. elapsed