雪氷災害の減災技術に関する研究
Research on Technologies for Reducing Snow and Ice Disasters

近年、局地的な多量降雪や暴風、暖気の流入による冬期の異常高温の発生など気象変化が激しくなる中、雪氷災害が激甚化し発生形態も変化しています。しかし、このような雪氷災害の発生条件等については不明な事項が多く、それらの解明や対策技術に関する研究が強く求められています。そこで、国民生活や経済活動への影響を緩和し、より安全・安心な社会の実現に貢献するため、以下の研究に取り組んでいます。

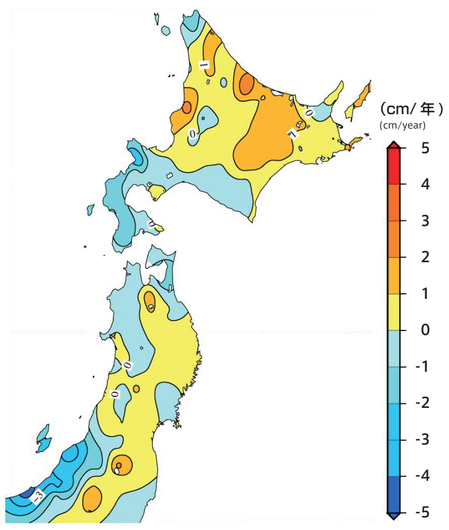
Climatic changes have become more extreme in recent years, and people have suffered from extraordinarily intense localized snowfall, storms and abnormally high temperatures in winter caused by the arrival of warm air. Snow and ice disasters have also become increasingly serious and diverse. However, the conditions under which these disasters occur are not fully understood. Research into them and study on disaster countermeasures are strongly demanded. To mitigate the effects of snow and ice disasters on citizens' lives as well as on economic activities and to help ensure a safer and more comfortable living environment, the Cold Region Road Engineering Research Group has been pursuing the studies shown below.

▲激甚化する雪氷災害（2010.1 えりも町）
Snow- and ice-related disasters have intensified. (Jan. 2010, Erimo)

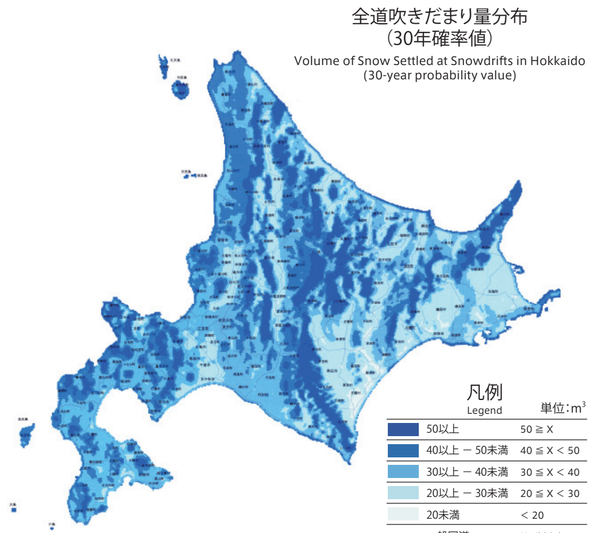
気象変動の影響による雪氷環境の変化に関する研究
Study on Changes in Snow- and Ice-Related Weather Conditions with Respect to Climate Change

気象変動に伴う冬期気象の変化・特徴を解明し、変動が増大する雪氷気候値・雪氷災害のハザードマップを提示します。

Changes in winter weather are analyzed in relation to climate change, and the characteristics of these changes are elucidated. We make hazard maps that show the likelihood of snow- and ice-related disasters and the climatic conditions, which have recently been undergoing great changes.



▲年最深積雪の増減傾向
Changes in annual maximum snow depth



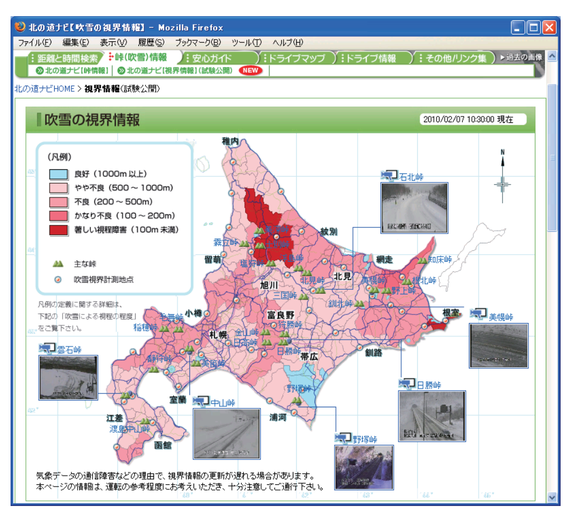
▲雪氷気候値マップの例
A map with snow- and ice-related climatic data

暴風雪による吹雪視程障害予測技術の開発に関する研究
Study on the Development of Technology for Forecasting Snowstorm-induced Poor Visibility

吹雪視程障害の予測技術を開発し、吹雪時にドライバーや道路管理者にリアルタイムに情報提供をすることで、吹雪時の安全性を高めます。

To enhance road safety, technology for forecasting snowstorm-induced poor visibility is developed for real-time information provision to drivers and road administrators.

▲ソフト的な吹雪災害対策
Software-based safety measures against snowstorm disasters



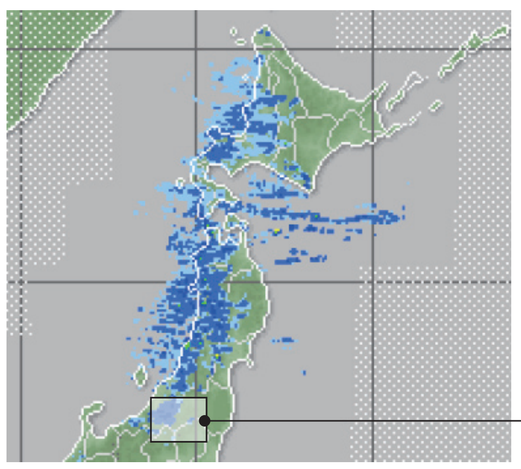
▲吹雪の視界情報」の試験公開（「北の道ナビ」HPサイト）
Test version of the "Snowstorm Visibility" page (Northern Road Navi website)

冬期の降雨等による雪崩対策技術に関する研究
Study on Technology to Mitigate Avalanches Caused by Rain in Winter

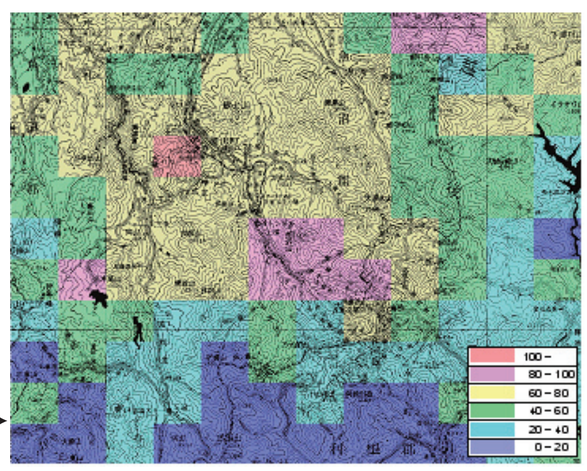
冬期の降雨や気温上昇等に伴い発生する雪崩に関して、気象及び積雪の条件を明らかにし、湿雪雪崩災害の危険度評価技術を開発します。

Concerning avalanches caused by rainfall and/or temperature rises in winter, relevant conditions are analyzed in terms of weather and snow accumulation, and technology is developed for risk assessment of wet snow avalanches.

▲湿雪雪崩の発生例
Example of a wet snow avalanche



▲レーダー降水量
Precipitation detected by weather radar



▲雪崩危険度評価のイメージ
Risk assessment of avalanches (rendering)

吹雪による危険度評価等の対策技術に関する研究
Study on Technologies for Assessing Risks Caused by Snowstorms

北海道での通行止め要因の多数を占める吹雪に関して、危険度要因の影響度を定量的に解明し、路線全体を通しての連続的な吹雪危険度評価技術を開発します。

Regarding snowstorms, which constitute the majority of the causes for road closures in Hokkaido, the risk factors are quantitatively analyzed in terms of the contribution of each factor, and technology is developed for continuously assessing the risk of a snowstorm along an entire route.

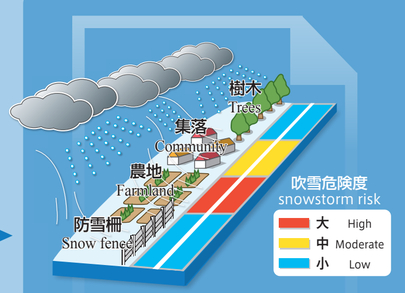
▲路線での吹雪障害
Blowing-snow-induced hindrance

吹雪危険度評価
Snowstorm risk assessment

▲移動気象観測車
Weather observation vehicle

移動気象観測車で連続的なデータを取得し、危険要因を定量化

Continuous data are collected by a weather observation vehicle, and risk factors are quantified.



路線としての連続的な吹雪危険度評価
Continuous assessment of snowstorm risk along an entire route