

Date of Submission	2024.04.20
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IPL Project (IPL -203) Annual Report Form 2023

1 January 2021 to 31 December 2023

1. Project Title

Analysis and identify of landslides based on species distribution and surface temperature difference (IPL 203)

2. Main Project Fields

A. Monitoring and Early Warning, B. Hazard Mapping, Vulnerability and Risk Assessment

Name of Project leader

Ying Guo

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Core members of the Project

Zhaoguang Hu, Institute of Cold Regions Science and Engineering Northeast Forestry University, China

Chunjiao Wang, Institute of Cold Regions Science and Engineering Northeast Forestry University, China

Chengcheng Zhang, Institute of Cold Regions Science and Engineering Northeast Forestry University, China

Hua Jiang, Institute of Cold Regions Science and Engineering Northeast Forestry University, China

3. Objectives: (5 lines maximum)

Under the permafrost, landslides and other complex geological conditions investigation, design, construction and monitoring technical of express way expansion project.

4. Study Area: (2 lines maximum)

Beian - Heihe Expressway Extension Project K160~K182 Section

5. Project Duration (1 line maximum)

2016.08-2024.12

6. Report

1) Progress in the project: (30 lines maximum)

Investigate the age of trees in the area and draw the age contour map.

2) Planned future activities or Statement of completion of the Project (15 lines maximum)

The high-resolution permafrost distribution map was drawn and compared with the tree age contour map to understand the impact of permafrost degradation on plants in the region.

3) Beneficiaries of Project for Science, Education and/or Society (15 lines maximum)

Some experts say that the earth has entered the "living in Anthropocene", the environmental change is greatly affected by human life. The Lesswer-Khinggan region happens to be in the key zone of "sensitive change of permafrost", and the accumulation of regional data is extremely necessary for the study of the global "Anthropocene" situation.

4) Results: (15 line maximum, e.g. publications)

Incident

*In 2023, the central state-owned capital operation budget project "Whole process construction management of highway in the permafrost degradation area of Northeast China" was approved by the Department of Finance of the Ministry of Education in 2023.06.19. The project cycle is two years, and the project capital is 12 million yuan.

*Florence, Italy, attended the 6th International Landslide Forum (WLF6), at the opening ceremony of WLF6, the Institute of Cold Region Science and Engineering of NEFU was awarded the title of "Global Center of Excellence for Landslide Risk and Disaster Reduction" for the fourth time.

*The Institute of Cold Region Science and Engineering of NEFU signed a letter of intent to jointly build the "International Joint Laboratory for Permafrost Remote Sensing Data Processing" with the Civil Defense Center of the University of Florence, Italy.

Papers

Development of a frozen soil dielectric constant model and determination of dielectric constant variation during the soil freezing process[J]. Ying G, Shuang X, Wei S. Cold Regions Science & Technology, 2018, 151:28-33.

Effect of exogenous salicylic acid on salt tolerance of *Hosta ensata* [J].EUROPEAN JOURNAL OF HORTICULTURAL SCIENCE,2023,SCI

Numerical Analysis on the Stability of Sandstone-Covered Mudstone Cutting Slopes

Considering Rainfall Infiltration APPLIED SCIENCES-BASEL[J].2023,SCI

Impacts of Climate Change on Permafrost and Hydrological Processes in Northeast China Sustainability[J].2023, SCI

Student training

Li Xianzhao – Master's Degree

School: School of Civil Engineering, Northeast Forestry University, Harbin, China

Title: Research on temperature variation and disease prevention technology of permafrost subgrade of G331 Line

Wang Weiqi - Master's Degree

School: School of Civil Engineering, Northeast Forestry University, Harbin, China

Title: Permafrost change characteristics and stability analysis of highway subgrade in the Great and lesser Khinggan Mountains

Title: Study on Unfrozen Water and Hydrothermal Coupling Change Characteristics of Northeast Clay