

5. **Background Justification:** (10 lines maximum)

In Northeast high latitude permafrost zone of China, forest is extensive distribution, during the past 50 years, there occur frequently landslides affected by global climate change and human engineering activities. This landslide is slowly in its beginning and processing, and affected by extensive forest, it is very difficult in this area to conduct landslides survey in large scale. In cold regions, landslides often associate with permafrost melting process and surface hydrological conditions, the differences in surface soil temperature and soil moisture will result in the difference of tree species. So in this study, using of radar data and small UAV images, combining with manual investigation, finally to obtain landslides distribution in whole forest area.

6. **Study Area:** (2 lines maximum; where will the project be conducted/applied?)

Hinggan forest Mountains located in Northeast of China.

7. **Project Duration:** (1 line maximum)

2016.04——2020.04

8. **Resources necessary** for the Project and their mobilization

Personnel, Facilities, and Budgets

Satellite data, small UAV, ground penetrating radar, High-density electrical equipment, GPS

9. **Project Description:** (30 lines maximum)

During the study of IPL-167 project, in K175-K183 sections of Beian-Heihe Highway, we found species differences and water content different between on-landslide body and outside-landslide body, similar situation in other area is also found by UAV survey. In this project, using L-band and InSAR data to analyze surface deformation, using LANDSAT8 data to analyze near surface temperature, using Modes data to analyze surface water distribution, combining with ground-penetrating radar, high-density electrical measurement, GPS measurement, PANDA2C measurement to obey landslide maps in this area and single landslide prediction.

10. **Work Plan/Expected Results:** (20 lines maximum; work phases and milestones)

Through this project, landslides distribution maps in forest mountain will be got, and will get the method to judge the landslide distribution in similar regions.

11. **Deliverables/Time Frame:** (10 lines maximum; what and when will you produce?)

2016.04--2017.04

detailed investigation in study area, analysis validation, improving research methods

2017.04--2018.04

conducting survey within 5km wide crossing Beian-Heihe Highway domain, selecting 10 representative landslide.

2018.04--2019.04

combining analysis data and ground measurements, collating and analyzing data, published research papers.

2019.04--2010.04

forming research methods and reporting to related to agency.

12. **Project Beneficiaries:** (5 lines maximum; who directly benefits from the work?)

The Methods and Results of this project could provide reference for forest use planning, railway line construction, highway construction, so has important environmental, economic, and engineering efficiency and important practical value.

13. **References** (Optional): (6 lines maximum; i.e. relevant publications)

HE R, JIN H, CHANG X, LV L, YU S, YANG S, WANG S, SUN G. 2009. Degradation of Permafrost in the Northern Part of Northeastern China : Present State and Causal Analysis, Journal of Glaciology and Geocryology-Volume 5, 829-834. ISSN: 1000-0240

JIN H, LI SH, WANG SH, ZHAO L. 2000. Impacts of Climatic Change on Permafrost and Cold Regions Environments in China, Acta Geographica Sinica-Volume 2, 161-174. ISSN: 0375-5444

WEI ZH, JIN H, ZHANG J, YU SH, HAN X, JI Y, HE R, CH X. 2011. Change Prediction of Permafrost in Northeast China in the Context of Climate Change, Scientia Sinica(Terrae)-Volume 1, 74-84. ISSN: 1674-7240

Note: Please fill and submit this form **by 15 November 2015** to **ICL network**

[<ICL-network@iclhq.org>](mailto:ICL-network@iclhq.org)

Date of Submission	
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IPL Project Proposal Form 2016

(MAXIMUM: 3 PAGES IN LENGTH)

1. Project Title:

Analysis and identify of landslides based on species distribution and surface temperature difference

2. Main Project Fields

(1) Technology Development

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

(2) Targeted Landslides: Mechanisms and Impacts

A. Catastrophic Landslides, B. Landslides Threatening Heritage Sites

(3) Capacity Building

A. Enhancing Human and Institutional Capacities

B. Collating and Disseminating Information/ Knowledge

(4) Mitigation, Preparedness and Recovery

A. Preparedness, B. Mitigation, C. Recovery

3. Name of Project leader

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Core members of the Project

Zhaoguang Hu

Chunjiao Wang

Chengcheng Zhang

Hua Jiang

(All of above belongs to Institute of Cold Regions Science and Engineering, Northeast Forestry University, China.)

4. Objectives: (5 lines maximum; what you expect to accomplish?)

In Northeast high latitude permafrost zone of China, forest is extensive distribution, landslides distribution will associate with tree species distribution. Using radar data and small UAV images, combining with manual investigation, finally to obtain landslides distribution in whole forest area.