

Date of Submission	
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IPL Project (IPL-Number) Annual Report Form

**Period of activity under report
from 1 January 2025 to 31 December 2025**

1. Project Number and Title: 271 - Tree-ring microscopic anatomy as landslide deformation data source for optimization of landslide hazard assessment in forested regions

2. Main Project Fields

Select the suitable topics. If no suitable one, you may add new field.

(1) Technology Development

B. Hazard Mapping, Vulnerability and Risk Assessment

(2) Targeted Landslides: Mechanisms and Impacts

A. Catastrophic Landslides

(3) Capacity Building

B. Collating and Disseminating Information/ Knowledge

(4) Mitigation, Preparedness and Recovery

A. Preparedness

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Core members of the Project: Prof. Karel Šilhán, University of Ostrava, Czech Republic

Doc. Pavel Raška, Jan Evangelista Purkyně University in Ústí nad Labem, Czech Republic

Dr. Jan Balek, IRSM CAS, Czech Republic

3. Objectives (5 lines maximum)

We aim to prepare new methodology of the well establish tree-ring based (cf. dendrogeomorphic) landslide investigations, which will allow i) reliable dating of past landslide events and ii) characterization of their magnitude in terms of regional extend and movements. These parameters are crucial inputs into landslide hazard assessment, but are largely unavailable in forested regions where long-term monitoring is missing and applicability of Earth observing technologies is seriously limited.

4. Study Area

The project will be performed in the temperate regions of Central Europe (e.g., Czech Republic, Austria, Slovakia), but the methodology will be applicable globally in all temperate regions.

5. Project Duration

2022 – ongoing

6. Report

1) Progress in the project (30 lines maximum)

We focused on publication of the previous results. One work focuses on specific landslide hazard (Klimeš et al., submitted) while the article Klimeš and Šilhán (2026) provides general suggestion on how to increase the use of dendrochronology in landslide studies as a complementary approach to other methods, e.g., engineering geology, remote sensing.

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

In our future work, we will explore the possible role of dendrochronology in engineering applications, including slope stability calculations. We will continue in calculating landslide hazard based on dendrochronological evidences for all landslides where such information is available. We will try to compare this approach to hazard assessment with other approaches.

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

The results of the project are used by other researchers or offices dedicated to landslide hazard assessment and mitigation.

4) Results (15 lines maximum, e.g., publications)

Klimeš, J., Šilhán, K. (2026) Possible use of tree-growth disturbances to record landslide movements as a complement to conventional monitoring techniques and remotely sensed data analysis in forested areas. Landslides, <https://doi.org/10.1007/s10346-026-02770-5>

Klimeš J, Šilhán K, Tábořík P, Raška P, Riezner J, Hartvich F, Balek J, Pánek T. Contribution of dendrogeomorphology to landslide hazard assessment – a case study from a volcanic region (Czechia). Natural Hazards

Note:

- 1) If you will change items 2-7 from the proposal, please write the revised content **in Red**.
- 2) Please fill and submit this form to ICL Network <icl-network@landslides.org>
- 3) Reporting year must be one or two years (Maximum).