

**World Centre of Excellence (WCoE-XX) 2017-2020**  
**Progress Report Form 2019**  
**1 January 2018 to 31 December 2018**

1. **Short Title of WCoE** Complex geomorphological and engineering geological research of landslides combined with assessment of adverse societal impacts.

2. **Name of Institution (Name of leader and email):**

Charles University in Prague, Faculty of Science (prof. Vít VILÍMEK, PhD)

Institute of Rock Structure and Mechanics Czech Academy of Sciences (RNDr. Josef STEMBERK, PhD., Deputy Coordinator),

3. **List of core members** RNDr. Jan KLIMEŠ, Ph.D., Mgr. Jan BLAHŮT, Ph.D., (IRSM CAS)

4. **Progress report of activities up to 31 December 2018** (up to 30 lines).

According to planned activities we did the progress in landslide mapping based on field works or remote sensing data and collection of samples for analyses from mountain region in the Czechia and in landslide hazard and risk zonation with respect to risk mitigation and risk management. The later activity has been carried on through bilateral cooperation with the research staff of the Florence University in Italy. We also continued (in collaboration with experts from the Czech Geological Survey, University of Zurich, Switzerland, INAIGEM and ANA, Peru) in research activities related to highly hazardous landslide in the Peruvian Andes (near the city of Carhuaz) and complex rock slide threatening glacial lake in the Cordillera Blanca, Peru. We also performed the first, state wide (Czechia) landslide susceptibility zonation mapping using GIS and statistical methods. Other research activity includes monitoring of thermo-elastic behavior of rock-walls developed in different rock types and long-term multi-parametric monitoring of various landslide types.

The main activities related to the public awareness about landslide risk reduction included: **i)** presentation of the WCoE at the public workshop in Prague dedicated to the Czech experts; **ii)** preparation of series of articles for broad public describing landslide related losses and other hazard related topics (Czech journal Vesmír); **iii)** publication of brochure dedicated mainly to local administrations and land-use planning departments explaining the landslide hazard reduction under the legal and environmental framework of the Czechia; **iv)** public talk and hiking excursion through important landslides in the Outer Western Carpathians; **v)** we took part in

preparation of series of short videos about village seriously damaged by landslide in the 1960' (Carpathians, Czechia), videos are dedicated for broad public; **vi**) we prepared three new Earthcaching sites illustrating landslide monitoring techniques.

We found **new full ICL member** from Czechia - Research Institute of Brown Coal Mining in Most. It is an institute with long tradition of landslide research. It will be ICL full member starting in 2019.

**Three undergraduate thesis** focused on landslide hazard research were defended in 2018 and **two new PhD** positions at the Charles University, Prague were opened. The students started in October 2018 and will carry most of the field works in 2019 and 2020.

#### 5. Plan of future activities (up to 30 lines)

Future activities will continue according to the original plan. Beside this we still plan to prepare one paper from previously sampled data from Peruvian Andes in the frame of Prague – Florence Universities (cooperation between 2 WCoE). The thematic issue of the Landslides journal entitled “Community participation for landslide disaster risk reduction” will be finished and prepared to be printed in 2019. We will collaborate with the administration of the Czech Switzerland National Park, Czechia on preparation of new Earthcaching sites dedicated to the landslide monitoring techniques. The landslide database of the Czechia based on the Google Alerts service will be complemented with expert defined hazard and risk assessment of each of the reported landslides. We are also preparing an interactive exhibition dedicated to landslide risk reduction topics.

#### 6. Publication (in Landslides, proceedings, meeting reports, or WEB):

- Allen S, Frey H, Huggel C et al. Standing Group on Glacier and Permafrost Hazards in Mountains of the International Association of Cryospheric Sciences and the International Permafrost Association. Zurich, Switzerland / Lima, Peru, 72 pp. – J. Klimeš acted as contributing author ([https://gaphaz.org/files/Assessment\\_Glacier\\_Permafrost\\_Hazards\\_Mountain\\_Regions.pdf](https://gaphaz.org/files/Assessment_Glacier_Permafrost_Hazards_Mountain_Regions.pdf))
- Burda J, Veselý M., Řehoř M., Vilímek V. (2018): Reconstruction of a large run-out landslide in the Krušné hory Mts. (Czech Republic). *Landslides*, 15, 3, 423-437.
- Bueechi E, Klimeš J, Frey H, Huggel C, Strozzi T, Cochachin A (accepted) Regional-Scale Landslide Susceptibility Modelling in the Cordillera Blanca, Peru - A Comparison of Different Approaches. *Landslides*
- Interview in the Czech Tv about international guide book for reduction of natural hazards in high mountains (<https://www.ceskatelevize.cz/porady/10101491767-studio-ct24/218411058310314>)
- Klimeš J, Rosario Guerrero AM, Vargas R, Raška P, Vicuña L, Jurt Ch (under review): Community participation in landslide risk reduction, example from Central Andes, Peru. *Landslides*

- Kalina, J. (2018): Giant landslides on volcanic islands on the example of the Hawaii archipelago. Bachelor thesis, Charles University, Prague, 57 pp. Tutor Dr. Jan Blahut, co-tutor Assoc. prof. David Mašín. [in Czech]
- Olejár, F. (2018): Stability of volcanic islands in relation to giant landslides on the example of El Hierro island, Canary Islands. Diploma thesis, Charles University, Prague, 88 pp. Tutor Dr. Jan Blahut, co-tutor Assoc. prof. David Mašín., Ing. Josef Rott. [in Slovak]
- Racek, O. (2018): Landslide susceptibility analysis of Czechia. Diploma thesis, Charles University, 153 pp. Tutor Dr. Jan Blahut, co-tutor Dr. Filip Hartvich. [in Czech]
- Stemberk J, Briestenský M (under review): Tectonic strain affecting the deep-seated gravitational slope deformations dynamics. Engineering Geology:
- Strozzi T, Klimeš J, Frey H, Caduff R, Huggel C, Wegmüller U, Rapre AC (2018) Satellite SAR Interferometry for the Improved Assessment of the State of Activity of Landslides: A Case Study from the Cordilleras of Peru. Remote Sensing of Environment, 217: 111-125.
- Tacconi C., Vilímek V., Emmer A., Catani F. (2018): Morphological analysis and features of the landslide dams in the Cordillera Blanca. Landslides, 15, 3, 507-521.

Note:

Please fill and submit this form by **30 March 2019** to ICL Network <[icl-network@iclhq.org](mailto:icl-network@iclhq.org)>