Date of Submission	19 June 2024

IPL Project (IPL-261) Annual Report Form

Period of activity under report
from 1 January 2023 to 31 December 2023

1. **Project Number and Title: IPL-261 World-wide-web-based Landslide Observatory (W3bLO)**

2. **Main Project Fields – (1) Technology Development**

3. **Name of Project Leader – Professor Matjaž Mikoš**
   Affiliation: University of Ljubljana, UNESCO Chair on Water-related Disaster Risk Reduction
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   Core members of the Project: Jošt Sodnik, PhD (UL FGG), Nejc Bezak, PhD (UL FGG), Mateja Jemec-Auflič, PhD (Geological Survey of Slovenia–GeoZS), Mitja Jermol, MSc (Chair of IRCAI – Research Centre on Artificial Intelligence, Institute Jožef Stefan, Ljubljana, Slovenija – under auspices of UNESCO), Joao Pita Costa, PhD (IRCAI, IJS).

4. **Objectives -** Development of a web-based Landslide Observatory, capable of collecting/ presenting a nearly now-casted information on the present status of selected indicators relevant for landslide risk reduction at the global scale. For its development Artificial Intelligence (AI) techniques will be applied (e. g. Deep Learning, other algorithms), and selected large databases with data from public domain. The observatory is a first step towards building of a Digital Twin of Landslide Risk Assessment.

5. **Study Area -** Global scale using different on-line satellite data (i.e., Sentinel) and large web databases.

6. **Project Duration -** 3 years (July, 2022 – June, 2025).

7. **Report**

1) Progress in the project – in 2023, the methodology was tested on a few selected natural hazards (floods & heat waves in Europe) that offered enough social media and news information to be analyzed using text mining tools (results published in a paper Pita Costa et al., 2024). The planned project activities were submitted as a part of ICL/IPL-related activities to the Open-Ended Working Group for operationalization of the IXth programme of the Intergovernmental Hydrological Programme of UNESCO. A part of the UNESCO IHP IXth Program is also a preparation of an international (multilingual) glossary on waters that can

support work on world-wide-web-based landslide observatory.

2) Planned future activities – in 2024, WP I – Development of AI tools and techniques to be used for Landslide Observatory & WP 2 – Building up the observatory using available and curated open datasets and filtered news feeds. For this purpose, within the IRCAI an independent Scientific Programme Committee was planned in 2023 to be activated in 2024 (https://ircai.org/project/ai-and-water-resources-management/) as a forum for innovative ideas in the field of Artificial Intelligence (AI) and Water Resources Management, covering also the role of water and water-related disasters in Climate Action (SDG #13).

3) Beneficiaries of Project for Science, Education and/or Society – The methodology will be tested in Slovenia and elsewhere, where publicly available databases in different languages can provide sufficient data for validation. Thus, other ICL members will be invited to support the development in its second phase to provide data, and test the observatory in their country and language. After the final inauguration of the observatory, general public and experts worldwide will be able to use it to plan prevention measures to mitigate and reduce landslide risk at regional and local scale.

4) Results – Mikoš, M. *et al.* (2024) Recent UL FGG Contributions to the 2020 Kyoto Commitment. In: Abolmasov, B., *et al.* Progress in Landslide Research and Technology, Volume 3 Issue 1, 2024. Progress in Landslide Research and Technology. Springer, Cham. https://doi.org/10.1007/978-3-031-55120-8_23 & Pita Costa, J. et al. (2024) Towards improved knowledge about water-related extremes based on news media information captured using artificial intelligence. International Journal of Disaster Risk Reduction 100, 104172, https://doi.org/10.1016/j.ijdrr.2023.104172.