

IPL Project (IPL-Number) Annual Report Form

Period of activity under report
from 1 January 2021 to 31 December 2021

1. Project Number and Title:

IPL 242 - Studies of disasters related to natural and anthropogenic landslides in Brazil
- Characterization of landslides triggers and impacts as a tool to rapid risk analysis –
IPL 242 – PHASE I

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

3. Name of Project Leader:

Prof. Renato Eugenio de Lima

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Core members of the Project:

1. Prof. Lazaro Valentim Zuquette(CENACID –USP-SCar)

2. 2.Prof. Tiago Marino(CENACID –UFRRJ)

3. 3.Prof. Luis Gustavo de Castro(CENACID –UFPR)

4. 4.Prof. Jefferson Picanço(CENACID –UNICAMP)

4. Objectives (5 lines maximum)

- Prepare the map of the distribution of types of mass movements throughout the country,

- Classify the most destructive landslides in Brazil.
- Provide scientific knowledge to facilitate the preparation and response of landslides disasters.
- Apply and develop RRLA (Rapid Risk Landslides Analysis) methodology for rapid analyses of landslides, useful in disasters.

5. Study Area

The project aims to evaluate all the most prone landslide areas in Brazil, and is planned to develop detailed studies in the States of Paraná, Rio de Janeiro and Santa Catarina. From 2021 we are also detailing studies in the State of “Minas Gerais”.

6. Project Duration

-6 years (2019 to 2024). We are proposing to extend the schedule to July 2025 considering the difficulties related to the pandemic (see “Report” below).

7. Report

1) Progress in the project (30 lines maximum)

In 2021, we face many difficulties related to the pandemic and in relation to the challenges of remote learning. In addition, universities are on a general budget reduction. Since February 2020, all face-to-face activities have been banned at the university, with the exception of some emergency disaster response missions. We returned to regular learning activities only in August 2022.

Despite the difficulties during the period, the group of CENACID responsible for the project IPL-242 promoted several scientific activities, including in December 2021 the II Virtual National Meeting of the center's members, with participants from different universities and State Geological Services in Brazil. We applied the group's methodologies, including the RRLA - Relative Rapid Landslides Analysis (Lima, 2013), to assess and investigate landslides in special situations in the states of Santa Catarina, Paraná and Minas Gerais, and we organized a first special meeting to discuss the environmental impacts of landslides.

In this complex situation, emergency missions were carried out to assess, study and provide emergency scientific support to respond to landslide-related disasters in the country. Most mass movements can be classified as translational landslides and gravitational flows. The gravitational mass movements in karstic areas were also studied. As usual in the group, all the landslides evaluated were classified using the Relative Rapid Landslides Analysis (RRLA) methodology. These landslides were also included in the GIS software “VICON-desastres” developed by the members of CENACID.

During 2021, the team made progress in preparing the database on the main landslide disasters in Brazil. As proposed in this project, the database provides information on the distribution,

types and classifies the most significant gravitational mass movements in Brazil.

In addition, group members presented several virtual conferences and published scientific reports on processes and consequences of landslides. In 2021, the members of the group presented the results at a special conference at the Brazilian Congress of Geology, which was a virtual meeting.

Members continued with virtual short courses on response to disasters associated with gravitational mass movements, in addition to offering a disaster resilience education program for public school teachers. The activities resulted in specific reports of each dangerous process studied and allowed to share many experiences in different governmental and scientific forums.

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

Despite the difficulties posed by the circumstances, the next planned activities include the continuation of the project's activities, in particular:

- To maintain with the landslide disaster database, including the significant landslide disasters of 2021;

- To continue with the studies of specific areas in terrains favorable to the occurrence of natural and anthropogenic disasters associated with gravitational mass movements.

- Promote annual virtual technical meetings with members.

- We are in the preparation stage and intend to present to the national government a set of proposals for scientific studies, actions and government policies, to reduce the enormous damage that landslides accidents have generated in the country in recent years.**

- Return to participating in international scientific events, mainly in Latin American seminars and congresses on the subject that has not been possible until now.

One of the challenges is to get more financial support to replace the reductions imposed by the reduced federal budget.

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

The project's beneficiaries are the communities living in areas favorable to landslides in Brazil, **especially the poorest, who are safer when served by CENACID's emergency scientific support missions. In these missions, the team applies the scientific knowledge developed in the group's research.**

National, state and local government authorities, who are responsible for coordinating prevention and response to these dangerous geological processes, also benefit.

Through the exchange of ideas and knowledge, scientific groups from Brazilian universities involved in the project's activities are direct beneficiaries of the project.

The work in schools served by disaster resilience courses offered by the project group to public school teachers also result in better prepared communities.

Other agencies such as Civil Protection, planning agencies and municipalities can use the studies for disaster preparedness and prevention. Other direct beneficiaries are the students involved in the project's activities.

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

A aplicação da pesquisa científica do grupo CENACID nas missões de emergência às áreas atingidas por deslizamentos de terra nos estados de Minas Gerais, São Paulo, Santa Catarina e Paraná, resultou em relatórios específicos que foram apresentados, discutidos e entregues às autoridades locais e comunidades. Esses documentos foram úteis para a resposta aos respectivos desastres, e também provocaram o replanejamento da ocupação dessas áreas.

As another result, group members were invited to present several conferences on the topic, including the publication of scientific articles in the Brazilian Congress of Geology (June / 2021).

Some specific results:

-04 (six) Technical Reports (in Portuguese):

-01 (one) Conference at the Brazilian Congress of Geology (June / 2021).

-01 (one) Coordination of the Seminar of Risks at the Brazilian Congress of Geology (June / 2021).

-Preliminary assessment of areas affected by landslides and floods in Presidente Getúlio – Santa Catarina – 2020-2021, 23pg. (in Portuguese)

-Studies on the flash-flood and associated processes that occurred on March 2, 2021 in the Córrego Alto Boqueirão in the municipality of Curitiba - Paraná, 2021, 19pg. (in Portuguese)

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 by **30 March XXX (nex year of the activity report)** to **ICL Network** <icl-network@iclhq.org>

3) Reporting year must be one or two years (Maximum).

Images of the gravitational mass movements studies of the group in 2021

