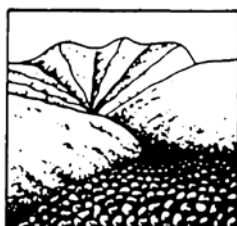


# **СЕЛЕВЫЕ ПОТОКИ: катастрофы, риск, прогноз, защита**

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Труды  
8-й Международной конференции

Тбилиси, Грузия, 6–10 октября 2025 г.



Ответственные редакторы  
С.С. Черноморец, Г.В. Гавардашвили, К.С. Висхаджиева

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ООО «Геомаркетинг»  
Москва  
2025

# **DEBRIS FLOWS: Disasters, Risk, Forecast, Protection**

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Proceedings  
of the 8<sup>th</sup> International Conference

Tbilisi, Georgia, 6–10 October 2025



Edited by  
S.S. Chernomorets, G.V. Gavardashvili, K.S. Viskhadzhieva

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Geomarketing LLC  
Moscow  
2025

# ღვარცოფები: კატასტროფები, რისკი, პროგნოზი, დაცვა

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მე-8 საერთაშორისო კონფერენციის  
მასალები

თბილისი, საქართველო, 6-10 ოქტომბერი, 2025



რედაქტორები  
ს. ს. ჩერნომორეც, გ. ვ. გავარდაშვილი, კ. ს. ვისხაჯიევა

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Conference logo is based on a figure from S.M. Fleishman's book on Debris Flows (Moscow: Geografgiz, 1951, p. 51).

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მეურნეობის ინსტიტუტი



## Preface

This volume contains the Proceedings of the **8<sup>th</sup> conference "Debris Flows: Disasters, Risk, Forecast, Protection" (Tbilisi, Georgia, October 6–10, 2025)**.

Debris flows in mountainous regions cause significant damage to the economy and often lead to casualties among the population. Since the mid-19<sup>th</sup> century, some cases of debris flows have been studied in Georgia. Maps of debris flow hazard and zoning have been created, stationary studies have been conducted on control catchments, experiments have been carried out to reproduce debris flows in flumes, and protective structures have been developed and built for mitigation.

To solve the debris flow problem, the cooperation of experts from different countries is required. One of the forms of such cooperation is the holding of conferences on "Debris Flows: Disasters, Risk, Forecast, Protection". The conference in China is the eighth and continues the series of conferences under the indicated name, held in Pyatigorsk (2008), Moscow (2012), Yuzhno-Sakhalinsk (2014), Irkutsk and Arshan (2016), Tbilisi (2018), Dushanbe and Khorog (2020, due to pandemic held in a reduced correspondence format), and Chengdu (2024).

The initiator of the conferences is the Debris Flow Association, which celebrates its 20<sup>th</sup> anniversary in 2025. The association was founded in 2005 in Pyatigorsk, Russia. The Debris Flow Association continues the traditions established by the Commissions for the study of the Kazbek blockages in the 19<sup>th</sup> century and the Debris Flow Commission of the USSR Academy of Sciences, which worked from 1948 to the end of the 1980s. At present, the Debris Flow Association is the world's largest association of specialists in Debris Flow protection and protection, which now includes 193 experts from 25 countries.

The conference in Georgia is organized by the Debris Flow Association, the Georgian National Academy of Sciences, the Tsotne Mirtskhulava Institute of Water Management of the Georgian Technical University, the Ecocenter for Environmental Protection, with the participation of the following organizations: the Ministry of Education, Science and Youth of Georgia, the Ministry of Environmental Protection and Agriculture of Georgia, the Faculty of Geography of the M.V. Lomonosov Moscow State University, the Institute of the Earth's Crust of the Siberian Branch of the Russian Academy of Sciences, the Far Eastern Geological Institute of the Far Eastern Branch of the Russian Academy of Sciences, the Chongqing Institute of Green and Intelligent Technologies of the Chinese Academy of Sciences, the College of Earth and Environmental Sciences of Lanzhou University, the Institute of Mountain Hazards and Environment of the Chinese Academy of Sciences.

The conference is held in the year of the 200<sup>th</sup> anniversary of the founder of debris flow science Boleslaw Statkowski (1825–1898), the first researcher of debris flows in the Caucasus.

Conference website: [www.debrisflow.ru/en/df25](http://www.debrisflow.ru/en/df25).

Here we publish the Proceedings of the conference. It includes 51 articles, the authors of which are experts from Austria, Armenia, Azerbaijan, Canada, China, Georgia, Germany, Kazakhstan, Kyrgyzstan, Russia, Switzerland, and Tajikistan. Titles of articles, surnames of authors, abstracts and keywords are given in Russian and English, the main text is written in one of the indicated languages. The main information partner and publisher of the conference proceedings is Geomarketing LLC.

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