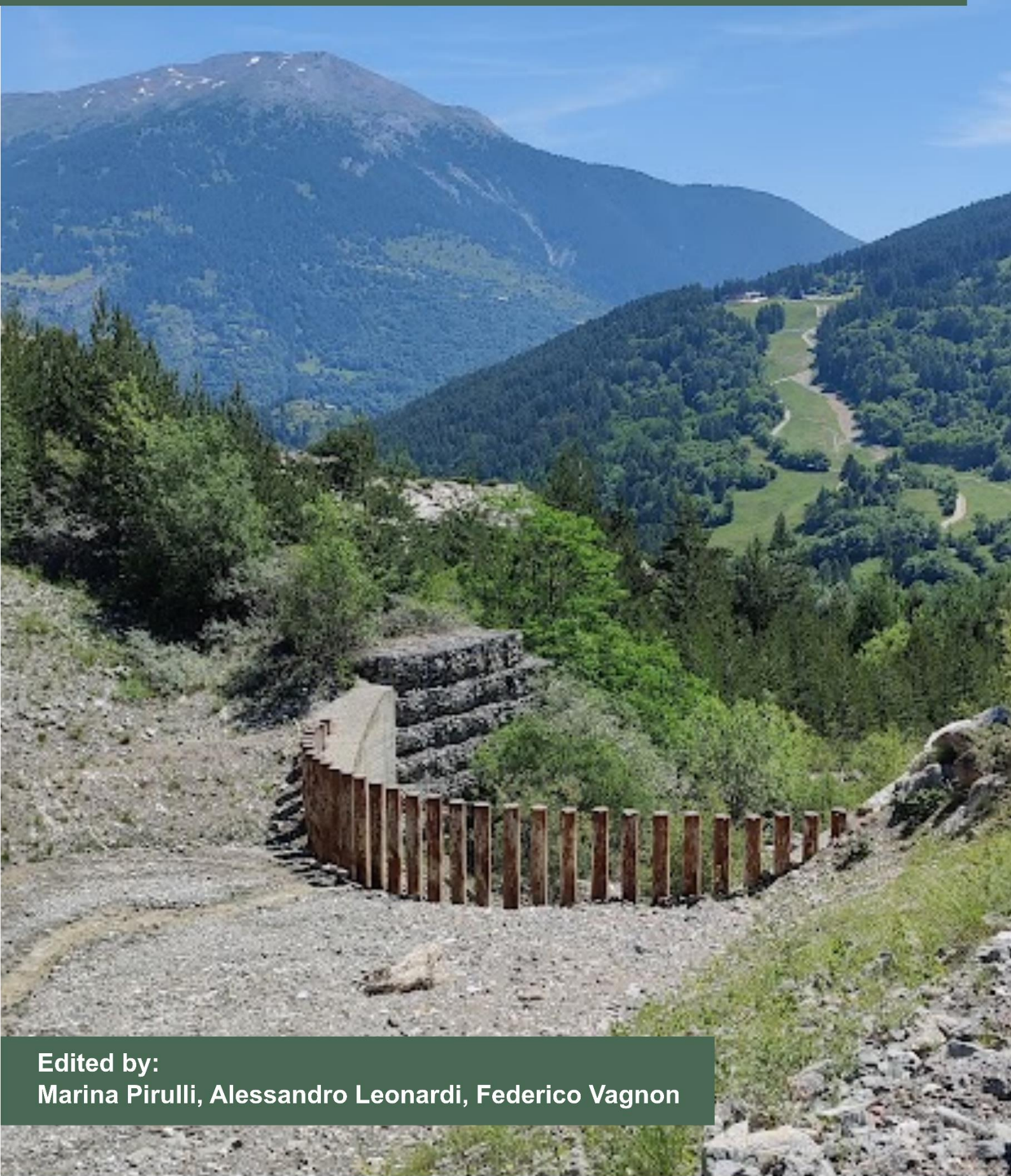
DEBRIS-FLOW HAZARD MITIGATION. Bridging Science and Practice in Debris Flow Management

# DEBRIS FLOW HAZARD MITIGATION

## Bridging Science and Practice in Debris Flow Management



Edited by:
Marina Pirulli, Alessandro Leonardi, Federico Vagnon

PROCEEDINGS OF THE EIGHT INTERNATIONAL CONFERENCE ON DEBRIS-FLOW HAZARD MITIGATION, TORINO, ITALY, JUNE 26-29, 2023

# DEBRIS-FLOW HAZARD MITIGATION

## Bridging Science and Practice in Debris Flow Management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2023


DFHM8 logo by Alessandro Leonardi

On the Cover: Filter barrier for debris flows, Bardonecchia, Italy. Alessandro Leonardi

# Preface

The Eighth International Conference on Debris-Flow Hazard Mitigation was held in Torino, Italy on June 26-29, 2023.

The conference gathered together some 250 participants from 22 countries, representing a global community of researchers and practitioners who deal with challenges on debris flow hazards and mitigation strategies. The agenda consisted of 11 keynote presentations, 40 shorter oral presentations, and 124 poster presentations. The conference sessions were preceded by a 1-day field trip in the Susa Valley and followed by a 2-day field trip in the Aosta Valley.

This proceedings volume contains 174 papers that accompanied all three types of presentations. The papers are arranged over 7 thematic sessions:

- Processes and Mechanics
- Experiments and Modelling
- Monitoring, Detection and Warning
- Role of Disturbance
- Case Studies and Hazard Assessment
- Engineering and Mitigation
- Needs of End Users

All papers underwent blind peer review, with each paper receiving at least one technical and one editorial review. Reviewer names and affiliations are given on the following pages.

For all the work done in organizing this event, we want to address our deepest gratitude to the International Scientific Committee, and to the institutions, companies and volunteers who have directly and indirectly contributed to this event. Special thanks go to Claudio Scavia, Giulia La Porta, Giulia Messina and Andrea Pasqua, who worked behind the curtains and greatly contributed to the success of the conference. Several organizations provided sponsorship through financial support. Their names are listed on the following pages. Our sincerest thanks goes out to all of these individuals and groups.

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Olivier Pouliquen (France)

*Experiments and Modeling*
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Miguel Cabrera (The Netherlands)

*Monitoring, Detection and Warning*
Fausto Guzzetti (Italy)
Velio Coviello (Italy)

*Role of Disturbance*
Katy R. Barnhart (USA)

*Case Studies and Hazard Assessments*
Julia Kowalski (Germany)
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Table of Contents

## *Processes and Mechanics*

*Guillaume Meyrat, Perry Bartelt, Brian McArdell*

A novel approach to measuring pore fluid sediment concentrations of debris flows in a volcanic torrent
*Shusuke Miyata, Michinobu Nonaka, Seiki Kubo, Kenshi Fukunaga, Shohei Ando, Masaharu Fujita*

Multi-component avalanches from rock- and ice-falls to potential debris flow transition modelling
*Jessica Munch, Perry Bartelt, Marc Christen*

Debris flow susceptibility mapping in Colorado Front Range, USA: a comparison of physics-based and data-driven approaches
*Te Pei, Tong Qiu*

Keynote lecture. Granular flows
*Olivier Pouliquen*

Effects of debris-flow and bed composition on erosion and entrainment
*Lonneke Roelofs, Pauline Colucci, Eise Nota, Tom Flipsen, Tjallingde Haas*

Segregation of water and gravel using large ball mill device laid roughness bed
*Kazuki Saito, Toshiyuki Horiguchi*

Laboratory investigation of the effects of grain size on the dynamics of debris flows: Measurement of pore fluid pressure in an open channel
*Yuichi Sakai , Norifumi Hotta*

Analysis on the dynamic characteristics of debris flow in Jiangjia Ravine, China
*Dongri Song*

Inferring spatial variations in velocity profiles and bed geometry of natural debris flows based on discharge estimates from high-frequency 3D LiDAR point clouds; Illgraben, Switzerland
*Raffaele Spielmann, Jordan Aaron, Brian W. McArdell*

Quantifying lateral bedrock erosion caused during a hyperconcentrated flow in a narrow alpine limestone gorge
*Verena Stammberger, Michael Krautblatter*

Experimental study on the effects of local sediment accumulation on a debris flow surge in a steep channel
*Shoki Takayama, Naoya Hayashi, Fumitoshi Imaizumi*

How are fine sediments described in sediment sheet flow?
*Taro Uchida, Yuki Nishiguchi, Satoshi Niwa, Takeshi Kubo, Yutaka Gonda, Yoshifumi Satofuka*

Measurements of debris flow entrainment and dynamics
*Hervé Vicari, Charles W. W. Ng, Steinar Nordal, Vikas Thakur, W. A. Roanga K. De Silva, Haiming Liu, Clarence E. Choi*

Effect of Including Sand Component in a Debris Flow on Concentration of Coarser Particle at the Flow Front
*Takashi Wada, Hiroto Mushiake, Hiroshi Miwa*

Fines-controlled drainage in just-saturated, inertial column collapses
*William Webb, Charles Heron, Barbara Turnbull*

Simulations of non-stationary flows of dry granular material along an inclined chute

*Francesco Zarattini, Fabio Gabrieli*

Impact force of post-fire debris flows over erodible bed
*Min Zheng, Haiming Liu, Sunil Poudyal, Charles W. W. Ng*

## *Experiments and Modeling*

Small-scale study of Debris-Flows Interactions with a Lateral Debris Basin and Crossings: The Manival Torrent case study
*Damien Alliau, Guillaume Piton, Guillaume Chambon, Anne-Sophie Drouet, Vincent Koulinski, Damien Kuss, Dominique Laigle, Vincent Mano, Clément Misset, Christophe Peteuil, Sébastien Roux, Pierre Verry*

Simulations of the occurrence of runoff-generated debris flows by means of hydrological models in headwater rocky basins
*Martino Bernard, Matteo Barbini, Leonardo Battistel, Matteo Berti, Alessandro Simoni, Carlo Gregoretti*

The Rosetta Stone Project – Integrating experimental results on debris flow mechanics across the scales: next results
*Elisabeth T. Bowman, Amanda Fawley, Roland Kaitna, Shuai Li, Brian McArdell, Jim McElwaine, Nicoletta Sanvitale, W. Andrew Take, Lisa Tauskela, Alex Taylor-Noonan, Yuting Zhao*

Keynote lecture. The planar setup: a window through the complex interactions in granular flows
*Miguel Cabrera, Laura Cote, Santiago Caro*

Impact of a dry granular flow against a rigid wall: MPM simulations with a new constitutive approach
*Claudio di Prisco, Pietro Marveggio, Irene Redaelli, Matteo Zerbi*

Laboratory experiments to analyse the influence of bridge profiles on debris-flow impact forces
*Caroline Friedl , Christian Scheidl , Susanna Wernhart, Dirk Proske*

faDebrisFOAM validation using field data surveyed in Crucecita (Chile) alluvial fan for the event of 13$^{th}$ May 2017
*Alex Garcés, Álvaro González, Aldo Tamburrino, Santiago Montserrat*

Hydraulic model test on channel shifting and yielding woody debris on the fan after sediment disaster in the past
*Kenji Hashimoto, Haruki Watabe, Hiroshi Kisa, Tomoyuki Hoya, Takahiro Itoh, Yasuharu Watanabe, Ryosuke Akahori*

Pilot study to explain runout distances of debris flow and immature debris flow considering depositing rate
*Hiroaki Izumiyama, Takao Yamakoshi, Yuya Takahashi, Yuki Nishiguchi, Ryosuke Okuyama*

Object impacted and transported by dry granular flow: 3D MPM-SDEM
*Wei Ji, Zhengyu Liang, Clarence E. Choi*

Numerical Simulation Reflecting Buildings in Area Damaged by Debris flow
*Bae-Dong Kang, Kye-Won Jun, Ho-Jin Lee, Chang-Deok Jang, Hang-Il Jo*

Evaluation of a method to calculate debris-flow volume based on observations of flow depth
*Brian W. McArdell, Jacob Hirschberg, Jordan Aaron, Alexandre Badoux*

Influence of approach shape of debris flow on impact load subjected to open Sabo dam under an overturning experiment of open Sabo dam
*Yuta Miyahara, Toshiyuki Horiguchi, Yoshiharu Komatsu*

Statistical modelling of sediment supply in torrent catchments of the Northern French Alps
*Maxime Morel, Guillaume Piton, Damien Kuss, Guillaume Evin, Caroline Le Bouteiller*

Coupling Depth-Averaged and 3D numerical models to study debris flow: Saint-Vincent event
*Andrea Pasqua, Alessandro Leonardi, Marina Pirulli*

Keynote lecture. A general two phase depth integrated model considering pore water pressure and dewatering
*Manuel Pastor, Saeid Moussavi Tayyebi, Andrei Hernandez, Lingang Gao, Miguel Martín Stickle, Pedro Navas, Diego Manzanal, Ángel Yagüe, Miguel Molinos*

Granular column collapse: the role of particle size polydispersity on the velocity and runout
*Oscar Polanía, Nicolás Estrada, Mathieu Renouf, Emilien Azéma, Miguel Cabrera*

Chute flows of dry granular media: numerical simulations by a well-posed multilayer model and comparisons with experiments
*Luca Sarno, Yongqi Wang, Yih-Chin Tai, Maria Nicolina Papa, Paolo Villani*

Testing applicability of image analysis for measurement of sediment concentration in laboratory experiments
*Kohei Sato, Taro Uchida*

Development of an open source Debris Flow Simulator for "Sabo" (DFSS)
*Takeshi Shimizu, Yusuke Yamazaki, Naoki Imamori*

Growth of debris flows by soil bed erosion: Effects of frictional and hydrodynamic shear stresses
*Pengjia Song, Clarence E. Choi*

A simplex multi-phase approach for modelling debris flows in smoothed-terrain-following coordinate system
*Yih-Chin Tai , Hock-Kiet Wong, Ching-Yuan Ma*

Experiments on and numerical calculations of debris flows passing through narrowed and widened channel regions
*Jun'ichiro Takahama, Kouhei Shintani*

Shear-thinning, Coulomb friction and grain collisions in debris-flow waterfalls: Applications of a 3D phase mixture model with a single calibration parameter and a complex 4-way coupled resolved CFD-DEM approach
*Albrecht von Boetticher, Catherine Berger, Jürg Speerli*

Micromechanical simulations of the collapse of a submerged granular column
*Francesco Zarattini, Antonio Pol, Fabio Gabrieli, Bruno Chareyre*

Mixture theory-based SPH model for submerged landslide
*Chengwei Zhu, Chong Peng, Wei Wu*

## *Monitoring, Detection and Warning*

A new real-time debris flow and avalanches detection system based on optical fiber sensing

*Santina Aiassa, Francesco Antolini, Marco Barla, Alessandra Insana, Roberto Gaudino, Giuseppe Rizzelli Martella, Saverio Pellegrini*

Performance of the debris flow alarm system ALMOND-F on the Rochefort Torrent (Val d'Aosta) on August 5, 2022
*Massimo Arattano, Marta Chiarle, Velio Coviello, Guido Nigrelli*

The July 2015 debris flow in Barsem, Western Pamir (GBAO) Tajikistan: description and causes
*Zafar Avzalshoev, Taro Uchimura*

Characterization of a debris flow event using an affordable monitoring system
*Matteo Berti, Andreas Schimmel, Velio Coviello, Mario Venturelli, Luca Albertelli, Luca Beretta, Francesco Brardinoni, Massimo Ceriani, Marco Pilotti, Roberto Ranzi, Marco Redaelli, Riccardo Scotti, Alessandro Simoni, Laura Turconi, Fabio Luino*

A model-based early warning system for runoff-generated debris flow occurrence: preliminary results
*Federico Cazorzi, Matteo Barbini, Alberto Beinat, Martino Bernard, Mauro Boreggio, Matteo Cesca, Sara Cucchiaro, Roberta Dainese, Alberto De Luca, Christian Demmler, Carlo Gregoretti, Karl Hagen, Veronika Lechner, Eleonora Maset, Michael Neuhauser, Paolo Nicolosi, Christoph Zingerle*

Towards a better understanding of debris flow sediment sources: Monitoring of an active rock slope at Spitze Stei, Switzerland
*Małgorzata Chmiel, Lena Husmann, Fabian Walter, Huw Horgan, Giacomo Belli, Emanuele Marchetti, Christian Kienholz*

Keynote lecture. Debris-flow detection for early warning purposes: recent advances open problems and future challenges
*Velio Coviello*

When instrument location makes the difference on rainfall thresholds definition: Lessons learned at Cancia, Dolomites
*Stefano Crema, Velio Coviello, Matteo Cesca, Roberta Dainese, Lorenzo Marchi, Alessandro Pasuto, Marco Cavalli*

What does landslide triggering rainfall mean?
*Richard Guthrie, Thad Wasklewicz, Graham Knibbs, Eric Hertzman, Sanaz Imen, David Bigelow*

Keynote lecture. Landslide early warning systems: Resources or problems?
*Fausto Guzzetti*

Monitoring and modelling of debris-flow erosion in the Rebaixader catchment (Pyrenees Spain)
*Marcel Hürlimann, Vicente Medina, Roger Ruiz-Carulla, Laura Molano, Ona Torra, José Moya*

Study of debris flow peak discharge at Kamikamihorizawa Creek
*Akihiko Ikeda, Takahiro Itoh, Takahisa Mizuyama*

Initiation and runout characteristics of partially saturated debris flows in Ohya landslide scar, Japan
*Fumitoshi Imaizumi, Shunsuke Oya, Shoki Takayama*

Study of debris-flow initiation through the analysis of seismic signals
*Elena Ioriatti, Velio Coviello, Matteo Berti, Francesco Comiti*

Continuous debris flow monitoring using DFLP and LVP in Sakura-jima Island
*Takahiro Itoh, Tadaaki Iwao, Seiki Kubo, Takaya Tsurumoto, Satoshi Tagata, Misa Furuya, Takahisa Mizuyama*

Volume, peak discharge and Froude number of debris-flow surges: 10 years of monitoring on the Réal Torrent (France)
*Suzanne Lapillonne, Firmin Fontaine, Guillaume Piton, Vincent Richefeu, Frédéric Liébault*

Soil water content regression analysis of measurement data from hyperspectral camera in weathered granite soils
*Hwan-Hui Lim, Seung-Rae Lee, Enok Cheon, Yeeun Nam*

Monitoring debris flows in the Gadria catchment (eastern Italian Alps): Data and insights acquired from 2018 to 2020
*Lorenzo Marchi, Velio Coviello, Marco Cavalli, Francesco Comiti, Stefano Crema, Pierpaolo Macconi*

A multi-year record of topographic changes on debris-flow fans in south-western British Columbia, Canada
*Andrew Mitchell, Sophia Zubrycky, Eimile McSorley, Scott McDougall, Mitch D'Arcy*

Long-term monitoring of sediment runoff for an active sediment control in Joganji River
*Kenji Miwa, Koso Mikami, Takahiko Nagayama, Tomohiko Furuya, Seiya Hayashi, Masaharu Fujita, Syusuke Miyata, Yoshifumi Satofuka, Takahisa Mizuyama, Kuniaki Miyamoto, Akihiko Ikeda, Takahiro Itoh*

Real-time debris flow detection using deep convolutional neural network and Jetson Nano
*Minh-Vuong Pham, Chang-Ho Song, Thanh-Nhan Nguyen, Ji-Sung Lee, Yun-Tae Kim*

Landslide analysis combining laser scanning and photogrammetry
*Pedro Pinto, Juliana Barros, Marisa Pinheiro, Roberto Tomás, Tiago Miranda, Eduardo Pereira*

Experimental study of seismo-acoustic frequency and flow velocity of debris flow
*Sudhan Regmi , Ko-Fei Liu , Shih-Chao Wei*

Bedrock erosion by debris rlows at Chalk Cliffs, Colorado, USA: Implications for Bedrock Channel Evolution
*Francis Rengers, Jason Kean, Jeffrey Coe, Megan Hanson, Joel Smith*

MAMODIS - A low-cost monitoring system for debris flows based on infrasound and seismic signals
*Andreas Schimmel, Matteo Berti*

Photogrammetrically UAV based terrain data generation and automatic extraction of torrential properties
*Gregor Rafael Schmucki, Perry Bartelt, Yves Bühler, Andrin Caviezel, Christoph Graf , Mauro Marty , Andreas Stoffel, Christian Huggel*

Pulse-Doppler radar measurements of debris flows: High-resolution monitoring of surge dynamics from two events in the Gadria Creek (Italy)
*Tobias Schöffl, Georg Nagl, Johannes Hübl, Roland Kaitna*

The RES approach for debris flow susceptibility analysis: a case study
*Battista Taboni, Davide Vianello, Federico Vagnon, Anna Maria Ferrero, Sabrina Maria Rita Bonetto*

Objective definition of discharge thresholds for post-fire debris flows
*Hui Tang, Luke McGuire, Ann Youberg*

The territorial debris flow early warning system of Piemonte (North-western Italy)
*Davide Tiranti, Paolo Bertolotto, Roberto Cremonini, Armando Riccardo Gaeta, Naima Vela*

Seismic measurements of roll waves in debris flows

*Fabian Walter, Zhen Zhang, Jordan Aaron, Brian McArdell, Christoph Graf*

Debris flow seismo-acoustic wave in a finite layer waveguide
*Shih-Chao Wei, Ko-Fei Liu, Sudhan Regmi*

Detection of debris-flow events from seismic signals using Benford's law
*Qi Zhou, Hui Tang, Jens M. Turowski, Jean Braun, Ci-Jian Yang, Michael Dietze, Sophie Lagarde, Ahmed Abdelwahab, Fabian Walter*

## *Role of Disturbance*

Debris-flow activity and sediment dynamics in the landslide-influenced Lattenbach catchment, Austria
*Philipp Aigner , Erik Kuschel , Leonard Sklar , Christian Zangerl , Markus Hrachowitz , Tjalling de Haas, Johannes Huebl , Roland Kaitna*

Keynote lecture. Forecasting the inundation of postfire debris flows
*Katherine R. Barnhart, Ryan P. Jones. David L. George, Francis K. Rengers, Jason W. Kean*

The spatial distribution of debris flows in relation to observed rainfall anomalies: insights from the Dolan Fire, California
*David B. Cavagnaro, Scott W. McCoy, Matthew A. Thomas, Jaime Kostelnik, Donald N. Lindsay*

Study on the relationship between rainfall, topography and landslide volume in the recent debris flow disasters in Hiroshima, Japan
*Tomoaki Eguchi, Hiroya Umemura, Mizuho Arai, Atsushi Okamoto, Yusuke Sakai, Taro Uchida, Shinichiro Hayashi, Makoto Ohyama*

Rainfall-induced shallow landslides triggered after vegetation removed because of fires: G-XSLIP application to Gioiosa Marea (Sicily, Italy)
*Michele Placido Antonio Gatto , Valentina Lentini, Lorella Montrasio, Francesco Castelli*

Snowmelt-triggered debris flows in seasonal snowpacks
*Benjamin Hatchett , Steven Bacon , W. Tyler Brandt , Anne Heggli , Jeremy Lancaster*

Future global debris flow susceptibility considering climate change, wildfire probability, and glacier retreat
*Laurie J. Kurilla, Giandomenico Fubelli*

Debris flow: Simulating the mitigation properties of vegetation
*Alessandro Leonardi, Andrea Pasqua, Luca Flammini, Marina Pirulli*

Post-wildfire erosion rates and triggering of debris flows: A case study in Susa Valley (Bussoleno)
*Giuseppe Mandrone, Damiano Vacha, Jessica Chicco*

Triggering rainfall intensities for post-wildfire debris flows in the Sonoran Desertscrub plant community
*Luke McGuire, Ann Youberg, Alexander Gorr, Rebecca Beers*

Rheology of hail-debris flow and implications in flow mobility
*Santiago Montserrat, Alex Garcés, Jorge Romero, Germán Aguilar, Aldo Tamburrino*

Study on debris flow monitoring in Mt. Fuji
*Naoki Nishimura, Nobuhiro Usuki, Masaru Touhei, Takahisa Mizuyama, Atsushi Okamoto*

Projected effects of climate change on post wildfire debris-flow hazards applied to the 2017 Thomas Fire, California USA

*Zane White, Paul Santi*

## *Case Studies and Hazard Assessments*

Hydrologic-hydraulic modelling in the Vezza catchment (Alpi Apuane, Italy): An area prone to flash floods and debris flows
*Michele Amaddii, Giorgio Rosatti, Daniel Zugliani, Lutz Weirhermuller, Cosimo Brogi, Mehdi Rahmati, Leonardo Disperati, Pier Lorenzo Fantozzi*

Debris flow hazard assessment: Laboratory experiences and numerical modelling
*Francesco Castelli, Valentina Lentini, Alessandra Di Venti*

Rainfall-induced debris flows and shallow landslides in Ribeira Valley, Brazil: main characteristics and inventory mapping
*Vivian Cristina Dias, Helen Cristina Dias, Carlos Henrique Grohmann*

Constraining post-fire debris-flow volumes in the southwestern United States
*Alexander Gorr, Luke McGuire, Ann Youberg*

A novel downstream flood hazard grade index incorporating upstream hydrograph characteristics to predict debris flow runoff
*Norio Harada, Kana Nakatani, Masamitsu Fujimoto, Yoshifumi Satofuka*

Simulating two-phase debris flows in HEC-RAS at Hummingbird Creek, British Columbia, Canada
*Kathleen Horita*

Reconstruction of debris flow in the Gerkhozhan-Su river valley based on the chain modeling
*Viktoriia Iudina (Kurovskaia), Sergey Chernomorets, Inna Krylenko, Tatyana Vinodradova, Eduard Zaporozhchenko*

The Emerging widespread debris flow disasters in tropical terrain of peninsular Malaysia: Understanding the risk and policy intervention
*Abd Rasid Jaapar, Mohamad Faruq Syahmi Md Aripin, Ibrahim Komoo, Che Aziz Ali, Zamri Ramli, Abd Rahim Harun, James Bachat, Zakaria Mohamad, Rohayu Che Omar, Khamarrul Azahari Razak, Choun Sian Lim*

Definition of rainfall thresholds for shallow landslides in Colombian tropical mountainous catchments as debris flow triggering mechanism
*Ricardo Jaramillo-González, Luis Martínez, Edier Aristizábal, Edwin García, Roberto J. Marín*

A Study on the comparative analysis of the FLO-2D model according to debris flow sediment amount
*Hang-Il Jo, Chang-Deok Jang, Kye-Won Jun, Ho-Jin Lee, Bae-Dong Kang*

Impact of climate change on hydro-meteorological trigger conditions for debris flows in Austria
*Roland Kaitna, David Prenner, Matt Switanek, Markus Stoffel, Douglas Maraun, Markus Hrachowitz*

Proposal of hazard connectivity index for debris flow disaster management
*Masato Kobiyama, Alessandro Gustavo Franck*

Keynote lecture. Towards reliability-management for debris flow risk assessment
*Julia Kowalski, Hu Zhao, Anil Yildiz*

Field investigations of sandstone escarpment stability at East Mountain, Utah, USA
*Hamid Maleki, Chuck Semborski, Ken Fleck*

Morphological characteristics of drainage networks related to landslide cluster in the Colombian Andean
*Karolina Naranjo, Edier Aristizábal, Johnnatan Palacio*

Integration of meteorology and geomorphology for enhanced understanding of post-fire debris-flow hazards
*Nina Oakley, Luke McGuire, Jeremy Lancaster*

Topographical criteria for the occurrence of landslides causing debris flows in the 2017 torrential rain in northern Kyushu, Japan
*Takehiro Ohta, Kanako Hamamoto, Seiya Eguchi*

Anthropogenic gravitational mass movements and the fluvial geomorphological changes: The Vale (2019) and Samarco (2015) tailing dam disasters, Brazil
*Jefferson Picanço, Maria José Mesquita, Renato Eugenio de Lima*

Modeling the runout behavior of the July 23rd, 2015 Cancia debris-flow event using two numerical models
*Zhitian Qiao, Matteo Berti, Wei Shen, Tonglu Li*

Satellite-based monitoring of an open-pit mining site using Sentinel-1 advanced radar interferometry: A case study of the December 21, 2020, landslide in Toledo city, Philippines
*Ryan Ramirez, Rajiv Eldon Abdullah, Woojae Jang, Shin-Kyu Choi, Tae-Hyuk Kwon*

Using integrated growth to delineate debris-flow inundation
*Mark E. Reid, Dianne L. Brien, Collin Cronkite-Ratcliff, Jonathan P. Perkins*

Keynote lecture. The debris flow event of 29 October 2018 in the Rio Rotiano (Italy) and its challenges for the mathematical and numerical modelling
*Giorgio Rosatti, Daniel Zugliani, Luigi Fraccarollo*

Extreme precipitation on dry ground in western Norway – characteristics of induced landslides call for adaption of the Norwegian practice in landuse planning
*Denise Christina Rüther, Lena Rubensdotter, Heidi Hefre*

Rockfalls change the runout and frequency of debris flows at Punta Nera (Eastern Italian Alps)
*Alessandro Simoni, Matteo Barbini, Leonardo Battistel, Martino Bernard, Matteo Berti, Osvaldo Cargnel, Pier Paolo Ciuffi, Carlo Gregoretti*

Development of debris flow vulnerability curve for data-driven method
*Chang-Ho Song, Ji-Sung Lee, Ho-Hong Duy Nguyen, Yong-Soo Ha, Yun-Tae Kim*

Quantifying debris-flow hazard and risk based on fan sector
*Alex Strouth, Sophia Zubrycky, Scott McDougall*

Spatial variation in specific sediment discharge volume from first-order catchment due to heavy rainfall and its factors
*Misa Tsushima, Taro Uchida*

Debris flows and debris avalanches initiation and runout susceptibility assessment in Campania region (Italy)
*Rita Tufano, Davide Mazza, Francesco Maria Guadagno, Pantaleone De Vita, Giacomo Russo, Paola Revellino*

Advancing debris flow hazard and risk assessments using debris flow modeling and radar derived rainfall intensity data

*Thad Wasklewicz, Richard Guthrie, Graham Knibbs, Rebecca Rossi*

Probabilistic prediction method of erosion volume and deposition area from rainfall observation data
*Kazuki Yamanoi, Kaori Shikakura, Kenji Kawaike, Satoru Oishi*

Bridge obstruction caused by debris flow: A practical procedure for its management in debris-flow simulations
*Daniel Zugliani, Atousa Ataieyan, Raffaele Rocco, Nathalie Betemps, Paolo Ropele, Giorgio Rosatti*

## *Engineering and Mitigation*

Design of two retention basins along the torrent Liera on the Gares Valley (Dolomites, North East Italy) after the storm Vaia
*Matteo Barbini, Martino Bernard, Mauro Boreggio, Fabio Da Re, Carlo Gregoretti*

Log crib check dam performance under multiple debris-flow loadings – East Gate Landslide, British Columbia, Canada
*Matthias Busslinger, Matthias Jakob, Richard Singer, Ryan Calder*

Keynote lecture. Modelling flow-landslides impact against protection structures
*Sabatino Cuomo*

Application of physical models to improve the mitigation structures of debris flow in a case study
*Davood Farshi, Dany Suter*

Debris flow mitigation by using biopolymers as a soil stabilizer
*Hadi Fatehi, Dominic Ong, Jimmy Yu, Ilhan Chang*

Propose of design method on Level II load of open Sabo dam
*Toshiyuki Horiguchi , Satoshi Katsuki , Yoshiharu Komatsu*

Effect of multiple debris flow countermeasures on flow characteristics and topographic changes through real-scale experiment
*Woojae Jang, Beom-Jun Kim, Shin-Kyu Choi, Tae-Hyuk Kwon, Chan-Young Yune*

Field investigation and design of debris nets in an environmentally sensitive area
*William Kane, Joseph McElhany, Brian Forsthoff*

Mitigation strategy for low-frequency large-magnitude debris flows in Hong Kong
*Florence Ko, Chris Chan, Hoi-yan Ho, Kevin So*

Deciphering controls for the impact of geophysical flows on a flexible barrier: Insights from coupled CFD-DEM modeling
*Yong Kong, Mingfu Guan*

Analysis of mitigation effect of the open- and closed-type check dam
*Seungjun Lee, Hyunuk An, Minseok Kim*

Flow-type landslides impacting V-shaped diversions: Physical modelling
*Ruoying Li, Clarence E. Choi*

Multiple debris-resisting barriers with basal clearance: a study on impact force
*Haiming Liu, Clarence E. Choi, Charles W.W. Ng*

The Cheekeye debris-flow barrier - unique features of a proposed open check dam in Canada

*Emily Mark , Alex Strouth*

Spatial distribution of natural debris-flow impact
*Georg Nagl, Roland Kaitna, Johannes Hübl*

Coupled Eulerian-Lagrangian debris flow model with flexible barrier
*Shiyin Sha, Ashley P. Dyson , Gholamreza Kefayati , Ali Tolooiyan*

Experimental study on structural behaviour of steel wire mesh under impact loading
*Masakazu Sugimoto, Kanako Koizumi, Takeshi Arita, Toshiyuki Horiguchi*

Physical model investigation of the transition of a debris flow from the aerial to the water phase
*Christian Tognacca, Enea Toschini, Mattia Benagli, Gioele Maddalena*

Static and dynamic impact forces on a rigid barrier due to dry debris flow simulated by a DEM-based granular column collapse
*Aman Ujjwal, S. Sureka, Govind Kant Mishra, Mousumi Mukherjee, Arindam Dey*

Sediment control and logs capturing in sand pocket with combination of sabo dam with large conduit and iron bars
*Haruki Watabe, Satoshi Tagata, Tatsuki Yuzawa, Takahiro Itoh*

A simplified numerical model for evaluating sediment control by open-type sabo dams in the Joganji River basin
*Yusuke Yamazaki, Tomoyuki Noro, Kenji Miwa, Takahisa Mizuyama, Masaharu Fujita, Shusuke Miyata, Akihiko Ikeda, Tomohiko Furuya, Takahiko Nagayama, Takahiro Itoh*

Keynote lecture. Impact dynamics of debris flow against slit dam: Experimental and numerical investigation
*Gordon G.D. Zhou, Kahlil F.E. Cui, Junhan Du, Nanjun Li, Xueqiang Lu, Yunxu Xie*

## *Needs of End Users*

Runout model evaluation based on back-calculation of building damage
*Katherine R. Barnhart, Jason W. Kean*

MurGame: Protect your village from debris flows!
*Catherine Berger, Florian Zimmermann, Ralf Mauerhofer, Marc Christen*

A new statistical method to assess debris flow erosion
*Gabriele Bertoldi, Tommaso Baggio, Francesco Bettella, Vincenzo D'Agostino*

Risk assessment of transport linear infrastructures to debris flow
*Francesco Castelli, Enrico Foti, Valentina Lentini, Marina Pirulli*

Debris-flow risk-to-life: Upper-bound preliminary screening
*Tim Davies, Mark Bloomberg, Dave Palmer, Tom Robinson*

Practical guide for debris flow and hillslope debris flow protection nets and its application in case studies
*Nadine Feiger, Corinna Wendeler*

A CFD-DEM based numerical investigation of debris flow on ballasted railway track
*Yufeng Gong, Yu Qian*

Tensile stress development and critical behavior of a flexible barrier

*Miao Huo, Fucheng Huang, Maojun Yang, Chenjie Jiang*

Debris flow hazard mapping along linear infrastructure: An agent based model and GIS approach
*Graham Knibbs, Richard Guthrie, Thad Wasklewicz*

A time-independent reliability based design approach for debris flow flexible barriers
*Maddalena Marchelli, Chiara Deangeli*

Keynote lecture. Defining protection works against debris-flow hazards: Industrial standard, tailor-made or haute-couture?
*Guillaume Piton*

A regional early warning system for summer debris flows
*Michel Ponziani, Denise Ponziani, Andrea Giorgi, Hervé Stevenin, Sara Maria Ratto*

Modelling of debris-flow deposition: terrain slope, mobility coefficient, and back-calculated basal friction coefficient
*Dieter Rickenmann, Christian Scheidl*