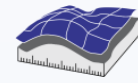


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GEOMORPHOMETRY 2020

Conference Proceedings

edited by

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**Proceedings of the
GEOMORPHOMETRY 2020 Conference**

Massimiliano Alvioli, Ivan Marchesini, Laura Meelli & Peter Guth

**Italian National Research Council
Research Institute for Geo-Hydrological Protection
University of Perugia Department of Physics and Geology
International Society for Geomorphometry Society**

@ Massimiliano Alvioli, Ivan Marchesini, Laura Melelli, Peter Guth

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Preface

Geomorphometry is the science of quantitative land surface analysis. It gathers various mathematical, statistical and image processing techniques to quantify morphological, hydrological, ecological and other aspects of a land surface. Common synonyms for geomorphometry are geomorphological analysis, terrain morphometry or terrain analysis and land surface analysis. The typical input to geomorphometric analysis is a square-grid representation of the land surface: a digital elevation (or land surface) model.

The first Geomorphometry conference dates back to 2009 and it took place in Zürich, Switzerland. Subsequent events were in Redlands (California), Nánjīng (China), Poznan (Poland) and Boulder (Colorado), at about two years intervals. The International Society for Geomorphometry (ISG) and the Organizing Committee scheduled the sixth Geomorphometry conference in Perugia, Italy, June 2020. Worldwide safety measures dictated the event could not be held in presence, and we excluded the possibility to hold the conference remotely. Thus, we postponed the event by one year - it will be organized in June 2021, in Perugia, hosted by the Research Institute for Geo-Hydrological Protection of the Italian National Research Council (CNR IRPI) and the Department of Physics and Geology of the University of Perugia.

One of the reasons why we postponed the conference, instead of canceling, was the encouraging number of submitted abstracts. Abstracts are actually short papers consisting of four pages, including figures and references, and they were peer-reviewed by the Scientific Committee of the conference. This book is a collection of the contributions revised by the authors after peer review. We grouped them in seven classes, as follows:

- Data and methods (13 abstracts)
- Geoheritage (6 abstracts)
- Glacial processes (4 abstracts)
- LIDAR and high resolution data (8 abstracts)
- Morphotectonics (8 abstracts)
- Natural hazards (12 abstracts)
- Soil erosion and fluvial processes (16 abstracts)

The 67 abstracts represent 80% of the initial contributions. The remaining ones were either not accepted after peer review or withdrawn by their Authors. Most of the contributions contain original material, and an extended version of a subset of them will be included in a special issue of a regular journal publication.

Three keynote speakers were scheduled for the conference: Marco Cavalli, Igor V. Florinsky and Michael Hutchinson. Prof. Hutchinson is the recipient of the ISG's Lifetime Achievement Award.

Marco Cavalli is researcher at CNR IRPI Padova since 2009. His research interests mainly focus on the development and application of geomorphometric approaches to LiDAR data and high-resolution Digital Terrain Models with specific attention to geomorphic processes and sediment dynamics in mountain catchments. His main works concerned the development of indices of surface roughness and sediment connectivity along with the use of DEM differencing techniques to assess geomorphic changes.

Igor V. Florinsky is a Principal Research Scientist at the Institute of Mathematical Problems of Biology, Keldysh Institute of Applied Mathematics at the Russian Academy of Sciences. He is the author or editor of over 150 publications including 4 books and 60 papers in peer-reviewed journals. His research interests include theory, methods, and applications of digital terrain modeling and geomorphometry, as well as the influence of geological environment on humans, society, and civilization.

Michael Hutchinson is recognized internationally for his contributions to the theory and practice of spatial and temporal analysis of environmental data. His methods for modelling of climate and terrain, as implemented in the ANUDEM, ANUSPLIN and ANUCLIM computer packages, are widely used to support hydrological and ecological modelling and the assessment of the impacts of climate change. His Australia-wide terrain and climate models have underpinned much of the natural resource and environmental analysis carried out by Australian Universities and Natural Resource Agencies over the last 30 years.

Patron

IAG - International Association of Geomorphologists



AIGeO – Associazione Italiana di Geografia Fisica e Geomorfologia



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Contents

Section 1: Data & Methods

1. Comparative study of delineation of urban areas using imperviousness products and open data.	1
<i>Massimiliano Alvioli</i>	
2. An optimization of triangular network and its use in DEM generalization for the land surface segmentation	5
<i>Richard Feciskanin and Jozef Minár</i>	
3. Detection of crevasses using high-resolution digital elevation models: Comparison of geomorphometric modeling and texture analysis.	9
<i>Olga Ishalina, Dmitrii Bliakharskii and Igor Florinsky</i>	
4. Pit-centric depression removal methods.	13
<i>John Lindsay</i>	
5. Framework for using handheld 3D surface scanners in quantifying the volumetric tufa growth.	18
<i>Ivan Marić, Ante Šiljeg, Fran Domazetović and Neven Cukrov</i>	
6. What does land surface curvature really mean?.	22
<i>Jozef Minár, Marián Jenčo, and Ian S. Evans</i>	
7. Burial mound detection using geomorphometry and statistical methods: pixels versus objects.. . . .	26
<i>Mihai Nicolita</i>	
8. Generalization of DEM looking for hierarchic levels of landforms in the land surface segmentation process.	30
<i>Anton Popov, Jozef Minár, Michal Gallay</i>	
9. A case-based classification strategy of automatically selecting terrain covariates for building geographic variable-environment relationship.. . . .	34
<i>Cheng-Zhi Qin, Peng Liang, A-Xing Zhu</i>	
10. Automated Extraction of Areal Extents For GNIS Summit Features Using the Eminence-Core Method	38
<i>Gaurav Sinha and Samantha Arundel</i>	

Proceedings of Geomorphometry 2020
 DOI: 10.30437/GEOMORPHOMETRY2020

11. Geomorphometric features selection based on intrinsic dimension estimation.	42
<i>Sebastiano Trevisani</i>	
12. Classification of Terrain Concave and Convex Landform Units by using TIN.. . . .	46
<i>Guanghui Hu, Wen Dai, Liyang Xiong and Guoan Tang</i>	
13. Geomorphic systems, sediment connectivity and geomorphodiversity: relations within a small mountain catchment in the Lepontine Alps.. . . .	50
<i>Irene Maria Bollati and Marco Cavalli</i>	

Section 2: Geoheritage

14. Flow Connectivity Patterns in Complex Anthropized Landscape: Application in Cinque Terre Terraced Site.	55
<i>Lorenzo Borselli, Devis Bartolini, Paolo Corradeghini, Alessandro Lenzi and Paolo Petri</i>	
15. Photogrammetric reconstruction of the Roman fish tank of Portus Julius (Pozzuoli Gulf, Italy): a contribution to the underwater geoarchaeological study of the area.	59
<i>Claudia Caporizzo, Pietro P.C. Aucelli, Gaia Mattei, Aldo Cinque, Salvatore Troisi, Francesco Peluso, Michele Stefanile and Gerardo Pappone</i>	
16. Changes of selected topographic parameters of Cracow Old Town (Poland) during the last millennium as a result of deposition of cultural sediments.. . . .	63
<i>Adam Łajczak, Roksana Zarychta and Grzegorz Walek</i>	
17. Necropolis of Palazzone in Perugia: integrated geomatic techniques for a geomorphological analysis.	67
<i>Fabio Radicioni, Aurelio Stoppini, Grazia Tosi and Laura Marconi</i>	
18. Combined approach for terraced slopes micromorphological analysis through field survey and 3D models: the Stonewallsforlife project.	71
<i>Emanuele Raso, Paolo Ardissonne, Leandro Bornaz, Andrea Mandarino, Andrea Vigo, Ugo Miretti, Rocco Lagioia, Alba Bernini and Marco Firpo</i>	

Section 3: Glacial Processes

19. Geomorphometry in the deep Norwegian Sea.	75
<i>Margaret Dolan, Lilja Bjarnadóttir, Terje Thorsnes, Markus Diesing and Shyam Chand</i>	
20. Hypsoclinometric evidence of the degree of modification of mountains by glacial erosion.. . . .	79
<i>Ian Sylvester Evans, Nicholas J. Cox, Mihai Niculita and David Milledge</i>	

21. 3D marine geomorphometry for the Arctic Ocean.	83
<i>Igor Florinsky, Sergey Filippov and Alexander Govorov</i>	
22. Geomorphometric diversity of closed depressions in the loess belt of east Poland (Nałęczów Plateau)	87
<i>Leszek Gawrysiak and Renata Kołodyńska-Gawrysiak</i>	
23. Geomorphometry of the cirques of Šar Planina.	91
<i>Ivica Milevski, Marjan Temovski, Balázs Madarász, Zoltán Kern and Zsófia Ruszkiczay-Rüdiger</i>	

Section 4: Lidar & High Resolution Data

24. Using high-resolution ICESat-2 point clouds to evaluate 1-3 arc second global digital elevation models.	95
<i>Tera Geoffroy and Peter Guth</i>	
25. Coastal dune modelling from airborne LiDAR, terrestrial LiDAR and Structure from Motion–Multi View Stereo.	99
<i>Carlos Grohmann, Guilherme Garcia, Alynne Affonso and Rafael Albuquerque</i>	
26. Using high-resolution lidar point clouds to evaluate 1-3 arc second global digital elevation models.	103
<i>Peter Guth</i>	
27. High-resolution geomorphometry – a tool for better understanding the genesis and contemporary processes in erosional sandstone landscapes.	107
<i>Kacper Jancewicz, Piotr Migoń, Wioleta Kotwicka and Milena Różycka</i>	
28. Can multiscale roughness help computer-assisted identification of coastal habitats in Florida?.	111
<i>Vincent Lecours and Michael Espriella</i>	
29. Estimating the spatial distribution of vegetation height and ground level elevation in a mesotidal salt marsh from UAV LiDAR derived point cloud.	115
<i>Daniele Pinton, Alberto Canestrelli, Christine Angelini, Benjamin Wilkinson, Peter Ifju and Andrew Ortega</i>	
30. DEM from topographic maps - as good as DEM from LiDAR?	119
<i>Bartłomiej Szypuła</i>	
31. Mathematical modelling of long profiles in a tectonically active area: Observations from the DEM-based geomorphometry of the Rangit River, India.	124
<i>Sayantana Das, Lopamudra Roy, Arindam Sarkar and Somasis Sengupta</i>	

Section 5: Morphotectonics

32. Tectonic Geomorphology of West Bangalore by analysing the Chick Tore river basin, Karnataka, India, Using ASTER DEM.	128
<i>K S Divyalakshmi, Yogendra Singh and Biju John</i>	
33. Detecting paleosurfaces on open access DEMs in semi-arid study area.	132
<i>Bernadett Dobre, István Péter Kovács and Titusz Bugya</i>	
34. The relationship between Bedrock geometry and soil solum at a regional scale.	135
<i>Javad Khanifar and Ataallah Khademalrasoul</i>	
35. 4D geometrical and structural analysis of ground ruptures related to 2016 earthquakes in Sibillini mountains (Central Italy).	139
<i>Marco Menichetti, Daniela Piacentini, Emanuela Tirincanti and Matteo Roccheggiani</i>	
36. Geomorphometry helps to distinguish between mountain fronts of various origin (Sowie Mts., SW Poland).	143
<i>Kacper Jancewicz, Milena Różycka, Mariusz Szymanowski and Piotr Migoń</i>	
37. Geomorphometric characteristics of the high mountains in North Macedonia.	147
<i>Ivica Milevski, Bojana Aleksova and Sonja Lepitkova</i>	
38. Geomorphometry and statistics-based approach for recognition of areas of enhanced erosion and their morphotectonic interpretation.	151
<i>Milena Różycka and Piotr Migoń</i>	
39. Suspected signature of active tectonism in Palghat Gap, India.	155
<i>Yogendra Singh, Biju John and KS Divyalakshmi</i>	

Section 6: Natural Hazards

40. A data-driven method for assessing the probability for terrain grid cells of initiating rockfalls on a large area.	158
<i>Massimiliano Alvioli, Michele Santangelo, Federica Fiorucci, Mauro Cardinali, Ivan Marchesini, Paola Reichenbach and Mauro Rossi</i>	
41. Towards a consistent set of land-surface variables for landslide modelling.	162
<i>Andrei Dornik, Lucian Drăguș, Marinela Adriana Chejan, Takashi Oguchi, Yuichi Hayakawa and Mihai Micu</i>	
42. Incorporating ground cracks in the estimation of post-seismic landslide susceptibility.	166
<i>Shui Yamaguchi and Mio Kasai</i>	
43. Methodological Improvement for Reconstructing the Palaeo-topography of Lombok island before the Samalas AD 1257 Eruption.	170
<i>Mukhamad Malawani, Franck Lavigne and Bachtiar Mutaqin</i>	

44. Slope – catchment area relationship for debris-flow source area identification	174
<i>Ivan Marchesini, Mauro Rossi, Massimiliano Alvioli, Michele Santangelo and Mauro Cardinali</i>	
45. Landslide topographic signature prediction using segmentation of roughness and Random Forest.	178
<i>Mihai Niculita</i>	
46. Relevance of morphometric parameters in susceptibility modelling of earthquake-induced landslides.	182
<i>Badal Pokharel, Massimiliano Alvioli and Samsung Lim</i>	
47. Volumetric assessment of river bank erosion using terrestrial laser scanning and high-resolution digital terrain modelling.	186
<i>Ján Šašák, Michal Gallay, Jaroslav Hofierka, Ján Kaňuk, Miloš Rusnák and AnnaKidová</i>	
48. The role of pre-landslide morphology in statistical modelling of landslide-prone areas.	190
<i>Stefan Steger</i>	
49. Assessing the impact of lava flows during the unrest of Svartsengi volcano in the Reykjanes peninsula, Iceland.	193
<i>Simone Tarquini, Massimiliano Favalli, Melissa Pfeffer, Mattia De' Michieli Vitturi, Sara Barsotti, GroPedersen, Bergrún Arna Óladóttir and Esther HJensen</i>	
50. Differences between terrestrial and airborne SFM and MVS photogrammetry applied for change detection within a sinkhole in Thuringia, Germany.	197
<i>Markus Zehner, Helene Petschko, Patrick Fischer and Jason Goetz</i>	
51. Quantifying geomorphic change in a partially restored gully using multitemporal UAV surveys and monitoring discharge and sediment production.	201
<i>Alberto Alfonso-Torreño, Álvaro Gómez-Gutiérrez and Susanne Schnabel</i>	

Section 7: Soil Erosion & Fluvial Processes

52. A new and extendable global watershed and stream network delineation using GRASS-GIS.	205
<i>Giuseppe Amatulli, Tushar Sethi, Longzhu Shen, Jaime Ricardo Garcia-Márquez, Jens Kiesel and Sami Domisch</i>	
53. Drainage inversion revealed by geomorphometric analysis of fluvial terraces.	209
<i>Francesco Bucci, Michele Santangelo, Francesco Mirabella, Andrea Mazzoni and Mauro Cardinali</i>	
54. Structural sediment connectivity assessment through a geomorphometric approach: review of recent applications.	212
<i>Marco Cavalli, Stefano Crema and Lorenzo Marchi</i>	
55. Fluvial inverse modelling for inferring the timing of Quaternary uplift in the Simbruini range (Central Apennines, Italy).	216
<i>Michele Delchiaro, Veronica Fioramonti, Marta Della Seta, Gian Paolo Cavinato and Massimo Mattei</i>	

56. Guidelines for optimization of terrestrial laser scanning surveys over gully erosion affected areas	220
<i>Fran Domazetović, Ante Šiljeg and Ivan Marić</i>	
57. The surface stream function: representing flow topology with numbers	224
<i>John Gallant</i>	
58. The D8 implementation of the surface stream function.	228
<i>John Gallant</i>	
59. Second-order derivatives of microtopography for the evaluation of soil erosion.	232
<i>Michal Gallay, Jozef Minár, Ján Kaňuk, Juraj Holec and Anna Smetanová</i>	
60. Response of alluvial river to active faulting example form Peninsular India.	236
<i>Biju John, KS Divyalakshmi, Yogendra Singh, and SG Dhanil Dev</i>	
61. Attempt at a semi-automatic detection of connectivity between rock glaciers and torrents	239
<i>Mario Kummert and Xavier Bodin</i>	
62. Mapping stream and floodplain geomorphic characteristics with the Floodplain and Channel Evaluation Tool (FACET) in the Mid-Atlantic Region, United States.	243
<i>Marina Metes, Kristina Hopkins, Labeeb Ahmed, Sam Lamont, Peter Claggett and GregNoe</i>	
63. Lithology and channel network initiation and orientation: a case study of upper Ogun River basin, southwestern Nigeria.	247
<i>Adeyemi Olusola and Adetoye Faniran</i>	
64. Morphometric and channel erosivity analysis of lateritic gully catchments using high resolution DTM and repeat survey Structure-from-Motion datasets.	251
<i>Priyank Pravin Patel, Sayoni Mondal, Rajarshi Dasgupta</i>	
65. GIS-based geomorphometric analysis of stream networks in mountainous catchments: implications for slope stability	254
<i>Daniela Piacentini, Francesco Troiani, Mattia Marini, Marco Menichetti and Olivia Nesci</i>	
66. An empirical-conceptual gully evolution model using space-for-time substitution.	258
<i>Xiaoli Huang and Guoan Tang</i>	
67. Probabilistic behavior modeling of morphometric parameters for thermokarst plains with fluvial erosion in Cryolithozone.	263
<i>Alexey Victorov, Olga Trapeznikova and Timofey Orlov</i>	
68. Physically-based segmentation of the Alps and the Western Carpathians: comparison and interpretation.	267
<i>Peter Bandura, Jozef Minár, and Miroslav Bielik</i>	