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*Av. Dr. Manuel Nava 5, 78240 San Luis Potosí,*  
*S.L.P. - MEXICO*

**National Research System (Mexico): SNI level 2**

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*Research Institute for Geo-Hydrological Protection (CNR-IRPI),*  
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Personal WEB page: <https://www.lorenzo-borselli.eu>

Institutional Web Page:

<https://investigadores.uaslp.mx/InvestigadorProfile/WIYAAA%3d%3d>

YOUTUBE channel for didactic activity and dissemination:

<https://www.youtube.com/@lorenzoborselli>

**FREEWARE SOFTWARE  
 FOR EARTH SCIENCE AND  
 ENGINEERING SCIENTIFIC  
 COMMUNITY**  
*( developed by Lorenzo Borselli )*

**[SSAP2010](#)** (*Slope Stability  
 Analysis Program*) (rel 5.2.2-  
 2023) - Analysis of slope  
 stability in natural and  
 artificial complex conditions.  
 Soil and rock masses.

**[KUERY](#)** - Global Erodibility  
 Database Query (rel. 1.5) :  
 based on Quantile  
 Regression applied  
 (Borselli et al. 2009) on  
 global erodibility  
 databases (Torri et al. al  
 1997) and climatic  
 Koppen classification  
 (Salvador Sanchis et al. ,  
 2008) , Borselli et al.  
 (2012)

**[DECOLOG 6.0](#)**  
**DECONVOLUTION OF  
 MIXTURES'  
 COMPONENTS INSIDE  
 PARTICLE SIZE  
 DISTRIBUTIONS**

**[PESERA-L](#)** - (rel. 1.3.1)  
 Sediment Yield due to  
 shallow mass movement in  
 a watershed. An  
 addendum to the PESERA  
 model.

### RESEARCHER'S IDENTIFIERS (and H factor)

SOURCE	IDENTIFIER	LINK (public access)	H Factor (*excluding self citations)	Last Update
SCOPUS	7004298826	<a href="https://www.scopus.com/authid/detail.uri?authorId=7004298826">https://www.scopus.com/authid/detail.uri?authorId=7004298826</a>	24*	13/03/2023
Orcid	0000-0003-1423-5700	<a href="https://orcid.org/0000-0003-1423-5700">https://orcid.org/0000-0003-1423-5700</a>	N.A.	13/03/2023
Google Academic	0PbU0dcAAAAJ	<a href="http://scholar.google.es/citations?hl=en&amp;user=0PbU0dcAAAAJ">http://scholar.google.es/citations?hl=en&amp;user=0PbU0dcAAAAJ</a>	31	13/03/2023
Research Gate	Lorenzo Borselli	<a href="https://www.researchgate.net/profile/Lorenzo_Borselli">https://www.researchgate.net/profile/Lorenzo_Borselli</a>	30*	13/03/2023
Web Of Science	A-7430-2012	<a href="https://www.webofscience.com/wos/author/record/A-7430-2012">https://www.webofscience.com/wos/author/record/A-7430-2012</a>	22*	13/03/2023

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### Dr. Lorenzo Borselli , Ph.D.

**Italian Citizen**, Born in Florence , ITALY.

Earth and Soil Scientist, Engineering Geologist. Specialist in soil and rocks mechanics and hydrology.

Degree in geology 1989 at the university of Florence Italy. In the 1998 received Ph.D In Soil Science at the university of Florence, ITALY.

Since 1997 until 2011 worked as Researcher at National Research Council (CNR). Since 2003 worked as Researcher at the Research Institute for Geo-Hydrological Protection (CNR-IRPI). In the period 2009-2011, He has been head of research unit of CNR-IRPI, in Florence,Italy.

**Referee of several International scientific journals:** *Hydrological Processes, Catena, Earth Surface Processes and Landforms, Geomorphology, Journal of Environmental Management, Soil Use and Management, European Journal of Soil Science, Earth Science review, Journal of Hydrology.*

Member of Editorial Board, as Associate Editor, of [Journal of Soil and Water Conservation](#). (march 2010 - July 2016). Member of Editorial Board, as Associate Editor, of [Revista Mexicana de Ciencias Geologicas](#). (2013-2016)

Has been Italian delegate COST ACTION 623 “Soil Erosion and Global change” and of COST 634 “ On and Off-site Environmental Impact of Runoff and Erosion”.funded by EU.

**VOLCANOFIT 2.0.1**

**Modeling a Stratovolcano Edifice with 3D surface (volcanoids)**

**EUROSEM 2010 (European soil Erosion Model - 2010).**

The European Soil Erosion Model (EUROSEM) is a dynamic distributed model, able to simulate sediment transport, erosion and deposition by rill and interrill processes in single storms for both individual fields and small catchments.

**YOUTUBE WEB CHANNEL ON DEVELOPED FREEWARE SOFTWARE**

**Dr. Lorenzo Borselli**  
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**Collaborations in software development:**

**AND MORE FREEWARE SOFTWARE**

**COLLABORATING WITH**  
**WWW.LAIMA-UASLP.ORG**

He collaborated in several international research projects (funded by EU) related to Soil erosion process and modeling, soil conservation, desertification process and measures for mitigation (MWISED, TERON, RECONDES, DESIRE, LAMPRE etc.). Since 2002 collaborated with Mexican universities (UNAM, UASLP) to projects in assessment of hydrological components for volcanic hazard. Author or Co-author of 60 papers on international scientific journals, and book chapters. His current research interests are: Geomathematics, software development and modeling for stability of slopes, soil and rock mechanics, shallow landslide modeling, surface hydrology, statistical and mathematical advanced techniques applied to soil erosion and surface hydrology, modeling soil erosion by water, soil erosion by tillage and land levelling. Author of various software distributed freeware at scientific community: "Slope Stability Analysis Program (SSAP)" ([www.ssap.eu](http://www.ssap.eu)), and DECOLOG ([www.decolog.org](http://www.decolog.org)), KUERY ([www.lorenzo-borselli.eu/kuery](http://www.lorenzo-borselli.eu/kuery)).

Since July 2019 is external consultant of SRK Consulting (<https://www.srk.com/en>) and since april 2019 Member of College of Expert Reviewers of European Science Foundation (ESF).

He is working, since July 2011, as Full Professor of Geotechnics and Engineering Geology at: Instituto de Geologia / Facultad de Ingenieria, Universidad Autonoma de San Luis Potosi (UASLP), San Luis Potosi, S.L.P. - MEXICO.

Since 2018 is Visiting Professor of Geotechnics and Engineering Geology at: Department of Earth Science (DST), University of Florence, ITALY.

Since May 2021 is Associate Researcher at Research Institute for Geo-Hydrological Protection (CNR-IRPI), National Research Council (CNR), Perugia, Italy.

Since November 2023 is Member of Working Group on "Planetary Geosciences" of National Research Council (CNR), Italy.

**Curriculum Vitae et Studiorum**

- (1989) **Degree in Geology**, University of Florence. *Dissertation in experimental geomorphology: "Experimental study on rill erosion evolution".*
- (1989) Received the **Qualification for professional practice in Engineering Geology**, Florence September 1989, University of Florence.
- (1990) **"CONNAUGHT" fellowship**, Dept. of Geography, University of Toronto, Canada.
- (1991-1992) - **Research Fellowship** at the National Research Council - Centro per lo Studio della Genesi, Classificazione e Cartografia del Suolo (CNR- CSGCCS), in Florence Italy - experimental activity in the field of soil conservation and soil hydrology modelling, rainfall simulations.
- (1992-1994) - **Research Fellowship** at the Agronomic Institute for Overseas (IAO), Florence Italy - soil Physics and hydrological process modeling, rainfall simulations. In the same period participated, as expert in rainfall simulations and surface hydrology, at two of the experimental field work activities of the international research project STD2-285-I "IMPROVING PRODUCTIVITY OF CRUSTING SOILS AND DEPLETED SANDY SOIL IN ZIMBABWE", founded by UE, Coordinator Prof. Giovanni A. Ferrari of the Univ. of Florence.
- (1994-1997) - **PhD Student** at the Dept. of Soil Science, University of Florence, directed by Prof. Guido Sanesi, and dr. Dino Torri of the Institute for Soil Genesis and Ecology (CNR-IGES) in Florence. Theme: Surface hydrology and modelling of soil roughness evolution and influences in water infiltration and runoff production, rainfall simulation.
- (May 1996 to July 96), worked at the "Laboratory for experimental Geomorphology" Catholic University of Leuven (belgium), directed by Prof. Jean Poesen, using rainfall simulators for surface Hydrology modelling and studies of soil roughness evolution and influences in water infiltration and runoff production.
- (1998) - received a **PhD in soil Science** from the University of Florence with the dissertation " **Dinamica della rugosità superficiale del suolo e sua influenza nei processi di infiltrazione: analisi sperimentale e modellizzazione** " (Soil surface roughness dynamics and its influence on the infiltration processes: experimental analysis and modeling)(in italian)
- (1998-2001), **contract researcher** at the Institute for Soil Genesis and Ecology of the NATIONAL RESEARCH COUNCIL (CNR-IGES), in Florence, directed by the Professor Gabriele Ristori.

- **(august 2001-september 2003), *Permanent position as Researcher at NATIONAL RESEARCH COUNCIL (CNR) in the Institute for Soil Genesis and Ecology (CNR-IGES) of Florence.***
- **(since september 2003), *Researcher at the CNR-IRPI - Research Institute for Geo-Hydrogeological Protection of the NATIONAL RESEARCH COUNCIL (CNR), in Florence.***
- **(october 2009-june 2011). *Deputy Director of Florence Branch of CNR-IRPI - Research Institute for Geo-Hydrogeological Protection, of the NATIONAL RESEARCH COUNCIL (CNR).* (<http://WWW.IRPI.CNR.IT>)**
- **(since July 2011) . *Full Professor of Geotechnics and Applied Geology at:* Institute of Geology/Faculty of Engineering, Universidad Autonoma de San Luis Potosi (UASLP) , San Luis Potosí, S.L.P. - MEXICO**
- **(since september 2011). *Academic Member titular of Doctorate School for Engineering and Science or Materials (DICIM) Universidad Autonoma de San Luis Potosi (UASLP) ,San Luis Potosí, S.L.P. - MEXICO***
- **(since september 2011). *Academic Member titular of Pograduate School in Applied Geology.* Universidad Autonoma de San Luis Potosi (UASLP) ,San Luis Potosí, S.L.P. - MEXICO**
- **(since 29 nov. 2012) Membership to National Resarch System (Mexico) (*Sistema Nacional de Investigacion with level 2 (SNI II)*)**
- **(November 2013-january2018) *Head of Academic Group On Geomaterials and Geosystems modeling,* Faculty of Engineering, Universidad Autonoma de San Luis Potosi (UASLP) , San Luis Potosí, S.L.P. - MEXICO**
- **(since July 2014 - ) . *Full-time Tenured Professor of Geotechnics and Engineering Geology at:* Institute of Geology/Faculty of Engineering, Universidad Autonoma de San Luis Potosi (UASLP) , San Luis Potosí, S.L.P. - MEXICO**
- **(January 2018 - ) . *Visiting Professor of Geotechnics and Engineering Geology at: Department of Earth Science(DST), University of Florence, ITALY***
- **(April 2019- ) . *Member of College of Expert Reviewers of European Science Foundation (ESF).***
- **(May 2021 - ) . *Associate Researcher at Research Institute for Geo-Hydrological Protection (CNR-IRPI), National Research Council (CNR), Perugia , Italy***
- **(November 2023 -)- *Member of Working Group on "Planetary Geosciences" of National Research Council (CNR), Italy***

#### Participation in Scientific Research Programs:

- **(1990-1993), STD2-285-I, "IMPROVING PRODUCTIVITY OF CRUSTING SOILS AND DEPLETED SANDY SOIL IN ZIMBABWE".** Funded by EU;
- **(1996-2000), FAIR3-CT96-1478, "Tillage Erosion : Current State, Future Trends and Prevention (TERON) ".** Funded by EU.
- **(1997-2000), ENV4-CT96-0359, "Inventory of alpine-relevant parameters for an alpine monitoring system using remote sensing data (ALPMON) ".** Participation as consultant of the Italian Contractor of the Project. Funded by EU;
- **(1998-2001), ENV4-CT97-0687, "Modelling Within Storm Erosion Dynamics (MWISED) ".** Funded by EU;
- **(1998-2003), COST Action 623, "Soil Erosion and Global Change".** Funded by European Commission ;
- **(2004-2007) COST Action 634: "On- and Off-site Environmental Impacts of Runoff and Erosion".** Funded by European Commission ;
- **(2004-2007) "Conditions for Restoration and Mitigation of Desertified Areas Using Vegetation" (RECONDES);** European Commission GOCE-CT-2003-505361
- **(2007-2012) "Desertification Mitigation and Remediation of Land - a global approach for local solutions " (DESIRE).** European Integrated Project GOCE 0370462.
- **(October 2008 - June 2011) Italian study site coordinator and Scientific Responsible of CNR resarch group whithin DESIRE project.**
- **(2010-2013) FIRESENSE (Fire Detection and Management through a Multi-Sensor Network for the Protection of Cultural Heritage Areas from the Risk of Fire and Extreme Weather Conditions, FP7-ENV-2009-1-244088-FIRESENSE .** <http://www.firesense.eu>.
- **(18 september 2013 -2015) Associate Scientist to "LAMPRE project - Landslide Modelling and tools for vulnerability assessment Preparedness and Recovery management." (LAMPRE project) - European Union seventh framework program. Grant No. 312384.**
- **(2013-2017) Modelling of Hydrologic Processes, Hydrophobicity and infiltration Dynamic for Flooding and Lahars hazard assessment .** CONACYT Grant: Proyecto Ciencia Basica CB-2012/184060.
- **(2018-2022) Software Innovation for the study of Geomaterials, Earth Science and Civil Engineering.** CONACYT Grant: Proyecto Ciencia Basica CB-2016/286764.

#### Main Research Interests and Skills



- Slope stability computation advanced algorithms and search engines for critical slip surfaces.
- Soil and Rocks Mechanics.
- Geotechnical and Geomathematics software development .
- Slope stabilization strategies and technologies.
- Geomaterials an Geosystems modelling for geo-hazard assessment.
- Global optimization algorithms and their application in earth sciences, hydrology and soil/rock Mechanics.
- Soil Erosion and soil Hydrology modelling.
- Surface flow connectivity modeling by GIS for engineering geomorphology and geo-hazard assessment.
- Soil conservation technologies.
- Fuzzy mathematical techniques applied to manage parametric uncertainty in erosion and hydrology modeling, slope stability and slope failure processes.
- Soil erosion By Tillage: modeling and advanced measurement techniques.

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#### Specialized Techniques (algorithms and software coding)

- Slope stability software, algorithm design and development.
- Geotechnical software development.
- Deconvolution of mixtures of statistical distributions.
- Monte Carlo numerical techniques and simulations .
- Differential evolution (DE) algorithms for global optimization and earth science and engineering.
- Soil hydraulic parameters by inversion algorithms from rainfall simulations data and field/lab infiltrometers.
- Soil surface roughness statistical properties and analysis with segmentation algorithms.
- Modelling uncertainty distributions using fuzzy variables.

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#### CURRENT DIDACTIC ACTIVITIES:

- UNDERGRADUATE COURSE: GEOTECHNICS (*at UASLP since 2011, 80 hour course each semester*) ([INFO](#)) (in spanish)
- POSTGRADUATE COURSE : SLOPE INSTABILITY PROCESSES (*at UASLP since 2011, 64 hours course each semester*)
- SSAP SOFTWARE AND SLOPE STABILITY COURSES IN ITALY (*since 2010*) ([INFO](#)) (in italian)

#### Directed Theses (B.sc., M.Sc., Ph.D.)

4 B.Sc.(USASLP)  
7 M.Sc.(UASLP)  
3 Ph.D.(1 UNIFI, 2 UASLP)

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#### Earth science and Engineering Freeware Software, algorithms and coding

- Slope stability software - [SSAP2010](#) (*Slope Stability Analysis Program*) (rel. 5.2.2 - 2023) - analysis of slope stability in natural and artificial complex conditions.
- [KQUERY](#) - Global Erodibility Database Query (rel. 1.5) : based on Quantile Regression applied (Borselli et al. 2009) on global erodibility databases (Torri et al. al 1997) and climatic Koppen classification (Salvador Sanchis et al. , 2008) , and Borselli et al. 2012., *A robust algorithm for estimating soil erodibility in different climates*. CATENA 97:85-94 DOI: 10.1016/j.catena.2012.05.012
- [PESERA-L](#) - (rel. 1.3.1). Sediment Yield due to shallow mass movements in a watershed. An addendum to the PESERA model.
- [DECOLOG 6.0](#) - *DECONVOLUTION OF MIXTURES' COMPONENTS INSIDE PARTICLE SIZE DISTRIBUTIONS*
- [EUROSEM 2010](#) (European soil Erosion Model - 2010). The European Soil Erosion Model (EUROSEM) is a dynamic distributed model, able to simulate sediment transport, erosion and deposition by rill and interill processes in single storms for both individual fields and small catchments.
- [VOLCANOFIT 2.0.1](#) Modeling a Stratovolcano Edifice with 3D surface (volcanoid). (see: *BORSELLI L., CAPRA L., SAROCCHI D., De La CRUZ-REYNA S. 2011. Flank collapse scenarios at Volcán de Colima, Mexico: a relative instability analysis. Journal of Volcanology and Geothermal Research. 208:51–65. DOI: 10.1016/j.jvolgeores.2011.08.004*)

## List of Publications

(last updated 15-07-2023)

### Papers on JRC Journals (International Peer Reviewed)

1. BONASIA, R.; BORSELLI, L.; MADONIA, P. Analysis of Flow and Land Use on the Hydraulic Structure of Southeast Mexico City: Implications on Flood and Runoff. *Land* (2023), 12, 1120. <https://doi.org/10.3390/land12061120>
2. Di TRAGLIA F., CALVARI S., BORSELLI L., CASSANEGO L., GIUDICEPIETRO F., MACEDONIO G., NOLESINI T., CASAGLIN. (2023). Assessing flank instability of Stromboli volcano (Italy) by reappraising the 30 December 2002 tsunamigenic landslides. *Landslides*. <https://doi.org/10.1007/s10346-023-02043-5>
3. CASABELLA-GONZALEZ M. J., BORSELLI L., GARCIA-MEZA J.V. (2023). Improved MPSIAC model for soil erosion rate assessment in semiarid zones. *Journal of Arid Environments*. 212: 10494. <https://doi.org/10.1016/j.jaridenv.2023.104946>
4. INNOCENTI, A., PAZZI, V., BORSELLI, L., NOCENTINI, M., LOMBARDI, L., GIGLI, G., & FANTI, R. (2023). Reconstruction of the evolution phases of a landslide by using multi-layer back-analysis methods. *Landslides*, 20, 189–207. <https://doi.org/10.1007/s10346-022-01971-y>
5. Di TRAGLIA, F., BORSELLI, L., NOLESINI, T., & CASAGLI, N. (2023). Crater-rim collapse at Stromboli volcano: understanding the mechanisms leading from the failure of hot rocks to the development of glowing avalanches. *Natural Hazards*, 115:2051–2068. <https://doi.org/10.1007/s11069-022-05626-y>
6. RODRÍGUEZ-SEDANO L.A., SAROCCHI D., CABALLERO L., BORSELLI L., ORTIZ-RODRÍGUEZ A.J., CERCA-RUIZ M.F., MORENO-CHÁVEZ G., FRANCO RAMOS O. (2022). Post-eruptive lahars related to the 1913 eruption in La Lumbre Ravine, Volcán de Colima, Mexico: The influence of ravine morphometry on flow dynamics. *Journal of Volcanology and Geothermal Research*. January 2022, Volume 421:107423. <https://dx.doi.org/10.1016/j.jvolgeores.2021.107423>
7. VANMAERCKE M., PANAGOS P., VANWALLEGHEM T., HAYAS A., FOERSTER S., BORSELLI L., ROSSI M., TORRI D., CASALI J., BORSELLI L., VIGIAK O., MAERKER M., HAREGEWEYN N., DE GEETER S., ZGOBICKI W., BIELDERS C., CERDA A., CONOSCENTI C., DE FIGUEIREDO T., EVANS B., GOLOSOV V., IONITA I., KARYDAS C., KERTESZ A., KRASA J., LE BOUTELLER C., RADOANE M., RISTIC R., ROUSSEVA S., STANKOVIANSKY M., STOLTE J., STOLZ C., BARTLEY R., WILKINSON S., JARIHANI B., POESEN J. (2021). Measuring, modelling and managing gully erosion at large scales: A state of the art. *Earth-Science Reviews*. Volume 218, 103637. <https://doi.org/10.1016/j.earscirev.2021.103637>
8. CASABELLA-GONZALEZ M. J., BORSELLI L., GARCIA-MEZA J.V. (2021). Soil Horizon erodibility assessment in an area of Mexico susceptible to gully erosion. *Journal of South American Earth Sciences*. November 2021, Volume 111:103497. <https://dx.doi.org/10.1016/j.jsames.2021.103497>
9. CASABELLA-GONZALEZ M. J., ASTELLO-GARCIA M.G., BORSELLI L., GARCIA-MEZA J.V. (2021). Glomalin-related soil protein analysis and its role in erodibility in a semiarid zone in San Luis Potosi, Mexico. *CATENA*. August 2021, Volume 203:105351. <https://doi.org/10.1016/j.catena.2021.105351>
10. MORENO-CHÁVEZ G., CASTILLO-RIVERA F., MONTENEGRO-RÍOS J.A., BORSELLI L., RODRÍGUEZ-SEDANO L.A., SAROCCHI D. (2020). Fourier Shape Analysis, FSA: Freeware for quantitative study of particle morphology. *Journal of Volcanology and Geothermal Research*. Volume 404, 15 October 2020, 107008. <https://doi.org/10.1016/j.jvolgeores.2020.107008>
11. ORTÍZ-RODRÍGUEZ A.J., CAPRA L., MUÑOZ-ROBLES C., COVIELLO V., BORSELLI L. (2020). Connectivity and hydrological efficiency dynamics at active volcanoes, Mexico. *Science of The Total Environment*. Volume 736, 20 September 2020, 139649. <https://doi.org/10.1016/j.scitotenv.2020.139649>
12. ORTIZ-RODRIGUEZ A.J., MUNOZ-ROBLEZ C., BORSELLI L. 2019. Changes in connectivity and hydrological efficiency following wildland fires in Sierra Madre Oriental, Mexico. *Science of Total Environment*. 655:112-128. <https://doi.org/10.1016/j.scitotenv.2018.11.236>
13. CHAVEZ, G. M., RIVERA, F. C., SAROCCHI, D., BORSELLI, L., & RODRIGUEZ-SEDANO, L. A. (2018). FabricS: A user-friendly, complete and robust software for particle shape-fabric analysis. *Computers & Geosciences*, 115, 20-30. <https://doi.org/10.1016/j.cageo.2018.02.005>
14. CAPRA, L., COVIELLO, V., BORSELLI, L., MARQUEZ-RAMIREZ, V.-H., and ARAMBULA-MENDOZA, R. (2018). Hydrological control of large hurricane-induced lahars: evidence from rainfall-runoff modeling, seismic and video monitoring, *Nat. Hazards Earth Syst. Sci.*, 18, 781-794, <https://doi.org/10.5194/nhess-18-781-2018>
15. PEREZ-GONZALEZ, M.L., CAPRA PEDOL, L., DAVILA-HERNANDEZ, N., BORSELLI, L., SOLIS-VALDEZ, S., ORTIZ-RORDIRGUIEZ, A.J., (2017). Spatio-temporal land-use changes in the Colima-Villa de Álvarez metropolitan area, and their relationship to floodings: *Revista Mexicana de Ciencias Geológicas*. v. 34, núm. 2, 2017, p. 78-90. <http://dx.doi.org/10.22201/cgeo.20072902e.2017.2.435>
16. ORTIZ-RODRIGUEZ A.J., BORSELLI L., SAROCCHI D. 2017. Flow connectivity in active volcanic areas: Use of index of connectivity in the assessment of lateral flow contribution to main streams. *Catena*. 157:90-111. <http://dx.doi.org/10.1016/j.catena.2017.05.009>
17. RODRIGUES-SEDANO, L. A., SAROCCHI, D., SULPIZIO, R., BORSELLI, L., CAMPOS, G., & CHAVEZ, G. M. 2016. Influence of particle density on flow behavior and deposit

- architecture of concentrated pyroclastic density currents over a break in slope: Insights from laboratory experiments. *Journal of Volcanology and Geothermal Research*, 328, 178-186. <http://dx.doi.org/10.1016/j.jvolgeores.2016.10.017>
18. VIGIAK O., BEVERLY C., ROBERTS A., THAYALAKUMARAN T., DICKSON M., McINNES J., BORSELLI L. 2016. Detecting changes in sediment sources in drought periods: The Latrobe River case study. *Environmental Modelling & Software*. Vol. 85:42-55. <http://dx.doi.org/10.1016/j.envsoft.2016.08.011>
  19. CHAVEZ, G. M., SAROCCHI, D., SANTANA, E. A., & BORSELLI, L. 2015. Optical granulometric analysis of sedimentary deposits by color segmentation-based software: OPTGRAN-CS. *Computers & Geosciences*, 85, 248-257. <http://dx.doi.org/10.1016/j.cageo.2015.09.007>
  20. CABALLERO, L., D. SAROCCHI, E. SOTO, and L. BORSELLI .2014, Rheological changes induced by clast fragmentation in debris flows, *Journal of Geophysical Research , Earth Surf.*, 119(9): 1800–1817, <http://dx.doi.org/10.1002/2013JF002942>
  21. BRUNETTI M.T., GUZZETTI F., CARDINALI M., FIORUCCI F., SANTANGELO M., MANCINELLI P., KOMATSU G., BORSELLI L. 2014. Analysis of a new geomorphological inventory of landslides in Valles Marineris, Mars, *Earth and Planetary Science Letters*, Vol. 405: 156-168, ISSN 0012-821X, <http://dx.doi.org/10.1016/j.epsl.2014.08.025>. (<http://www.sciencedirect.com/science/article/pii/S0012821X14005317>)
  22. MORENO CHÁVEZ G., SAROCCHI D., ARCESANTANA E., BORSELLI L., RODRÍGUEZ-SEDANO L.A. 2014. Using Kinect to analyze pebble to block-sized clasts in sedimentology. *Computers & Geosciences*. Vol. 72:18–32. <http://dx.doi.org/10.1016/j.cageo.2014.07.008>
  23. SANTI E., TARANTINO C., AMICI V., BACARO G. BLONDA P., BORSELLI L., ROSSI M., TOZZI S., TORRI D. 2014, Fine-Scale Spatial Distribution Of Biomass Using Satellite Images. *Journal of Ecology and the Natural Environment*, Vol.62, Pag.75-86, DOI: 10.5897/JENE2013.0416.
  24. MONTENEGRO RIOS A., SAROCCHI D., NAHAMAD-MOLINARI Y., BORSELLI L. 2013. Form From Projected Shadow (FFPS): An algorithm for 3D shape analysis of sedimentary particles. *Computers & Geosciences*. 60:98–108. DOI:10.1016/j.cageo.2013.07.008.
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**Selected Presentations as Invited Key notes,  
Invited Seminars and in International Conferences**

**INVITED KEY NOTES**

- [Using connectivity to assess soil erosion and mass movement processes in the landscape: applications and discussion of a new paradigm](#). CONNECTEUR –Scientific Kickoff Meeting (COST Action ES 1306) Wageningen, The Netherlands, August 25-26, 2014
- [Using connectivity to assess soil erosion in the landscape: applications and discussion of a new paradigm](#). "Sediment connectivity and its use for large scale models“, Meeting , JRC. Ispra; ITALY 26 January , 2015
- [Sediment connectivity and travel times: concepts and applications](#). "Summer School on Geomorphology: Sediment dynamics in high-mountain environments” 31/8-6/9 2015 , Feichten im Kaunertal, Austria (DOI: <https://dx.doi.org/10.13140/RG.2.2.29760.53761> )
- [Conectividad de Flujos de Sedimentos: conceptos, aplicaciones y desafíos](#) – Invited seminar. 15-03-2023. Universidade Federal de Espirito Santo (UFES), Vitoria, BRASIL

**GENERAL (Conference presentation and Invited Seminars)**

- [Connectivity approach for flow and sediment delivery and application to SDR assessment\(2009\)](#)
- [Differential Evolution Application In Earth Sciences\(2008\)](#)
- [Flank collapse and new relative instability analysis techniques \(2012\)](#)
- [PESERA-L, the shallow landslides contribution to specific sediment yield \(SSY\), as extensions of the PESERA soil erosion model \(2010\)](#)
- [State of the art and future development of erosion modelling in Italy and Europe \(2009\)](#)
- [EUROSEM \(European Soil Erosion Model\) – Eurosem 2008 \(2008\)](#)
- [Valutazione del rischio idrogeologico in Messico: metodologie e software tools](#) - Padova 24 Giugno 2013 – CNR-IRPI (in Italian)
- [Including hillslope sediment connectivity in SWAT—the Siret Basin case study](#) [http://connecteur.info/wp-content/uploads/2014/08/VIGIAK\\_COST\\_WagAug2014.pdf](http://connecteur.info/wp-content/uploads/2014/08/VIGIAK_COST_WagAug2014.pdf)
- [Modelado De Geomateriales y Geosistemas para la evaluacion de peligros Geologicos](#) - San Luis Potosi 9 septiembre 2016 (in spanish)
- [Flank collapses and new relative instability analysis\(RIA\) techniques applied to active strato-volcanoes](#). Invited seminar - Boise State University, Boise (ID) 19/09/2016 (in English) - <https://dx.doi.org/10.13140/RG.2.2.26100.35207>

- [Slope Stability Analysis Program - Programma di calcolo per l'analisi della stabilità dei pendii - SSAP2010](#). Invited Seminar. UNESCO Chair on the Prevention and Sustainable Management of Geo-Hydrological Hazards, University of Florence, Italy. 10-11-2016 (in italian) <https://dx.doi.org/10.13140/RG.2.2.17292.31362>
- [Problematiche del dissesto idrogeologico e della stabilità dei versanti: sfide e opportunità](#). laboratorio di Geomatica, ist. tecnico V. Cardarelli. La spezia 09/05/2017 (in italian)
- [Extreme Gullung in Mexico in semi-abandoned agricultural lands and in active volcanic areas - field studies and modelling -2018](#).  
*Workshop - Gully erosion inventory and proposal for a modelling activity -Joint Research Centre, Ispra, Italy, 19 – 20 March 2018 (in english)*
- [Fondamenti geologici e geomorfologici nelle verifiche di stabilità dei pendii](#). GEOSCIENZE PER UN FUTURO SOSTENIBILE, Torino 17-22 Settembre 2022. Pre Congress Workshops. (in Italian)
- [FUNDAMENTOS GEOLÓGICOS, GEOMORFOLÓGICOS Y GEOTECNICO EN ENSAYOS DE ESTABILIDAD DE TALUDES - CASOS DE ESTUDIO EN MÉXICO Y ITALIA -2023](#). Convención Geológica Nacional, 23-27 abril 2023, Ciudad de México, México.  
<http://dx.doi.org/10.13140/RG.2.2.11815.21926>

#### DECOLOG SOFTWARE ([www.decolog.org](http://www.decolog.org))

- [Deconvoluzione di misture con componenti log-normali entro distribuzioni granulometriche](#) (Napoli, IT, Univ. Federico II. (22 february 2011) (in italian).
- [Deconvolution fo Mixture's components inside Particle Size Distribution \(DICIM-UASLP, Mexico\) \(18-may-2016\)](#).

#### SSAP SOFTWARE ( Slope stability software) ( [www.ssap.eu](http://www.ssap.eu) )[SSAP2010-Slope Stability Analysis Program - Invited seminar CNR-IRPI,Perugia, ITALY, \(28 January 2013\)](#) (in italian)

- [Evaluación de la estabilidad de taludes complejos en suelo y roca por medio de software SSAP 2010: aplicaciones en Italia y -México](#) (Invited seminar, 21 March 2013, Mexico ;DF, Sociedad Geologica Mexicana)(in spanish)
- [Advanced 2D Slope Stability Analysis by LEM with SSAP software](#). (PDF tool appendix to.... BORSELLI L. 2013. *Advanced 2D Slope stability Analysis by LEM by SSAP software: a full freeware tool for teaching and scientific community*. IN "ICL Landslide Teaching Tools". Kyoji Sassa, Bin He, Mauri McSaveney, Osamu Nagai (EDS.). International Consortium on Landslides (ICL). PP. 428. ISBN: 978-4-9903382-2-0) (in english)
- [SSAP2010-Slope Stability Analysis Program - Invited seminar, Politecnico di Bari ITALY, \(21 January 2014\) \(in italian\)](#)
- [Modelado de estabilidad de taludes en el sistema solar: desde Marte, Luna y Ceres hasta Volcanes y microtaludes](#). - Invited seminar Centro de Geociencias UNAM, Juriquilla Queretaro, 13 april 2016 , (in spanish)
- [Evaluación de la estabilidad de taludes complejos en suelo y roca por medio de software SSAP2010 aplicaciones en Italia y México](#). - Invited seminar at Universidad Autonoma de Nuevo Leon (UANL), Linares, 10-10-2016 (in spanish)
- [Slope Stability Analysis Program - Programma di calcolo per l'analisi della stabilità dei pendii - SSAP2010](#). Invited Seminar. UNESCO Chair on the Prevention and Sustainable Management of Geo-Hydrological Hazards, University of Florence, Italy. 10-11-2016 (in italian) <http://dx.doi.org/10.13140/RG.2.2.17292.31362>
- [La stabilità dei versanti secondo le NTC 2018:cenni teorici e algoritmi di applicazione con SSAP](#).  
*IL RUOLO DELLA GEOINGEGNERIA NELLE NTC 2018 E NEGLI EUROCODICI: OPPORTUNITÀ DA COGLIERE* . Politecnico di Milano 29 maggio 2018 (in italian)
- [Evaluación de la estabilidad de taludes complejos en suelo y roca por medio de software SSAP2010 aplicaciones en Italia y México](#). - Invited seminar at IPICYT, San Luis Potosi, 29-08-2019 (in spanish)
- [Corso Generale Software SSAP 2010](#) (freeware). Invited course (24 hours duration). UNESCO Chair on the Prevention and Sustainable Management of Geo-Hydrological Hazards, University of Florence, Italy. 9-30 October 2019.(in italian)
- [Introduzione al codice SSAP 2010 e descrizione delle sue funzionalità](#). Invited seminar. Dipartimento di Ingegneria Civile e Ambientale. Università degli Studi di Firenze (IT) 23-09-2022 (in italian)

#### DIDACTIC MATERIALS (presentations, in short courses ,organized from public institutions)

- [Geotecnica - Corso Base](#) . Ordine dei Geologi del Lazio, novembre 2021 - gennaio 2022, (in Italian) (27 hours)
- [Idrogeotecnica dei Geosistemi a bassa permeabilità](#) . Fondazione dei Geologi della Toscana -ottobre 2023, (in italian) (9 hours)

#### DISSEMINATION

- [Attività' della ricerca italiana in scienze della terra nella UASLP \(2016\) \(in italian\)](#)

#### VIDEOS in YOUTUBE channel for didactic purpose and scientific dissemination:

- <https://www.youtube.com/@lorenzoborselli>



