

UNESCO CHAIR/UNITWIN NETWORK PROGRESS REPORT FORM

Title of the Chair/Network:	UNITWIN-UNESCO/KU/ICL Landslide, Earthquake and Water-related Disaster Risk Management for Society and the Environment Cooperation Programme
Host Institution:	The Disaster Prevention Research Institute, Kyoto University and the International Consortium on Landslides
Date of establishment of Chair/Network: <i>(mm, yyyy)</i>	UNITWIN-UNESCO/KU/ICL Landslide Risk Mitigation for Society and the Environment Cooperation Programme established in March 2003, revised in November 2010, and further revised to the current title in March 2019
Period of activity under report: <i>(mm, yyyy - mm, yyyy)</i>	1 November 2018 to 31 October 2020
Report established by: <i>(name, position)</i>	Kyoji Sassa, Secretary General of the International Consortium on Landslides, Ryosuke Uzuoka (Professor) and Kaoru Takara (Professor) of the Disaster Prevention Research Institute, Kyoto University

To be returned by electronic mail to both: unitwin@unesco.org and i.nichanian@unesco.org

Or by mail to UNESCO, Division for Policies and Lifelong Learning Systems

Section for Higher Education

7, place Fontenoy – 75352 Paris 07 SP, France

Fax: 33 (0)1 45 68 56 26/27/28

1. Executive Summary:

Major outcomes, results and impact of the Chair, including on national policies, in relation to its objectives as stated in Article 2 of the Chair Agreement (between the Institution and UNESCO)

(Not exceeding 300 words)

1. **Landslides-Journal of International Consortium on Landslides**, 24 issues (5,406 pages) Vol.15 (No.11, No.12), Vol.16 (No.1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12), Vol. 17 (No.1, 2, 3, 4, 5, 6, 7, 8, 9, 10) were published under the cooperation of this network and ICL supporting organizations. The impact of this journal is evaluated from the Journal Impact Factor (4.708) released by Clarivate Analytics in 2019 and journal CiteScore (8.2) by Elsevier in 2019. No.2 rank for 39 journals in the field of Engineering, Geological of the Impact Factors, and No.1 for 189 journals in the field of Geotechnical Engineering and Engineering Geology of the CiteScore.
2. Organization of the Fifth World Landslide Forum (WLF5) was planned from 2 to 6 November 2020 in Kyoto, Japan. However, it was postponed to from 2 to 6 November 2021 in Kyoto, Japan due to COVID-19. Although the Conference was postponed to 2021, the planned six full color books to introduce the progress of science and technology in the field of Landslides after WLF4 in 2017 were edited. Those books will be published by the end of 2020. These books are reported in Item No.4. The ISDR-ICL Sendai Partnerships 2015-2025 (renamed as Sendai Landslide Partnerships 2015-2025) was very successful. However, the partners concerns the activity after 2025. The necessity of

landslide disaster risk reduction will not disappear in 2025. Then, the ICL together with ICL supporting organization decided to establish a new global cooperation frame for the landslide disaster risk reduction which will continue to 2025, 2030 and beyond. It is the Kyoto 2020 Commitment for Global Promotion of Understanding and Reducing Landslide Disaster Risk (Kyoto Landslide Commitment 2020). It is reported in Item No.3.

3. Kyoto Landslide Commitment 2020

The concept of the Kyoto Landslide Commitment 2020 was proposed and adopted during the Fourth World Landslide Forum (WLF4) in Ljubljana in 2017. Subsequently the final draft of the “Kyoto 2020 Commitment for Global Promotion of Understanding and Reducing Landslide Disaster Risk” (KLC2020) was decided and developed. During the 2019 ICL-IPL Conference at UNESCO Headquarters in Paris, in 2019, the Commitment was signed by a first group of 57 signatories. Thereafter, the number of signatories has gradually increased to 87 organizations until 5 September 2020.

The online/virtual KLC2020 Launching session will be organized on 5 November 2020.

The session will be chaired by Chairs: David Malone (Under-Secretary-General of the United Nations and Rector of the United Nations University) and Qunli Han (Executive Director of Integrated Research on Disaster Reduction). Mami Mizutori (United Nations Special Representative of the Secretary-General for Disaster Risk Reduction), and representatives from UNESCO, WMO, FAO, Gov. of Japan, Kyoto University, ISC, WFEO, IUGG, IUGS will present supporting greeting for the launching session of KLC2020. In the end of panel discussion, all participants from 87 signatory organizations will unanimously agreed on, and declare the launching of the Kyoto Landslide Commitment 2020.

4. ICL and Springer created a new book series "ICL Contribution to Landslide Disaster Risk Reduction" in 2019 which was registered as ISSN 2662-1894 (print version) and ISSN 2662-1908 (electronic version). The first books in this series are six volumes of books "Understanding and Reducing Landslide Disaster Risk" containing the recent progress of landslide science and technologies from 2017 to 2020. Six volumes of books have been edited and those will be published in December 2020.

1) Vol. 1 : Sendai Landslide Partnerships and Kyoto Landslide Commitment (Kyoji Sassa, Matjaž Mikoš, Shiji Sassa, Peter Bobrowsky, Kaoru Takara, Khang Dang, eds.) of « Understanding and Reducing Landslide Disaster Risk”. Springer, 579p.

2) Vol. 2: From mapping to hazard and risk zonation (Fausto Guzzetti, Snježana Mihalić Arbanas, Paola Reichenbach, Kyoji Sassa, Peter Bobrowsky, Kaoru Takara, eds). Springer, 418 p.

3) Volume 3 : Monitoring and Early warning Nicola Casagli, Veronica Tofani, Kyoji Sassa, Peter Bobrowsky, Kaoru Takara, eds). Springer, 322 p.

4) Vol. 4: Testing, Modeling and Risk Assessment (Binod Tiwari, Kyoji Sassa, Peter Bobrowsky, Kaoru Takara, eds). Springer, 456 p.

5) Vol. 5: Catastrophic Landslides and Frontiers of Landslide Science (Vít Vilímek, Fawu Wang, Alexander Strom, Kyoji Sassa, Peter Bobrowsky, Kaoru Takara, eds). Springer, 374 p.

6) Vol. 6: Specific topics in landslide science and applications (Željko Arbanas, Peter Bobrowsky, Kazuo Konagai, Kyoji Sassa, Kaoru Takara, eds). Springer, 386 p.

5. 56 projects of the International Programme on Landslides (IPL): a programme of ICL for landslide disaster risk reduction are implemented in 19 countries within the ICL full member organizations (68 member organizations in 29 countries/regions). New projects were proposed in 11 in 2018, 7 in 2019, and 5 in 2020.

6. 19 World Centres of Excellence on Landslide Risk Reduction 2020-2023 will be identified at the 2020 ICL-IPL Conference on 2 November 2020. Those are working for thematic network and regional network of ICL as the core of ICL and the UNITWIN network.

2. Activities:

Overview of activities undertaken by the Chair during the reporting period

UNITWIN network includes Kyoto University, ICL headquarters, and 68 ICL full member organizations and 20 ICL associates and 14 supporters.

All members are invited to contribute their activities to the International Journal “Landslides”. The journal published 5,406 pages of articles in this reporting period including 7 categories (Review papers, Original papers, Recent Landslides, Technical Notes, IPL/WCoE activities, Landslide News and News/Kyoto Commitment). Articles were contributed from ICL members and non ICL members. The journal is distributed to all ICL members free of charge and donated to ICL supporting members. Non-ICL members can access to the journal from their journal subscribed organizations free of charge or commercially Springer, the publisher.

Activities of this UNITWIN network were published in Journal “Landslides” and will be published in six volumes of full color books “Understanding and Reducing of Landslide Disaster Risk”.

Other activities taken by the UNITWIN Network are reported.

a) Education/Training/Research

i) Education leading to Certificate

Thirty seven (37) Ph.D. were awarded as the UNITWIN education/training/research in the reporting period 2018.11-2020.10.

One hundred thirty six (136) Master’s degree were awarded as the UNITWIN education/training/research in the reporting period 2018.11-2020.10.

- 1 PhD was awarded at Kyoto University, Japan
- 19 PhD, 19 Masters in Geological Sciences and technologies, 18 Master Theses in Civil Engineering and in Environmental Engineering were awarded at UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence. The University of Florence UNESCO Chair continued to propose the International Academic Master’s Degree (totally in English language) on “Geoengineering” focused to train experts on prevention, management and mitigation of geo-hydrological risks. The Master started in the academic year 2017/2018 (<https://www.ing-gem.unifi.it>)
- 1 Ph.D. and 9 Masters were awarded at UL FGG, Ljubljana, Slovenia
- 2 Master were awarded at Northeast Forestry University, China
- 10 PhD, 80 Master were awarded at Charles University, Prague, Czech Republic
- Amrita Vishwa Vidyapeetham: A new course on M.tech in Geoinformatics and Earth Observation is started during the academic year 2019-21. Currently, 6 students are pursuing their second year in this course and 9 students are pursuing their first year in this course.
- A new program on PhD in Sustainable Development is started. As part of this program Amrita adopted 100+ villages and got committed to use applied research as the foundation of socio-economic progress and sustainability. Few of these villages encounter the problem of landslides and multi hazards, and as part of this PhD program two students are currently enrolled to work on landslides.
- 13 Master’s degree were awarded at National Central University, Chinese Taipei.
- 1 PhD, 3 Master’s degree were awarded at UNIZG-RGNF (Croatian Landslide Group), Croatia.
- 1 PhD, 8 Master’s degree were awarded at UNIRI-GF (Croatian Landslide Group), Croatia.

- 4 PhD, 2 Master were awarded at Shimane University, Japan.

ii) Training (short term)

UNESCO Chair: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence:

- 2018, November 24-25. Il Cairo, Egypt. Bilateral Italy-Egypt Seminar on SAR technologies: “Eye on the Globe. COSMO Sky-Med for Cultural Heritage”, in the framework of the conference GEOMEAST and in collaboration with the Egyptian Agency for Space (NARS) and the Italian National Research Counsel (CNR).
- 2019, July 14-18. Il Cairo (Egypt). Short Course: “Groundwater management and cultural heritage”, co-organized in collaboration with the UNESCO Cairo office, the Italian Embassy in Cairo and NRIAG (National Institute for Astronomy and Geophysics),
- 2019, September 2-13. Lausanne (Switzerland). LARAM (LANDslide Risk Assessment and Mitigation) International School 2019.
- 2019, October 9, 16, 23 and 30. Florence (Italy). Training course: “Use of the software freeware SSAP (Slope Stability Analysis Program)”. Held by Prof. Lorenzo Borselli - Professor of Geotechnics and Applied Geology, Instituto de Geologia Universidad Autonoma de San Luis Potosi - Mexico.
- 2019, December 10-11. Florence (Italy). Training course: “Use of the software freeware SSAP (Slope Stability Analysis Program)”. Held by Prof. Lorenzo Borselli - Professor of Geotechnics and Applied Geology, Instituto de Geologia Universidad Autonoma de San Luis Potosi - Mexico.
- 2020, January 13-15. Florence (Italy). Training course: “Evidence and Policy Disaster Risk Management School”. Organized by the European Commission’s Joint Research Centre (JRC) and Directorate General for European Civil Protection and Humanitarian Aid (DG ECHO), in collaboration with the Italian Civil Protection Department, the International Network for Government Science Advice (INGSA) and the University of Florence (UNIFI).

UNESCO Chair: Geoenvironmental Disaster Reduction in Shimane University, ICGdR:

- 2019 Field School: UNESCO Chair 2019 Field School on Geoenvironmental Disaster Reduction in Shimane University, Japan. Time: 14-18 March 2019
- 2020 Field School: UNESCO Chair 2020 Field School on Geoenvironmental Disaster Reduction in Shimane University, Japan. Time: 10-15 February 2020

Institute of Rock Structure and Mechanics, Czech Academy of Sciences:

- 2019, April 3-4. Workshop for students on field methods in geomorphology focused on their application on landslides, Bohemian Paradise Global Geoparc UNESCO

National Central University, Chinese Taipei

- Seminar: Binh Pham Thai, University of Transport Technology (UTT) and share experience with lecturers and students. 2019/7/17-19.
- Seminar: “Advances in Sensors and Instrumentation for Soil Physical Property and Process Determination” by Scott Jones, Climate, Utah State University.
- Seminar: Shackleton Project Advisory Panel Meeting, 2019/12/15.
- Course: Advanced Institute-Training Course on Landslide Investigations and Hazards Mitigation, Hanoi University of Mining and Geology (HUMG), Hanoi, Vietnam. 2019/7/20-25.
- Conference: Effect of salinity intrusion, high tides, geological conditions and climate to constructions durability in the Mekong Delta, Vinh Long, Vietnam. 2019/4/16.
- Conference: 2019 International Symposium on Geohazards and Risk Analysis, Taoyuan, Taiwan. 2019/12/16.

Amrita Vishwa Vidyapeetham:

- Training sessions and community engagement programs were held to spread awareness on Landslide disaster risk, precursors, safe construction methods etc in Munnar, Kerala, India on 21st

May-2019.

- As part of the “Live in Labs®” program by Amrita Vishwa Vidyapeetham, 5 B.tech students from Amrita, were working in Munnar (a landslide prone town in Kerala, India) from 16-23- June 2019. Their visit is to understand the problems that people are facing during monsoon and develop a human centric approach to overcome major problems in Munnar. During their visit they interviewed many key personals and conducted individual interviews also.
- As part of the “Live in Labs® ” program by Amrita Vishwa Vidyapeetham, 2 students from Kings College London, and 1 student from worked with the Munnar community in Kerala, India to develop a human centric approach for landslide early warning.
- ERT training: Amrita University has collaborated with British Geological Survey for installation and application of time-lapse electrical resistivity tomography (ERT).
- Workshop on tracking landslides with District officials in Nilgiris, Tamilnadu, India: First virtual workshop of district level officials were trained on the landslide data collection through the “Landslide Tracker APP” developed by Amrita (available in playstore at https://play.google.com/store/apps/details?id=edu.awna.amrita.mht&hl=en_GB) for the validation of EWS.

iii) Research

Research is the main activities of this UNITWIN Network. By the suggestion by 6 participants from UNESCO at the ICL foundation meeting in January 2002, the International Programme on Landslides (IPL) was established within the frame of the UNESCO Chair/UNITWIN programme at the same time of ICL foundation in 2002. The core of Research activities in UNITWIN Programme is IPL projects. Currently 49 IPL projects are conducted in 20 countries. 20 Word Centres of Excellence on Landslide Risk Reduction 2017-2020 are working for landslide disaster risk reduction in 16 countries.

New research project is the SATREPS (Science and Technology Research Partnership for Sustainable Development) project “Development of early warning technology pf rain-induced rapid and long-travelling landslides in Sri Lanka which is funded by JICA (Japan International Cooperation Agency) and JST (Japan Science and Technology Agency) in 2019-2025. The International Consortium on Landslides and one of UNITWIN programme partners “National Building Research Organization of Sri Lanka” are the main partners in Japan and Sri Lanka.

b) Conference/Meetings

2018 ICL-IPL Conference in Kyoto, Japan - Planning of the Fifth World Landslide Forum (WLF5) and the Kyoto 2020 Commitment (KC2020) was organized in the Kyoto International Conference Center (KICC) on 1-2 December 2018 and the Large Seminar Room (R301) in the Collaborative Research Hub of the Disaster Prevention Research Institute (DPRI), Kyoto University (KU) on 3-4 December 2018. 85 pearsons from UNDRR, UNESCO, UNU, IRDR, Gov.of Japan (Cabinet office, MLIT, MEXT, MAFF), and 23 countries.

2019 ICL-IPL UNESCO Conference -Planning of the Fifth World Landslide Forum (WLF5) and Signing the Kyoto 2020 Commitment (KC2020) was organized at Salle IX, Fontenoy Building, UNESCO, Headquarters, Paris, France on 16-19 September 2019. 69 participants from UNESCO, UNU, WFEO, GRF, IGS and ICL members from 19 countries. On 18 September 2019, participants approved the final version of Kyoto Landslide Commitment 2020, and 57 organizations signed and joined the KLC2020 as the first Signatories at UNESCO.

The Fifth World Landsldie Forum which was planned to be organized on 2-6 November 2020 was postponed to 2-6 November 2021 in Kyoto, Japan due to COVID-19.

Other Conference/Meetings which was organized or presented by UNITWIN Network members are the followings.

Kyoto University

- 7th International Conference on Earthquake Geotechnical Engineering, Roma, Italy, June 17-20, 2019.
- 7th Asia-Pacific Conference on Unsaturated Soils (AP-UNSAT2019), Nagoya, Japan, August 23-25, 2019.
- 16th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering, ARC 2019, Taipei, Taiwan, October 14-18, 2019.

UNESCO CHAIR: Water-related Disaster Risk Reduction at University of Ljubljana

- 4th Regional Symposium on Landslides in the Adriatic-Balkan Region (4th ReSyLAB), Sarajevo, Bosnia and Herecegovina, October 23-25, 2019.
- UNESCO Chair on Water-related Disaster Risk reduction co-organized the World Construction Forum, Ljubljana, Slovenia, April 8-11, 2019.
- 2nd Meeting of UNESCO VISUS experts (October 29 – 30, 2019) in Ljubljana on “School safety upgrading strategies in multi-hazard prone areas”, where the Ljubljana Declaration was accepted.
- The Venice Climate Meeting (November 6 – 8, 2019) in Venice, Italy at UNESCO Regional Office on the future of South-East Europe and the Mediterranean in the context of Climate Change: a UNESCO perspective.
- 28th IHP UNESCO Danube River basin Conference in Kyiv, Ukraine in November 2019.
- EGU Annual General Assembly meetings in Vienna, Austria in April, 2019.
- The 2020 Field School on Geoenvironmental Disaster Reduction from February 10 to 16, 2020, organized by the UNESCO Chair on Geoenvironmental Disaster Reduction at Shimane University, Matsue, Japan.
- 14th INTERPRAEVENT Congress in Bergen, Norway (postponed from May 2020 to June 2021).

UNESCO Chair: Geoenvironmental Disaster Reduction in Shimane University, ICGdR

- 2018 Annual symposium: The 16th International Symposium on Geo-disaster Reduction, Université de Strasbourg, France, 7-31 August 2018.
- 2019 Annual symposium: The 17th International Symposium on Geo-disaster Reduction, Aurora Conference Center. Issyk Kul Lake A363, Kyrgyzstan, 19-23 August 2019

Amrita Vishwa Vidyapeetham

- Indo-UK workshop Science for Emergency and Disaster management: Dr. Maneesha V. Ramesh, was invited to present the ongoing research and development work on rainfall-induced landslide risk reduction at the India-UK Workshop: Science for Disaster and Emergency Risk Management, held at New Delhi, from August 29-30, 2019. The event was organized by the Office of the Principal Scientific Adviser, Govt of India, along with the National Disaster Management Authority in partnership with the UK Governments Office of Science. During the session on geophysical hazards, Dr. Maneesha showcased an Indian case study focusing on challenges in landslide risk reduction in India.
- American Geophysical Union-2019 (AGU-2019): Ms. Hemalatha T and Ms. Divya P attended and presented two abstracts in AGU-2019 held in San Fransisco.
- National Brainstorming Workshop: A National Brainstorming Workshop on “Modelling Fault Zone Induced Surface Mass Transport in Himalayan Orogenic Terrains for the Study of Fault Related Hazards in Himalayan towns” was organized by Birla Institute of Technology, India. Dr. Maneesha was invited to present Amrita's work on landslides.
- Indian Near Surface Geophysics Conference & Exhibition 2019 (INSG-2019): Mr. Balmukund attended and presented a paper written in collaboration with British Geological Survey-BGS in the INSG-2019 held on November 28-29, 2019
- Dr. Maneesha’s visit to Lawrence Berkeley National Laboratory (LBNL): Dr. Maneesha visited the Lawrence Berkeley National Laboratory, in California and delivered talks on the following topics : Wireless Sensor Networks for Early Warning of Landslides: Experiences from a Decade Long Deployment ; Live-in-Labs®: Sustainable Community Development through Experiential

Learning Approach. Discussions also happened on the lines of student exchange, collaborations in the area of water quality monitoring, water management, transformative technology, etc.

- Prof. Michelle Clavello visit to Amrita: Michelle Clavello from University of Salerno visited Amrita on 14th and 15th of February-2019. He delivered a talk on “Early warning systems for weather-induced landslides” in Amrita. During his visit discussion on research topics such as Rainfall Thresholds, Spatio-Temporal Data Analytics, Machine Learning/AI based landslide threshold development & early warning were conducted. Collaborations in terms of Joint Publication, Dual M.tech Degree, Joint Projects, Joint PhD student guiding, were also conducted.
- Dr. Bruce Malamud visit to Amrita: Dr. Bruce Malamud from Kings college, London visited Amrita from 16-20 August-2019. Major discussions happened on the lines of ‘Social media data analytics for landslide event detection’, Multihazards, and Landslide tracking through Landslide tracker mobile app (available in playstore at https://play.google.com/store/apps/details?id=edu.awna.amrita.mht&hl=en_GB).

National Central University, Chinese Taipei

- The 9th International Conference on Scour and Erosion, Taiwan, 2018/11/05-08.
- 2018 Taiwan-Japan-New Zealand seismic hazard assessment workshop, New Zealand. 2018/11/14-16.
- European Geosciences Union General Assembly 2019, Austria, 2019/04/07-12.
- 2019 Asia Oceania Geosciences Society, Singapore. 2019/07/27-8/2.
- The 26th National Computational Fluid Dynamics Conference, Taiwan, 2019/08/12-13.
- The 2nd Badong International Geohazards Symposium (BIGS2019) -Prevention and Control of Reservoir Geohazards and Ecological Environmental Protection, Hubei, China. 2019/08/24-25.
- 12th ARC of IAEG, Jeju, South Korea. 2019/09/23-27.
- International Workshop on Advanced Technology in Coastal Engineering, Korea, 2019/10/11.
- 2019 AGU Fall Meeting, USA, 2019/12/09-13.
- Extreme events Archive in GEological Records (EAGER) Workshop, Taiwan, 2020/02/14.
- The 163rd TCU-ARL Seminar, International Workshop on Data-driven Infrastructure Maintenance and Risk Management, Tokyo, Japan. 2020/9/24.

Institute of Geography, National Autonomous University of Mexico

- Forum: Integrated Disaster Risk Management from a Human Rights Approach, Mexico City Human Rights Commission, Mexico City, 2019, 2019/10/10-11
- First Multi-Sectoral Conference towards Integrated Disaster Risk Management in Mexico: Building a National Public Policy, Mexico City 2019, 2019/10/21-25
- Public Policies, ARISE MX Regional Forum “Resilience for all: the importance of understanding risk, Mexico City 2019, 2019/10/29-30

Croatian Landslide Group

- 4th Regional Symposium on Landslides in the Adriatic-Balkan Region, 2019/10/23-25
- ISRM Specialized conference and 8th Conference of Croatian Geotechnical Society, 2019/04/11-13

Institute of Rock Structure and Mechanics, Czech Academy of Sciences:

- International Conference “State of geomorphological research in 2019”, April 3-5, 2019, with sections dedicated to landslide research.

c) Interuniversity Exchange.

Within 68 ICL full member organizations from 29 countries, and 20 associate members from 11 countries, and 14 supporters from three countries, 43 members are from universities. ICL organized the annual meeting and symposium once or twice in 2018, 2019 and will organize it by zoom on 2-6 November 2020. 56 projects of the International Programme on Landslides (IPL): a programme of ICL for landslide disaster risk reduction are implemented in 19 countries within the ICL full member

organizations. Report of ongoing projects and proposals of new projects were presented in the IPL Symposium during the ICL-IPL Conference in 2018, 2019 and will be presented in 2020. Those oral presentations and discussion in the management of ICL and IPL and planning of the Fifth World Landslide Forum are the place for the annual interuniversity exchange.

ICL Headquarters:

✓ 2 visiting students:

- Tan Qinwen, PhD student in Geological Engineering in China University of geosciences, visited ICL from September 1st 2017 to August 31th 2018.
- Luqi Wang, PhD student in China University of Geosciences (Wuhan), visited from November 11th, 2019 to November 10th 2020.

UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence

✓ 3 visiting students:

- Shuhao Liu
Thesis title: “Application of multiple source of monitoring data in geohazard research in the three Gorges area”, China University of Geosciences (CUG) (Wuhan, China)
Tutors: Prof Yin Kunlong and Prof Nicola Casagli
- Xiao Ting
Thesis title: “Landslide susceptibility mapping, hazard assesment and risk assesment in the three Gorges area”, Faculty of Engineering (China University of Geosciences)
Tutors: Prof Yin Kunlong and Prof Nicola Casagli
- Hang Zhang
Thesis title: “Microseismic Monitoring and Early Warning of Rockburst in Deep buried Hard Rock Tunnel Based on Artificial Intelligence”, Chengdu University of Technology - State Key Laboratory of Geohazard Prevention and Geoenvironment Protection
Tutor: Nicola Casagli

✓ 3 Visiting Professors and Researchers:

- Vanessa Canavesi (Researcher at CEMADEN - Centro Nacional de Monitoramento e Alertas de Desastres Naturais, São José dos Campos, Brasil)
- Meng Qingkai (Researcher at Qinghai University, Xining City, China).
- Antoinette Tordesillas (Professor at School of Mathematics and Statistics, University of Melbourne, Australia).

UNESCO Chair on Water-related Disaster Risk Reduction, University of Ljubljana

- Annually master students from the Erasmus-Mundus Flood Risk Management Master Program are attending courses at University of Ljubljana, hosted by the UNESCO Chair on WRDRR.
- Visiting Professors Jaromír Říha and Tomáš Julínek (Faculty of Civil Engineering, Brno University of Technology, Czech Republic).
- Yasser Ghafoori (PhD student) from Herat, Afghanistan working on a PhD thesis entitled “Optimization of Early Seepage Detection in Embankments using a distributed temperature system based on fiber optic sensing”.

Charles University has Interuniversity Exchange with 31 universities

- Heidelberg University (Germany)
- Johannes Gutenberg University Mainz (Germany)
- University of Stuttgart (Germany)
- University of Strasbourg (France)
- University of Cagliari (Italy)
- Adam Mickiewicz University in Poznań (Poland)
- University of Sheffield (UK)
- University of Camerino (Italy)
- University of Malta (Malta)

- Free University of Berlin (Germany)
- University of Tuebingen (Germany)
- Dresden University of Technology (Germany)
- University of Seville (Spain)
- University of Lausanne (Switzerland)
- Maynooth University (Ireland)
- University of Bonn (Germany)
- Freiberg University of Mining and Technology (Germany)
- Technical University of Munich (Germany)
- University of Florence (Italy)
- Trinity College Dublin (Ireland)
- University of Pécs (Hungary)
- Humboldt University of Berlin (Germany)
- University of Santiago de Compostela (Spain)
- University of Lisboa (Portugal)
- University of Pavia (Italy)
- University of Göttingen (Germany)
- University of Helsinki (Finland)
- Pavol Jozef Šafárik University in Košice (Slovakia)
- University of Leicester (UK)
- University of Leuven (Belgium)
- University of Ulster (UK)

Amrita Vishwa Vidyapeetham:

- PhD collaborations are agreed between TU Delft and Amrita Vishwa Vidyapeetham in the areas of Landslides and Hydrological Systems Group
- A new MoU is signed between British Geological Survey (BGS) and Amrita Vishwa Vidyapeetham.
- Two M.tech students from Geoinformatics and Earth Observations are selected for pursuing their masters level project in Lawrence Berkeley National Laboratory (LBNL) as part of student exchange activities with LBNL.

Institute of Rock Structure and Mechanics, Czech Academy of Sciences:

- Joint PhD supervision of Mariana Correas Gonzalez of the Argentinian Institute of Nivology, Glaciology and Environmental Sciences, Mendoza – CONICET, Argentina and Institute of Rock Structures and Mechanics, The Czech Academy of Sciences, Czech Republic.

d) Publications/Multimedia Materials

Refer to the attached list.

e) Cooperation with UNESCO Headquarters, Field Offices

ICL was founded by UNESCO-Kyoto University Joint symposium (IGCP-425 Landslide Hazard Assessment and Cultural Heritage) in 2002. IPL (International Programme on Landslides) was founded as a landslide version of IGCP. The Chair of the IPL Global Promotion Committee which manages all of IPL matters, is Qunli Han (the former Director of the Ecological Sciences and Earth Sciences of UNESCO, the current Executive Director of the Integrated Research on Disaster Risk (IRDR)). The deputy chair is Giuseppe Arduino (Chief Ecohydrology, Water Quality and Water Education Section Division of Water Sciences, of UNESCO). Soichiro Yasukawa Programme Specialist, Coordinator for Disaster Risk Reduction and Resilience, Section on Earth Sciences and Geo-hazards Risk Reduction, Natural Sciences Sector of UNESCO is a focal point of ICL and attended most of ICL meetings and also attend ICL-IPL meeting in Kyoto in 2018. Ms. Peggy Oti-Boateng, Acting Assistant Director-General for Natural Science and Soichiro Yasukawa attended the 2019 ICL-IPL Conference at UNESCO. Two sessions for the Fifth World Landslide Forum held in Kyoto, 2021 have been proposed

by UNESCO headquarters and also its Kazakhstan office; 1) Landslides and hazard assessment at UNESCO designated sites; 2) Landslides in Central Asia.

Ms Shamila Nair-Bedouelle, Assistant Director-General for Natural Sciences supported the International Journal *Landslides* and also the publication of 6 volumes of full color books for the Fifth World Landslide Forum (WLF5). Her supporting message « Foreword by Shamila Nair-Bedouelle for the Journal of the International Consortium on Landslides » was published in Vol.17-1, 2020. Her Foreword for all six volumes of books « Understanding and Reducing Landslide Disaster Risk » for WLF5 are under press. These books will be published in December 2020.

UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence

- Establishment of the Centre For Sustainable Heritage Conservation (SHeC), together with 11 other Italian UNESCO Chairs and Networks in Perugia (Italy) in January 10, 2018. SHeC was born out of the desire to establish in Italy, directly connected with the Mediterranean region, a research and training centre concerned with the conservation of cultural and natural heritage.
- The Chair, as a member of ICL, has contributed to the final draft the Kyoto 2020 Commitment, which is devoted to promote global landslide disaster risk reduction, as a contribution to the International Strategy for Disaster Reduction, the Sendai Partnership 2015-2025, The 2030 Agenda for Sustainable Development, the New Urban Agenda and the Paris Climate Agreement. It was preliminary signed by the Chair and 58 signatories (amongst which UNESCO, UNU, IRDR, WFEO, GRF Davos, IGS) during the 14th session of the International Program on Landslides (IPL) Global Committee held in Paris (September 19, 2019). Up today the Kyoto 2020 Commitment signatures are 90 and it will be officially launched during the official virtual launching ceremony on 5th november, 2020.
- The Chair participated to the “UNESCO Chair 2019 Field School on Geoenvironmental Disaster Reduction”, held at Shimane University, March 18-21, 2019, Matsue (Japan).
- The Chair participated to the “UNESCO Chair 2020 Field School on Geoenvironmental Disaster Reduction”, held at Shimane University, February 10-15, 2020, Matsue (Japan).
- The Chair participated to the “UNESCO International Water Conference”, held in the Paris UNESCO headquarters, Paris, May 13-14th 2019.
- The Chair co-organized with the UNESCO Office and the Italian Embassy in Cairo, and NRIAG (National Institute for Astronomy and Geophysics), the short training Course: “Groundwater management and Cultural Heritage”, held in Cairo, 14-18th July 2019. The Chair co-organized with the UNESCO Office and the Italian Embassy in Cairo the 1st Symposium on Sustainable conservation of UNESCO and other heritages sites through proactive geosciences, held in Luxor-Assuan 10-12th, December 2019
- The Chair participates to several national and international missions, in collaboration with UNESCO and official partners, to promote the protection of the World’s cultural heritage threatened by geo-hydrological hazards, some of which part of the UNESCO World Heritage list, especially in developing countries: Georgia (Vardzia, Vanis Kvabebi, David Gareja and Uplistsikhe), Iran, Madagascar (Antananarivo), Mexico (Mitla).

UNESCO CHAIR: Water-related Disaster Risk Reduction at University of Ljubljana:

- Participation to the Venice Climate Meeting (November 6 – 8, 2019) in Venice, Italy at UNESCO Regional Office on the future of South-East Europe and the Mediterranean in the context of Climate Change: a UNESCO perspective.
- Organization of the 2nd Meeting of UNESCO VISUS experts (October 29 – 30, 2019) in Ljubljana on “School safety upgrading strategies in multi-hazard prone areas”, where the Ljubljana Declaration was accepted in cooperation with the UNESCO HQ in Paris.
- Participation in the official state delegation of the Republic of Slovenia to the 5th Session of the Global Platform on Disaster Risk Reduction (May 13 – 17, 2019) in Geneva, Switzerland.
- Contributing to the draft of the 2020 Kyoto Landslide Commitment (2020 KLC).

Amrita Vishwa Vidyapeetham:

- Dr. Maneesha attended and presented Amritas work on landslides in ICL-IPL UNESCO Conference on 16th – 19th September 2019
- Amrita Vishwa Vidyapeetham was one among the ICL members to take part in the first signatories of the Kyoto Landslide Commitment 2020 held on 18 September 2019
- Amrita Vishwa Vidyapeetham also submitted a proposal for conducting “World-Landslide Forum-6” in India

Institute of Geography, National Autonomous University of Mexico

- International Geoscience Programme Council, IGCP, UNESCO, Scientific Board Member, Geohazards (Irasema Alcántara-Ayala).

f) Other***UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence:***

- The Department of Earth Sciences of the University of Firenze since 2008 is recognized as World Centre of Excellence (WCoE) on landslide risk reduction by the Global Promotion Committee of the International Programme on Landslides (IPL/GPC); this triennial achievement was confirmed in 2011, 2014 and 2017.
- The Earth Sciences Department of the University of Firenze (UNIFI) is the official Centre of Competence of the Italian Civil Protection for Remote Sensing and Geohazards (Directive of the Italian Prime Minister of 27 February 2004; Decree of the Head of the Italian National Civil Protection Department no. 252 of 26 January 2005); this achievement was confirmed four consecutive times: in 2007, 2011, 2013 and 2018 respectively.
- The Chair Associate Nicola Casagli was nominated President of the ICL for the next mandate (2021-2023) during the 14th session of International Program on Landslides (IPL) Global Committee, Paris, UNESCO headquarters, September 19th 2019.
- The Chair Associate Sandro Moretti was nominated Vice President of ICGdR consortium during the 17th ICGdR International Symposium on Geo-disaster Reduction. Issyk Kul Lake, Kyrgyz Republic, August 20th, 2019
- The UNESCO Chair associates Veronica Tofani, Federico Raspini, Filippo Catani, Nicola Casagli received the "Best paper Award 2019" of the journal Remote Sensing (MDPI). Title of the paper: Persistent Scatterer Interferometry (PSI) technique for landslide characterization and monitoring.

UNESCO CHAIR: Water-related Disaster Risk Reduction at University of Ljubljana:

- The Faculty of Civil and Geodetic Engineering, University of Ljubljana, hosting UNESCO Chair, is recognized as the World Centre of Excellence (WCoE) in Landslide Risk Reduction for the period 2017-2020.
- The Chair holder was the Chairman of the Slovenian National Platform on Disaster Risk Reduction (2015- July 2019).

Amrita Vishwa Vidyapeetham:

- UNESCO Chair for Experiential Learning for Sustainable Innovation & Development: The United Nations awarded Amrita Vishwa Vidyapeetham its second UNESCO Chair – UNESCO Chair for Experiential Learning for Sustainable Innovation & Development – on June 12, 2020. Through this new Chair, the university will develop a comprehensive framework for academic engagement to build sustainable communities by designing a curriculum based on experiential learning. This curriculum will enable the academic community to acquire the knowledge, skills, attitudes and values necessary to implement sustainable solutions among vulnerable and rural communities.
- Member in Advisory committee for “Kerala State Disaster Management Authority-KSDMA” : Dr. Maneesha is selected as one of the members for the “Advisory Committee for landslide/debris flow” by the “Kerala State Disaster Management Authority-KSDMA”. This advisory intends to achieve the following : To help the disaster management authority in developing specific plans for Landslide preparedness ; Upon request from the authority, visit various landslide sites for

<p>conducting study and submit report so as to help the authority in making decisions ; Visit quarry sites in order to ensure that they adhere to the instructions disseminated by the authority to prevent landslides ; To help the disaster management authority in developing landslide prevention & preparedness plans for districts & the State ; To help the authority in preparing Landslide mitigation plans for getting funds from the Central Government.</p>	
<p>a) Education/Training/Research <i>(key education programmes and training delivered and research undertaken by the Chair during the reporting period, target group and geographical coverage)</i></p>	
<p>i) Education (leading to certificate)</p>	<p><u>Education leading to Ph.D</u></p> <p><i>Kyoto University (1 PhD):</i> HA Nguyen Duc Date obtained PhD: November 26, 2019 Field: Civil Engineering Institution: Graduate School of Engineering, Kyoto University Thesis title: A coupled hydrological geotechnical framework for forecasting shallow landslide hazard</p> <p><i>University of Florence, Italy (19 PhD):</i> Artini Giada — Doctor of Philosophy (PhD.) International Doctorate in Civil and Environmental Engineering (XXXV Cycle) University of Florence: Department of Civil and Environmental Engineering Title of Doctor Dissertation: Linkages between flow, morphodynamics and vegetation Tutor: Luca Solari and Simona Francalanci</p> <p>Marco Lompi — Doctor of Philosophy (PhD.) International Doctorate in Civil and Environmental Engineering (XXXIV Cycle) University of Florence: Department of Civil and Environmental Engineering Title of Doctor Dissertation: Flash Floods Forecasting using Data Merging Techniques in near real time Tutor: prof. Enrica Caporali and Luis Mediero (Universidad Politécnica de Madrid – UPM).</p> <p>Matteo Pampaloni — Doctor of Philosophy (PhD.) International Doctorate in Civil and Environmental Engineering (XXXIV Cycle) University of Florence: Department of Civil and Environmental Engineering Title of Doctor Dissertation: Investigating hydrological parameters for Nature Based Solution design. Tutor: prof. Enrica Caporali and Alvaro Sordo (Universidad Politécnica de Madrid – UPM).</p> <p>Genming Du — Doctor of Philosophy (PhD.) International Doctorate in Civil and Environmental Engineering (XXXIV Cycle) University of Florence: Department of Civil and Environmental Engineering, Department of Earth Sciences Title of Doctor Dissertation: A GIS-based system for ground anomalies detecting and landslide assessment using Sentinel-1 InSAR data. Tutor: Grazia Tucci</p> <p>Davide Festa — Doctor of Philosophy (PhD.) Regional School of Earth Science (XXXV Cycle) University of Florence: Department of Earth Sciences Title of Doctor Dissertation: Spatial and temporal analysis of interferometric data for ground deformation detection at regional scale. Tutor: Prof. Nicola Casagli, Co-tutor: Federico Raspini</p>

Tania Luti — Doctor of Philosophy (PhD.)
 Regional School of Earth Science Engineering (XXXIII Cycle)
 University of Florence: Department of Earth Sciences
 Title of Doctor Dissertation: Land monitoring through optical and radar remote sensing
 Tutor: Prof. Nicola Casagli and Michele Munafò

Monan Shan — Doctor of Philosophy (PhD.)
 Regional School of Earth Science Engineering (XXXIII Cycle)
 University of Florence: Department of Earth Sciences
 Title of Doctor Dissertation: Permafrost degradation monitoring using time series InSAR technique and its effect on environmental change in northeastern China
 Tutor: Prof. Nicola Casagli and Silvia Bianchini

Roberto Montalti — Doctor of Philosophy (PhD.)
 Regional School of Earth Science Engineering (XXXIII Cycle)
 University of Florence: Department of Earth Sciences
 Title of Doctor Dissertation: Regional scale satellite monitoring for hydrogeological risk reduction
 Tutor: Prof. Filippo Catani

Agnese Turchi — Doctor of Philosophy (PhD.)
 Regional School of Earth Science Engineering (XXXIII Cycle)
 University of Florence: Department of Earth Sciences
 Title of Doctor Dissertation: Geo-environmental risk analysis for territorial and local sustainable management
 Tutor: Prof. Sandro Moretti and Prof. Riccardo Fanti

Lorenzo Innocenti — Doctor of Philosophy (PhD.)
 International Doctorate in Civil and Environmental Engineering (XXXIII Cycle)
 University of Florence: Department of Civil and Environmental Engineering.
 Title of Doctor Dissertation: Modelling wood transport in rivers
 Tutor: Prof. Luca Solari

Teresa Gracchi — Doctor of Philosophy (PhD.)
 International Doctorate in Civil and Environmental Engineering (XXXII Cycle)
 University of Florence: Department of Civil and Environmental Engineering; Department of Earth Sciences
 Title of Doctor Dissertation: Wireless Sensor Networks for landslide Early Warning Systems
 Tutor: Claudia Madaï and Prof. Nicola Casagli
 Date of certification: April 2020

Mattia Ceccatelli — Doctor of Philosophy (PhD.)
 International Doctorate in Civil and Environmental Engineering (XXXII Cycle)
 University of Florence: Department of Civil and Environmental Engineering; Department of Earth Sciences
 Title of Doctor Dissertation: MOBIDIC hydrologic model implementation for numerical modelling and management of groundwater flow
 Tutor: Prof. Fabio Castelli and Prof. Riccardo Fanti
 Date of certification: April 2020

Elena Benedetta Masi — Doctor of Philosophy (PhD.)
 International Doctorate in Civil and Environmental Engineering (XXXII Cycle)
 University of Florence: Department of Civil and Environmental Engineering; Department of Earth Sciences

<p>Title of Doctor Dissertation: The root reinforcement in slope stability models: root biomass estimation by means of field and remote sensing data Tutor: Prof. Enrica Caporali and Prof. Filippo Catani Date of certification: April 2020</p> <p>Matteo Isola — Doctor of Philosophy (PhD.) International Doctorate in Civil and Environmental Engineering (XXXII Cycle) University of Florence: Department of Civil and Environmental Engineering Title of Doctor Dissertation: Resilience strategies for flood risk management: estimation of damage Tutor: Prof. Enrica Caporali Date of certification: April 2020</p> <p>Liang Feng — Doctor of Philosophy (PhD.) International Doctorate in Civil and Environmental Engineering (XXXII Cycle) University of Florence: Department of Civil and Environmental Engineering Title of Doctor Dissertation: Stability prediction and forecasting of slope of open pit mine Tutor: Prof. Nicola Casagli and Prof. Grazia Tucci Date of certification: April 2020</p> <p>Laura Pastonchi — Doctor of Philosophy (PhD.) Regional School of Earth Sciences (XXXI Cycle) University of Florence: Department of Earth Sciences Title of Doctor Dissertation: Analysis and monitoring of geo-hazards in UNESCO world heritage sites Tutor: Prof. Veronica Tofani Date of certification: April 2019</p> <p>Federico Marini — Doctor of Philosophy (PhD.) Regional School of Earth Sciences (XXXI Cycle) University of Florence: Department of Earth Sciences Title of Doctor Dissertation: True 3d rockfall analysis from high resolution point clouds Tutor: Prof. Giovanni Gigli Date of certification: April 2019</p> <p>Giulio Calvani — Doctor of Philosophy (PhD.) International Doctorate in Civil and Environmental Engineering (XXXI Cycle) University of Florence: Department of Civil and Environmental Engineering. Title of Doctor Dissertation: Interactions between river morphodynamics and riparian vegetation Tutor: Prof. Luca Solari Date of certification: May 2019</p> <p>Costanza Carbonari — Doctor of Philosophy (PhD.) International Doctorate in Civil and Environmental Engineering (XXXI Cycle) University of Florence: Department of Civil and Environmental Engineering. Title of Doctor Dissertation: Vertical sorting in gravel bed rivers Tutor: Prof. Luca Solari Date of certification: May 2019</p> <p><i>University of Ljubljana, Ljubljana, Slovenia (1 PhD):</i> Mateja Klun – PhD School: Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Title: Analysis of concrete gravity dam conditions using state-of-the-art experimental and numerical methods</p>

Date of Certification: March 8, 2020

Charles University, Prague, Czech Republic (10 PhD, examples with direct relation to landslides):

Uxa T. PhD

School: Charles University, Prague, Czech Republic

Title: Past and present permafrost and active-layer phenomena as indicators of the Late Quaternary environmental changes.

Date of certification: 22.09.2020

Falátková K. – PhD

School: Charles University, Prague, Czech Republic

Title: Dynamics of glacial lakes and hydrological conditions of a glacial-morainic complex (Adygine, northern Tien Shan).

Date of certification: 20.06.2019

Amrita Vishwa Vidyapeetham:

PhD in Sustainable Development: A new program on PhD in Sustainable Development is started. As part of this program Amrita adopted 100+ villages and got committed to use applied research as the foundation of socio-economic progress and sustainability. Few of these villages encounter the problem of landslides and multi hazards, and as part of this PhD program two students are currently enrolled to work on landslides.

University of Rijeka, Rijeka, Croatia (1 PhD):

Josip Peranić – PhD

School: Faculty of Civil Engineering, University of Rijeka, Rijeka, Croatia

Title: Importance of geotechnical cross-section unsaturated zone for landslide occurrence in flysch deposits

Date of Certification: 8 February 2019

University of Zagreb, Zagreb, Croatia (1 PhD):

Sanja Bernat Gazibara – PhD

School: Faculty of Civil Engineering, University of Zagreb, Zagreb, Croatia

Title: Methodology for landslide mapping using high resolution digital elevation model in the Podsljeme area (City of Zagreb)

Date of Certification: 10 May 2019

Shimane University, Japan (4 PhD):

Shuai Zhang – PhD

School: Faculty of Natural Sciences, Shimane University, Japan

Title: Spatial distribution analysis and three-dimensional seismic slope stability assessment of coseismic landslides, --an application to the 2018 Eastern Iwate Earthquake, Hokkaido, Japan--

Date of Certification: September 2019

Kounghoon Nam – PhD

School: Faculty of Natural Sciences, Shimane University, Japan

Title: Deep learning-based susceptibility assessment and prediction of landslides triggered by earthquake and rainfall using autoencoder combined with random forest

Date of Certification: 2020

Prakash Dhungana – PhD

School: Faculty of Natural Sciences, Shimane University, Japan

Title: Hydro-mechanical constraints and premonitory factors of landslide dam failure caused by seepage

	<p>Date of Certification: 2020</p> <p>Ran Li – PhD School: Faculty of Natural Sciences, Shimane University, Japan Title: Controlling role of soil and groundwater on landslide triggered by earthquake Date of Certification: 2020</p> <p><u>Education leading to Mater’s Degree</u></p> <p><i>University of Florence, Italy (37 Master):</i> Chiara Fucini, “Satellite radar monitoring of soil deformations and landslides in Tuscany”. Department of Earth Sciences, University of Florence. Tutor: silvia Bianchini, Co-tutor: Federico raspini</p> <p>Roberto Montalti, “Quantitative evaluation of conformance to design geometry of open pit excavation works, using high-resolution Lidar data”. Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani</p> <p>Giacomo Minissale, “Continuous monitoring of the subsidence in the Pistoia area through satellite radar data”. Department of Earth Sciences, University of Florence. Tutor: Federico Raspini, Co-tutors: Lorenzo Solari and Federica Bardi</p> <p>De Blasi Francesca, “Calibration of a hydrological model for the evaluation of solid transport in the pilot basin of the Carrione torrent”. Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani, Co-tutors: dott. Ascanio Rosi and Stefano Menichetti</p> <p>Borri Francesco, “Analysis and comparison between rainfall and satellite interferometric data at regional scale for the characterization of landslides”. Department of Earth Sciences, University of Florence. Tutors: Prof. Filippo Catani, Co-tutor: dott. Ascanio Rosi e Lorenzo Solari.</p> <p>Medici Camilla, “Study of deep-seated gravitational slope deformations and rock glaciers in Valle d’Aosta by means of satellite radar interferometry”. Department of Earth Sciences, University of Florence. Tutor: Silvia Bianchini, Co-tutor: Dr. Lorenzo Solari</p> <p>Donato Petracca, “Characterization of worldwide submarine landslides for risk zoning purposes”. Department of Earth Sciences, University of Florence. Tutor: Filippo Catani.</p> <p>Francesco Delli Santi, “Satellite analysis and monitoring of the urban area of Taranto”. Department of Earth Sciences, University of Florence. Tutor: Nicola casagli. Co-tutor: Vincenzo Simeone.</p> <p>Cardi Francesco “Creation of a geodatabase for storing the values of geotechnical parameters from in-situ and laboratory tests”. Candidate: Department of Earth Sciences, University of Florence. Tutor: Samuele Segoni, Co-tutor: Pietro Vannocci</p> <p>Francesco Facchini “Analysis of 3D Kinematic mechanisms of slope instability affecting the monastery of Vardzia (Georgia)”. Department of Earth Sciences, University of Florence. Tutor: Prof. Giovanni Gigli, Co-tutor: Dr. William Frodella.</p> <p>Beatrice Puglioli, “3D reconstruction of the sliding surface of the Vajont landslide and its implications regarding the trigger kinematics”. Department of Earth Sciences, University of Florence. Tutor: Prof. Giovanni Gigli, Co-tutors: Chiara del Ventisette and Luca Lombardi</p>
--	---

Federico Berlincioni, “Mitigation of the falling rocks risk along a motorway section”. Department of Earth Sciences, University of Florence. Tutor: Prof. Giovanni Gigli, Co-tutor: Dr. Luca Lombardi

Rachele Franceschini, “Use of satellite interferometric data to monitor slopes in Alpine regions”. Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani, Co-tutor: Dr. Lorenzo Solari

Emanuele Montini, “Influence of the mass transport in the upper Rhine valley”. Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani

Maria Grazia Coccioli, “Morphometric analysis and about reactivation of landslides triggered by the 12 May 2008 Wenchuan earthquake”. Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani. Co-tutor: Dr. Veronica Tofani

Cosimo Martinelli, “Monitoring of the Perarolo di Cadore landslide (BL)”. Department of Earth Sciences, University of Florence. Tutor: Prof. Nicola Casagli, Co-tutor: Antonio Galgaro.

Lorenzo Paci, “Assessment of the geo-hydrological and hydraulic risk scenarios for the civil protection plan of the Florentine University”. Department of Earth Sciences, University of Florence. Tutor: Prof. Nicola casagli, Co-tutor: Dr. Tanteri Luca and Ermini Leonardo.

Antonella Marinelli, “Specific risk assessment for rapid kinematic landslides in the Aosta Valley”. Department of Earth Sciences, University of Florence. Tutor: Prof. Nicola casagli, Co-tutor: Ascanio Rosi and Matteo Del Soldato.

Francesco Caleca, “Quantitative assessment of the risk of slow kinematic landslides in the Arno river basin”, Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani, Co-tutor: Veronica Tofani, Samuele Segoni

Marco Lompi, “Analysis of Flash Flood Events - Hydrological Modeling and Comparison with the Design Hydrographs”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and prof. Fabio Castelli.

Andrea Ombrato, “Hydrological and hydraulic analysis to support the final design of the Beccarello detention basin at the confluence of Bruna River and Fossa Creek (GR)”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and prof. Fabio Castelli.

Giuseppe Parravano, “Urban flood hazard modelling in Florence”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and prof. Luca Solari.

Claudio Petri. “Hydrosedimentological modelling and investigation about the effect of mining on the San Cipriano Reservoir sedimentation”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and eng. Tommaso Pacetti.

Luca Sichi, “Hydraulic risk analysis of the terminal reach of Ombrone Pistoiese and of the interaction with the bridges of Poggio a Caiano”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and prof. Fabio Castelli.

Margutti Francesco, “The role of Canale Macinante in the urban drainage system of

Florence”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and prof. Fabio Castelli.

Andrea Carraresi, “Bivariate frequency analysis of floods to assess flood risk and building damage”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and eng. Chiara Arrighi.

Andrea Fanti. “Hydrological load characterization at local and regional scale for Sustainable Urban Drainage Systems design”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and Tommaso Pacetti.

Simona Cioli, “Analysis of Bisenzio river dynamics to support the design of a fluvial park in Prato municipality” Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and Tommaso Pacetti.

Andrea Segat, “Messa in sicurezza del sito archeologico di Vanis Kvabebi (Georgia)”, Department of Civil, Chemical, Environmental and Materials Engineering (DICAM), University of Bologna. Tutor: Daniela Boldini, Co-tutor Daniele Spizzichino

Saverio Mengoni, “Caratterizzazione e analisi dei processi di instabilità delle tombe etrusche nella necropoli dei Monterozzi a Tarquinia”. Department of Civil, Chemical, Environmental and Materials Engineering (DICAM), University of Bologna. Tutor: Daniela Boldini, Co-tutor: Daniele Spizzichino

Grazia Luna Guido “Caratterizzazione ed analisi di stabilità della parete tufacea del monastero rupestre in Georgia”. Department of Civil, Chemical, Environmental and Materials Engineering (DICAM), University of Bologna. Tutor: Daniela Boldini, Co-tutor Daniele Spizzichino.

Rocco Silvaggi “Utilizzo di dati satellitari per la valutazione degli effetti di un evento di frana: il caso della frana di Montescaglioso”. Facoltà di ingegneria civile e industriale, Sapienza University, Roma. Tutor: Daniele Spizzichino.

Lorenzo Casini, “Study on the low-flow conditions of the Arno river in the urban stretch of Florence”. Tutor: Ing. Simona Francalanci, Cotutor: Prof. Enio Paris

Serena Aniello, “Interaction between river bars and vegetation: laboratory experiments”. Tutor: Prof. Luca Solari. Cotutors: Ingg. Simona Francalanci, Giulio Calvani

Begnardi Gabriele, “Hydromorphological analysis of the Ombrone Grossetano River and 2D modelling for evaluating sediment’s extraction intervention”. Tutors: Ing. S. Francalanci. Cotutors: Prof. M. Rinaldi, Ingg. V. Francalanci, C. Simoncini.

Artini Giada, “On the effects of vegetation on the hydrodynamics of Arno River at the confluence with Greve River”. Tutor: Prof. L. Solari. Cotutors: Ingg. S. Francalanci, Dott.ri E. Stefanini, G. Calvani, L. Innocenti.

Martelli Guido, “Research of a method for the quantification and classification of microplastics entering the Anconella”. Tutor: Ing. Simona Francalanci, Cotutors: Prof. E. Paris, Ing. L. Rossi

University of Ljubljana, Ljubljana, Slovenia (9 Masters):

Žiga Ščukovt MEng

School: Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia

<p>Title: Comparison of drought indicators with measurements of water balance in soil Date of Certification: 2020</p> <p>Maja Jelen MEng School: Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Title: Hydrological analysis of karst springs in Slovenia Date of Certification: 2019</p> <p>Maja Matic MEng School: Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Title: Comparison of two image analysis methods to determine the granularity of coarse-grained aggregates and sediments Date of Certification: 2019</p> <p>Sandi Kaltak MEng School: Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Title: Mathematical modeling of debris flows and formation of torrential fans Date of Certification: 2019</p> <p>Klemen Zimic MEng School: Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Title: Analysis of sediment transport in the section of the HPP Doblar reservoir Date of Certification: 2019</p> <p>Katarina Lavtar MEng School: Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Title: Evaluation of lumped hydrological models' performance for the Sava River basin Date of Certification: 2019</p> <p>Miha Verčnik MEng School: Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Title: Technological methods of pile walls construction for stabilisation of landslides Date of Certification: 2019</p> <p>Jan Cunja MEng School: Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Title: Temporal and spatial analysis of the largest hydrological droughts in Slovenia Date of Certification: 2019</p> <p>Mateja Trnovec MEng School: Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia Title: Discussion of the flood problem of the Suha torrent in Preddvor with the flood regulations proposal Date of Certification: 2020</p> <p><i>North-East Forestry University, Harbin, China (2 Master):</i> Kun Qian — Master's Degree School: Civil engineering College, North-East Forestry University, Harbin, China Title: Hydrothermal coupling analysis of pre-melting technology of high temperature frozen soil foundation in permafrost regions</p> <p>Shuanglin Wang — Master's Degree School: Civil engineering College, North-East Forestry University, Harbin, China</p>
--

<p>Title: Permafrost degradation characteristics and foundation settlement prediction along Bei-Hei Expressway</p> <p><i>Charles University, Czech Republic (80 Master – examples with direct relation to landslides):</i></p> <p>Kroczek T. – master’s degree (2019) Evaluation of natural hazards from Imja glacial lake, Nepal. MSc Thesis, Faculty of Physical Geography and Geoecology, Charles University, Czech Republic.</p> <p>Dlabáčková T. – master’s degree (2019) Geomorphological conditions of debris flows in the central part West Tatra Mts. MSc Thesis, Faculty of Physical Geography and Geoecology, Charles University, Czech Republic.</p> <p>Baťka J. – master’s degree (2020) Hazard evaluation from GLOFs in the Cordillera Huayhuash, Peru. MSc Thesis, Faculty of Physical Geography and Geoecology, Charles University, Czech Republic</p> <p>Hulec F. - master’s degree (2020) Hydrological and suspended load regime of the Odlezecké landslide dammed Lake. MSc Thesis, Faculty of Physical Geography and Geoecology, Charles University, Czech Republic</p> <p>Fišer P.- bachelor’s degree (2020) Analysis of debris flows in Otrepo region, the Apennines. MSc Thesis, Faculty of Physical Geography and Geoecology, Charles University, Czech Republic</p> <p><i>National Central University, Chinese Taipei (13 Master):</i></p> <p>Quoc-Viet Pham (2019) Velocity-dependent frictional properties of kaolinite clay under different drainage conditions with temperature measurement</p> <p>Trong-Van Nguyen (2019) A Submarine Landslide Case Study from Palm Ridge, Offshore Southwestern Taiwan</p> <p>Victoriano Realino II (2019) The characteristics of landslides, sediment transportation, and debris flow of two watersheds along Tachia River, Taiwan</p> <p>Xiu-Yi Lei (2019) Hydraulic-mechanical coupling effect on groundwater flow around rock tunnel using finite difference method</p> <p>Tran Hoai Hieu, Truong (2019) Rainfall Triggered Landslide Susceptibility Analysis and Validation in the Zengwen Reservoir Catchment, Taiwan.</p> <p>Pei-Xin Yang (2019) Further studies on ground-motion prediction equations for subduction-zone earthquakes in Northeast Taiwan.</p> <p>Chong-Zhih Wang (2019) Sensitivity study of wedge failure by using numerical calculation.</p> <p>Ji-Hao Jian (2019) Development of the integrated monitoring system of IoT and TDR for shallow and deep-seated landslides</p> <p>Shi-Kai Wei (2019) Modification of TDR Penetrometer for Water Content Profile Monitoring</p> <p>Tan-Minh Le (2020) Mechanical aperture and hydraulic aperture of synthetic single joint</p>
--

	<p>printed by 3D printer</p> <p>Yi-Chia Chiang (2020) Velocity-displacement dependent friction law of dry kaolinite</p> <p>Shi-Ming Hong (2020) Using porosity-effective stress relationship curve to evaluate the erosion amount of the fore-arc basin in the southern part of Coastal Range</p> <p>Tran Van Nhiem (2020) Improved TDR Deformation Monitoring by Integrating Centrifuge Physical Modelling</p> <p><i>Shimane University, Japan (2Master):</i> Atikar Rahman – MEng School: Faculty of Natural Sciences, Shimane University, Japan Title: Slope Stability Analysis of Rainfall-induced Shallow Landslides Making Use of Database in Shimane Prefecture, Japan Date of Certification: March 2019</p> <p>Akinori Iio – MEng School: Faculty of Natural Sciences, Shimane University, Japan Title: Study on mechanism of landslide generation on volcanic fall pyroclastic slopes caused by earthquakes and characteristics of fallen pyroclastic Date of Certification: 2020</p>
<p>ii) Training (short term)</p>	<p><i>UNESCO Chair at University of Florence:</i></p> <ul style="list-style-type: none"> • 2018, November 5. Firenze (Italy). Conference “Flood Risk: 7 challenges for 2020, 1) participatory hydrological safety; 2) effective and compensable and flood forecasting; 3) Who pays? 4) planning and management of flood protection in change; 5) do not leave the match in the hands of the mayors; 6) adequacy, availability and national homogeneity of data and methods; 7) sustainability and effectiveness of hydrogeological risk defenses over time”. • 2018, November 24-25. Il Cairo, Egypt. Bilateral Italy-Egypt Seminar on SAR technologies: “Eye on the Globe. COSMO Sky-Med for Cultural Heritage”, in the framework of the conference GEOMEAST and in collaboration with the Egyptian Agency for Space (NARS) and the Italian National Research Counsel (CNR). • 2018, November 22. Florence (Italy). Seminar: “Studi di archeo-sismologia in Messico: la frana di Mitla”. Held by Víctor Hugo Garduno-Monroy - Professor at Universidad Michoacana de San Nicolás de Hidalgo. • 2019, February 26. Firenze (Italy). Conference: “Arno: Travel along the river. Memory: Testimonials, stories and images. Future. The story of water between digital, video and art”. • 2019, March 5. Firenze (Italy). Seminar: “An Introduction to Climate Change: the Past, the Present, and the Future”, held by Dr. Simone Fatichi, Research Associate and Lecturer at the Institute of Environmental Engineering at the ETH Zurich. • 2019, March 20-21. Rome. Workshop on “Monitoring and maintainance of archaeological areas: climate change, hydro geological imbalance, environmental and chemical degradation”. Hosted by the Colosseum Archaeological Parck in Rome. • 2019, April 18. Florence (Italy). Seminar: “Applied landslide research in the area of Dinarides and Pannonian Basin in Croatia”. Held by Snježana Mihalić Arbanas - Professor at Faculty of Mining, Geology and Petroleum Engineering University of Zagreb e Željko Arbanas - Professor at Faculty of Civil Engineering University of Rijeka. • 2019, April 18-20. Georgia. Joint International Conference: Davit Gareji – Multidisciplinary Study and Development Strategy Tblisi Georgia.

	<ul style="list-style-type: none"> • 2019, May 21. Florence (Italy). Seminar: “The Vajont landslide and dam disaster”. Held by Nicola Casagli - Professor at the UNESCO Chair on the Prevention and Sustainable Management of Geo-Hydrological Hazards of the University of Florence. • 2019, June 27. Florence (Italy). Seminar: “The karst geomorphology of the Albanian Alps: potential and problems for the development of the territory”. Held by Ervis Krymbi - Professor at the Department of Geography, University of Shkoder “Luigj Gurakuqi”, Albania. • 2019, July 14-18. Il Cairo (Egypt). Short Course: “Groundwater management and cultural heritage”. co-organized in collaboration with the UNESCO Cairo office, the Italian Embassy in Cairo and NRIAG (National Institute for Astronomy and Geophysics), • 2019, June 27. Florence (Italy). Seminar: “Analysis of coastal erosion phenomena in Albania, problems and prospects for the future”. Held by Ervis Krymbi - Professor at the Department of Geography, University of Shkoder “Luigj Gurakuqi”, Albania. • 2019, September 2-13. Lausanne (Switzerland). LARAM (Landslide Risk Assessment and Mitigation) International School 2019. The programme was structured in the following sessions: S1, Introduction to landslides; S2, Landslide risk theory; S3, Landslide modelling; S4, Landslide risk analysis and zoning; S5, Landslide monitoring and mitigation; S6, Landslide risk management and risk governance. • 2019, October 9, 16, 23 and 30. Florence (Italy). Training course: “Use of the software freeware SSAP (Slope Stability Analysis Program)”. Held by Prof. Lorenzo Borselli - Professor of Geotechnics and Applied Geology, Instituto de Geologia Universidad Autonoma de San Luis Potosi - Mexico. • 2019, October 11. Firenze (Italy). Seminar: “Vulnerabilità idraulica degli elementi sensibili (pedoni, veicoli) in ambito urbano e criticità della rete viaria”. Promoted by the Florence Provincial Council of Engineers. • 2019, October 18. Florence (Italy). Seminar: “Government action plan to combat waste fires in the Terra dei Fuochi area”. Held by Fabrizio Curcio - Presidenza del Consiglio dei Ministri. • 2019, October 21. Firenze (Italy). Seminar: “Catchment-scale water balance: Lumped models and hydrologic spaces”, held by Dr. Edoardo Daly, Department of Civil Engineering, Monash University, Melbourne, Australia. • 2019, October 24. Firenze (Italy). Workshop: “Water-Ecosystems Management for Resilient Cities”. • 2019, November 4-21. Firenze (Italy). Event " Arno clean, safe, to live". Promoted by the Association Vivilarno and the Tuscany Region. • 2019, November 21. Florence (Italy). Seminars: “Flood risk scenarios for cultural heritage: quantifying resilience” by Chiara Arrighi; “Extreme hydrological events in urban river basins: the case study of Santa Croce in Florence” by Enrica Caporali. • 2019, December 10-12. Luxor-Assuan. 1st Symposium on Sustainable conservation of UNESCO and other heritages sites through proactive geosciences. • 2019, December 10-11. Florence (Italy). Training course: “Use of the software freeware SSAP (Slope Stability Analysis Program)”. Held by Prof. Lorenzo Borselli - Professor of Geotechnics and Applied Geology, Instituto de Geologia Universidad Autonoma de San Luis Potosi - Mexico. • 2019, December 13. Florence (Italy). Seminar: “Ground-based radar for mining and landslide monitoring worldwide”. Held by David Noon - GroundProbe Ltd. • Training course: “Evidence and Policy Disaster Risk Management School”, Florence (Italy), January 13-15, 2020. • Workshop: LEWS2020 (Regional Landslide Early Warning Systems experiences, progresses, needs), Perugia (Italy), January 28-29-30, 2020. • Workshop: DIDA Research Preview, Florence (Italy), February 5-6-7, 2020. • UNESCO Chair 2020 Field School on Geoenvironmental Disaster Reduction, Shimane (Japan), February 10-16, 2020.
--	---

	<ul style="list-style-type: none"> • Seminar: “Il dissesto idrogeologico fra mito e realtà”, organizzato da LARES (Unione Nazionale Laureati Esperti in Protezione Civile) Toscana, in diretta streaming il June 13, 2020. • Seminar: “COPERNICUS il programma europeo di osservazione della Terra e le sue applicazioni”, streaming, June 19, 2020. <p>UNESCO CHAIR on Water-related Disaster Risk Reduction at University of Ljubljana co-organized COST LAND4FLOOD on-line Training course & Workshop on “Technical aspects of Nature-Based Solutions allocation”, Ljubljana, Slovenia, September 23, 2020.</p> <p>Institute of Rock Structure and Mechanics, Czech Academy of Sciences:</p> <ul style="list-style-type: none"> • Workshop for students on field methods in geomorphology focused on their application on landslides, Bohemian Paradise Global Geoparc UNESCO, 2019, April 3-4. <p>Amrita Vishwa Vidyapeetham:</p> <ul style="list-style-type: none"> • Community Engagement in Munnar, Kerala, India: A community engagement program on “Landslide awareness” and “Landslide early warning system established by Amrita Vishwa Vidyapeetham in Munnar region of Kerala” was organized in the Munnar panchayat community hall on 21 st May 2019. A team of Sr. Scientist and landslide experts from Amrita University conducted the meeting. Awareness was created about the natural vulnerability of landslides in Munnar. An elaborate presentation was made on landslide precursors and the Do’s and Don’t’s during a landslide. The functional aspects of Amrita’s three-level early warning system in Munnar is explained in terms of, (i)how the warnings were delivered and (ii) the zone of influence of each level of warning has been conveyed to the people.It was a highly interactive session, where residents shared their experiences the ‘precursors’ they noticed during landslides and how Amrita Universities warning in 2018 helped them to safely relocate to another place. The local people were also sharing other water scarcity and water quality problems that they were facing in the community in Anthoniar colony. The team from Amrita also have identified volunteers in the different places in Munnar who could become the champions in the future natural calamity related endeavours. <p>National Central University, Chinese Taipei:</p> <ul style="list-style-type: none"> • 2019/7/20-25 Advanced Institute-Training Course on Landslide Investigations and Hazards Mitigation, Hanoi University of Mining and Geology (HUMG), Hanoi, Vietnam. Prof. Dong, J.J., National Central University, as a lecture to assiste IRDR-ICoE-Taipei to HUMG, had a short-course on landslide program. 										
iii) Research	<p>The main and common research activities of this network are the projects of the Internatinal Programme on Landslides (IPL) and also activities of ICL World Centres of Excellence (WCoEs). The list of IPL project and WCoEs are presented here.</p> <table border="1" data-bbox="347 1693 1455 2000"> <tr> <td data-bbox="347 1693 459 1899">IPL-106-2</td> <td data-bbox="459 1693 911 1899">International Summer School on Rockslides and Related Phenomena in the Kokomeren River Valley, Tien Shan, Kyrgyzstan</td> <td data-bbox="911 1693 1094 1899">Russia</td> <td data-bbox="1094 1693 1350 1899">Alexander Strom</td> <td data-bbox="1350 1693 1455 1899">2008 -</td> </tr> <tr> <td data-bbox="347 1899 459 2000">IPL-112</td> <td data-bbox="459 1899 911 2000">Landslide mapping and risk mitigation planning in Thailand</td> <td data-bbox="911 1899 1094 2000">Thailand</td> <td data-bbox="1094 1899 1350 2000">Saowanee Prachansri</td> <td data-bbox="1350 1899 1455 2000">2009 -</td> </tr> </table>	IPL-106-2	International Summer School on Rockslides and Related Phenomena in the Kokomeren River Valley, Tien Shan, Kyrgyzstan	Russia	Alexander Strom	2008 -	IPL-112	Landslide mapping and risk mitigation planning in Thailand	Thailand	Saowanee Prachansri	2009 -
IPL-106-2	International Summer School on Rockslides and Related Phenomena in the Kokomeren River Valley, Tien Shan, Kyrgyzstan	Russia	Alexander Strom	2008 -							
IPL-112	Landslide mapping and risk mitigation planning in Thailand	Thailand	Saowanee Prachansri	2009 -							

IPL-155	Determination of soil parameters of subsurface to be used in slope stability analysis in two different precipitation zones of Sri Lanka.	Sri Lanka	A. A. Virajh Dias	2010 -
IPL-157	Dynamics of subaerial and submarine megaslides	Japan	Kyoji Sassa	2010 -
IPL-158	Development of Community-based Landslide Early Warning System	Indonesia	Teuku Faisal Fathani	2009 -
IPL-159	Development of Education Program for Sustainable Development in Landslide Vulnerable Area through Student Community Service.	Indonesia	Dwikorita Karnawati	2009 -
IPL-165	Development of community-based landslide hazard mapping for landslide risk reduction at the village scale in Java, Indonesia	Indonesia	Dwikorita Karnawati	2010 -
IPL-167	The effect of freezing-thawing on the stability of ancient landslide of North-Black highway	China	Wei Shan	2009 -
IPL-175	Development of landslide risk assessment technology and education in Vietnam and other areas in the Greater Mekong Sub-region	Japan, Vietnam	Kyoji Sassa & Nguen Xuan Khang	2012 -
IPL-181	Study of slow moving landslide Umka near Belgrade, Serbia	Serbia	Biljana Abolmasov	2012 -
IPL-191	Landslide hazard zonation in Carpathian region of Ukraine using GIS	Ukraine	Yakovliev Yevhenii, Oleksandr M. Trofymchuk	2015-
IPL-192	Development of post-earthquake rainfall induced landslide (PERIL) hazard mitigation framework	USA and Nagendra Sitoula, Nepal	Binod Tiwari	2015-
IPL-193	Integrated systems for landslides monitoring, early warning and risk mitigation along motorways	Italy	Pasquale Versace	2015-
IPL-196	Development and applications of a multi-sensors drone for geohazards monitoring and	Italy	Veronica Tofani	2015-

	mapping			
IPL-197	Low frequency, high damaging potential landslide events in “low risk” regions – challenges for hazard and risk management	Czech Republic	Jan Klimeš	2015-
IPL-198	Multi-scale rainfall triggering models for Early Warning of Landslides (MUSE)	Italy	Filippo Catani	2015-
IPL-199	The effect of root systems in natural slope erosion protection in the hill country of Sri Lanka	Sri Lanka	Pvip Perera	2015-
IPL-200	An assessment of the rock fall susceptibility based on cut slopes adjacent to highways and railways	Sri Lanka	H.M.J.M.K. Herath	2015-
IPL-202	Ripley landslide monitoring project (Ashcroft, BC, Canada)	Canada	Peter Bobrowsky	2016-
IPL-203	Analysis and identify of landslides based on species distribution and surface temperature difference	China	Ying Guo	2016-
IPL-208	Landslide disaster risk communication in mountain areas	Mexico	Irasema Alcántara Ayala	2016-
IPL-210	Massive landsliding in Serbia following Cyclone Tamara in May 2014	Serbia	Biljana Abolmasov	2016-
IPL-212	The construction of a global database of giant landslides on oceanic island volcanoes	Czech Republic	Matt Rowberry	2016-
IPL-213	Real-time Landslide Monitoring and Early warning System in Western Ghats & Himalayas, India	India	Maneesha Vinodini Ramesh	2016-
IPL-215	The development of paleo-landslides in the middle part of the Moskva River valley within the limits of the Moscow City	Russia	Oleg Zerkal	2016-
IPL-216	Diversity and hydrogeology of mass movements in the Vipava valley, SW Slovenia	Slovenia	Timotej Verbovšek	2016-

IPL-217	PROTHEGO – PROTection of European Cultural HEritage from GeO – Hazards	Italy	Daniele Spizzichino/ Claudio Margottini	2016-
IPL-218	Landslide rapid mapping from remote sensing	China	Ping LU	2017-
IPL-219	Rockfall hazard identification and rockfall protection in the coastal zone of Croatia	Croatia	Željko Arbanas	2017-
IPL-220	Kostanjek landslide monitoring project (Zagreb, Croatia)	Croatia	Martin Krkač	2017-
IPL-221	PS continuous streaming for landslide monitoring and mapping	Italy	Federico Raspini	2017-
IPL-222	Landslide risk analysis and mitigation in the ancient rock-cut city of Vardzia (Georgia)	Italy	Claudio Margottini	2017-
IPL-223	Landslides in Africa: Understanding catastrophic failures and effective preventive measures in vulnerable regions of the continent	Nigeria	Igwe Ogbonnaya	2017-
IPL-225	Recognition of potentially hazardous torrential fans using geomorphometric methods and simulating fan formation	Slovenia	Matjaž Mikoš	2017-
IPL-226	Studying landslide movements from source areas to zone of deposition using a deterministic approach	Slovenia	Mateja Jemec Auflič	2017-
IPL-227	Development of a web based landslide information system for the landslides in Sri Lanka	Sri Lanka	K M Weerasinghe	2017-
IPL-228	General approach to landslide research and stabilization in Bosnia and Herzegovina	Bosnia and Herzegovina	Sabid Zekan	2017-
IPL-230	Evolution-based key technology of landslide prevention in Three Gorges Reservoir region, China	China	Huiming Tang	2018-
IPL-231	Landslide mechanism considering Soil-Water-Vegetation coupling effects	China	Su Lijun	2018-
IPL-232	Investigations on landslides in Nilgiris, Tamil Nadu, India	India	S. S. Chandrasekaran	2018-

IPL-233	Archival Records and Documentation of Some Socio-economically Significant Landslides in India	India	Surya Parkash	2018-
IPL-234	Development of landslide detection system based on rainfall prediction and seismic aspect in Banjarnegara Region, Centre of Java, Indonesia	Indonesia	Dr. Munawar	2018-
IPL-235	EO4GEO – Towards an innovative strategy for skills development and capacity building in the space geo-information sector supporting Copernicus User Uptake	Italy	Luca Guerrieri and Daniele Spizzichino	2018-
IPL-236	A multiparametric field laboratory for the investigation on the relationship between material behavior and morphodynamic of landslides	Italy	Andrea Segalini	2018-
IPL-237	The role of time-dependent rock mass deformations and landscape evolution rates as predisposing factors for massive rock slope failures	Italy	Carlo Esposito	2018-
IPL-238	Landslides Threatening Russian Cultural Heritage Sites	Russia	D.N. Gobotsov	2018-
IPL-239	Detailed Interpretation and Evaluation of Dynamic Model Behavior of Pothupitiya Landslide Potential Area (Combined Ground Water and Slope Stability Dynamic Model under PC Raster environment)	Sri Lanka	A A Virajh Dias	2018-
IPL-240	Global Lecture Series – Recent Advances on Landslide Analysis and Remediation	USA	Binod Tiwari	2018-
IPL-242	Studies of disasters related to natural and anthropogenic landslides in Brazil –	Brazil	Renato Eugenio de Lima	2019-

	Characterization of landslides triggers and impacts as a tool to rapid risk analysis			
IPL-243	Wildfire-related landslides in Italy: triggering mechanisms and propagation processes	Italy	Giuseppe Mandrone	2019-
IPL-244	Evolution mechanism and control of landslides induced by sudden rainstorm	China	Huiming Tang	2019-
IPL-245	Laboratory physical modeling of rainfall, slope deformation and landslides triggering	Italy	Giovanna Capparelli	2019-
IPL-246	Classification and spatial distribution of landslides on dumps in brown coal basin in the Czech Republic	Czech Republic	Martin Veselý	2019-
IPL-248	Innovation in slow-moving landslide risk assessment of roads and urban sites by combining multi-sensor multi-source monitoring data	Italy	Dario Peduto	2019-
IPL-249	Development of early warning technology of rain-induced rapid and long-travelling landslides in Sri Lanka	Japan, Sri Lanka	Kazuo Konagai & Asiri Karunawardena	2019-
IPL-238	Landslides Threatening Russian Cultural Heritage Sites	Russia	D.N. Gobotsov	2018-
IPL-239	Detailed Interpretation and Evaluation of Dynamic Model Behavior of Pothupitiya Landslide Potential Area (Combined Ground Water and Slope Stability Dynamic Model under PC Raster environment)	Sri Lanka	A A Virajh Dias	2018-
IPL-240	Global Lecture Series – Recent Advances on Landslide Analysis and Remediation	USA	Binod Tiwari	2018-

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	Brazil	Renato Eugenio de Lima	2019-
IPL-243	Wildfire-related landslides in Italy: triggering mechanisms and propagation processes	Italy	Giuseppe Mandrone	2019-
IPL-244	Evolution mechanism and control of landslides induced by sudden rainstorm	China	Huiming Tang	2019-
IPL-245	Laboratory physical modeling of rainfall, slope deformation and landslides triggering	Italy	Giovanna Capparelli	2019-
IPL-246	Classification and spatial distribution of landslides on dumps in brown coal basin in the Czech Republic	Czech Republic	Martin Veselý	2019-
IPL-248	Innovation in slow-moving landslide risk assessment of roads and urban sites by combining multi-sensor multi-source monitoring data	Italy	Dario Peduto	2019-
IPL-249	Development of early warning technology of rain-induced rapid and long-travelling landslides in Sri Lanka	Japan, Sri Lanka	Kazuo Konagai & Asiri Karunawardena	2019-

List of ongoing the Word Centre of Excellence on Landslide Disastr Reduction (WCOE) for 2017-2020

No.	WCOE Title	Leader	Country	Organization
1	Landslide Monitoring and Critical Infrastructure	Peter Bobrowsky	Canada	Geological Survey of Canada
2	Scientific research for mitigation, preparedness and risk assessment of Landslides	Yueping Yin	China	China Geological Survey
3	Formation mechanism research, disaster warning, and universal education of landslides	Wei Shan	China	Institute of Cold Regions Science and Engineering, Northeast

	in permafrost regions			Forestry University
4	Center for Applied Landslide Research (CALaR)	Snjezana Mihalic Arbanas, Zeljko Arbanas	Croatia	Croatian Landslide Group from University of Zagreb and University of Rijeka
5	Landslide risk assessment and development guidelines for effective risk reduction – continuation	Vit Vilimek	Czech Republic	Charles University, Faculty of Science & Institute of Rock Structure and Mechanics Czech Academy of Sciences
6	Enhancement of the existing Real-time Landslide Monitoring and Early warning System in Western Ghats & Himalayas, India	Maneesha V Ramesh	India	Amrita University
7	Development of Community-based and Most Adaptive Technology for Landslide Risk Reduction	Dwikorita Karnawati	Indonesia	University of Gadjah Mada
8	ATLaS: Advanced Technologies for LandSlides	Nicola Casagli	Italy	Department of Earth Sciences, University of Firenze (DST-UNIFI)
9	Methods and tools for landslide forecasting and risk mitigation and adaptation strategies	Fausto Guzzetti	Italy	Istituto di Ricerca per la Protezione Idrogeologica (IRPI), of the Italian National Research Council (CNR)
10	Landslide Hazards Mitigation Programs in the Korean Demilitarized Zone	Sangjun Im	Korea	Korean Society of Forest Engineering
11	Landslide Quantitative Risk Analysis Study for Malaysia	Che Hassandi Abdullah	Malaysia	Slope Engineering Branch, PublicWorks Department of Malaysia
12	Landslides Integrated Research for Disaster Risk Reduction	Irasema Alcántara Ayala	Mexico	National Autonomous University of Mexico (UNAM)

13	Characterizing past and planned activities: Klima 2050 – Innovational methods for risk reduction associated to hydro-meteorologically induced landslides	José Cepeda	Norway	Norwegian Geotechnical Institute (NGI)
14	Central Asia rockslide inventory. Compilation and analysis	Alexander Strom	Russia	JSC “Hydroproject Institute”
15	Harmonization of Landslide Data and Local Communities Capacity Building for Landslide Risk Reduction	Biljana Abolmasov	Serbia	University of Belgrade, Faculty of Mining and Geology
16	Landslides in Weathered Flysch: from activation to deposition	Ana Petkovšek	Slovenia	University of Ljubljana, Faculty of Civil and Geodetic Engineering (UL FGG)
17	Landslide risk reduction in Slovenia	Mateja Jemec Auflic	Slovenia	Geological Survey of Slovenia
18	Model Policy Frameworks, Standards, and Guidelines on Landslide Disaster Risk Reduction	A A Virajh Dias	Sri Lanka	Central Engineering Consultancy Bureau (CECB)
19	Characterizing past and planned activities: NBRO is the national focal point for landslide disaster risk management	Asiri Karunawardena	Sri Lanka	National Building Research Organization
20	Implementation of National Slope Master Plan	Oleksander Trofymchuk	Ukraine	The Institute of Telecommunication and Global Information Space (ITIGS) of the National Academy of Science of Ukraine (NASU)
List of the Word Centre of Excellence on Landslide Disaster Reduction (WCOE) for 2020-2023 (to be approved on 2 November 2020)				
1	Slow moving translational landslides in argillaceous soils and weak rocks	Michael T. Hendry	Canada	University of Alberta
2	Formation mechanism research, disaster warning, and universal education of	Wei Shan	China	Research Center of Cold Regions Landslide

		Cold Regions Landslide			
3	Landslide Modeling: From Physical to Phenomenological Models	Željko Arbanas, Snježana M. Arbanas	Croatia	Croatian Landslide Group	
4	Community centered landslide disaster risk reduction in changing climate, continuation	Josef STEMBERK	Czech Republic	Institute of Rock Structure and Mechanics Czech Academy of Sciences & Charles University, Faculty of Science	
5	Documentation, Training and Capacity Enhancement on Landslides Risk Reduction and Resilience	Surya Parkash	India	National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Government of India, New Delhi	
6	Internet of Things (IoT) for landslide disaster risk reduction	Maneesha V Ramesh	India	Amrita Vishwa Vidyapeetham, Amritapuri campus	
7	Development of risk reduction strategy and technological innovation for landslide mitigation	Teuku Faisal Fathani	Indonesia	Universitas Gadjah Mada	
8	Development of multidisciplinary and integrated methodologies for mitigating geological risks	Francesca Bozzano	Italy	CERI - Centro di Ricerca Previsione, Prevenzione e Controllo dei Rischi Geologici (Research Centre on Geological risks) – Sapienza Università di Roma	
9	Advanced Technologies for LandSlides (ATLaS)	Nicola Casagli	Italy	UNESCO Chair for the prevention and the sustainable management of geo-hydrological hazards, University of Firenze (UNIFI)	
10	Integrated research on landslide disaster risk	Irasema Alcántara-Ayala	Mexico	Institute of Geography, National Autonomous University of Mexico (UNAM)	
11	Landslides in Weathered Heterogeneous Sedimentary Rock Masses such as Flysch	Matjaž Mikoš	Slovenia	University of Ljubljana, Faculty of Civil and Geodetic Engineering (UL FGG)	
12	International Training Course on Slope Land disaster Reduction	Louis Ge	Chinese Taipei	Department of Civil Engineering, National Taiwan University	

13	National Slope Master Plan, method of certification heritage objects in hazardous landslide sites	Oleksandr Trofymchuk	Ukraine	The Institute of Telecommunication and Global Information Space (ITIGS) of the National Academy of Science of Ukraine (NASU), Research Institute of Building Constructions (RIBC)
14	Developing Model Policy Frameworks, Standards, and Guidelines on Landslide Disaster Reduction	S. S. I. Kodagoda	Sri Lanka	Central Engineering Consultancy Bureau
15	Research on landslide initiation mechanism based on physical model	Katsuo Sasahara & Asiri Karunawardena	Japan & Sri Lanka	The Japan Landslide Society & National Building Research Organisation
16	Bridging Science, Policies, and Partnership for Landslide Risk Management	Hans Guttman	Thailand	Asian Disaster Preparedness Center (ADPC)
17	Central Asia Rockslide Inventory. Compilation, Analysis and Training	Alexander Strom	Russia	JSC "Hydroproject Institute"
18	Harmonization of Landslides Data and National Authorities Capacity Building for Landslide Risk Reduction - continuation	Biljana Abolmasov	Serbia	University of Belgrade, Faculty of Mining and Geology
19	Landslide Susceptibility Map Assessment Base on Climatological Changes Using Geographic Information Systems	Ir. Hj. Zulkifly Bin A. Ghani	Malaysia	Slope Engineering Branch, Public Work Department Malaysia

UNESCO Chair at University of Florence:

- LINKS (Strengthening links between technologies and society for european disaster resilience) a Horizon 2020 funded project (Security).
- Re-HeED (Reframing Heritage Education in Egypt). Erasmus+ 2019 programme. Cooperation for innovation and the exchange of good practices.
- U-Geohaz (Geohazard impact assessment for urban areas), ECHO EU-funded project.
- SARA (Search and rescue aid and surveillance using high egNSS accuracy), a Horizon 2020 funded project.
- CONCERT-EAUX an Interreg /Alcotra project programme to stimulate cooperation between regions in and out of the European Union (EU), funded by the European Regional Development Fund.
- PROTERINA-3Évolution: an Interreg Marittimo-IT FR-Maritime project programme to stimulate cooperation between regions in and out of the European Union (EU),

funded by the European Regional Development Fund.

- The Chair also participates in several regional and national projects, funded by the Italian Ministry of Research and Education (MIUR) as well as by several regional and national governments and agencies.

UNESCO Chair at University of Ljubljana:

- LIQUEFACT: Assessment and mitigation of liquefaction potential across Europe: a holistic approach to protect structures / infrastructures for improved resilience to earthquake-induced liquefaction disasters (2016-2019) HORIZON 2020 project.
- DAREFFORT Danube River Basin Enhanced Flood Forecasting Cooperation (2018 – 2021) INTERREG Danube Transnational Programme.
- LAND4FLOOD: Natural Flood Retention on Private Land (2017–2021) COST Action.
- DAMOCLES: Understanding and modeling compound climate and weather events (2018–2022) COST Action.
- Evaluation of intelligent learning techniques for prediction of hydrological data: useful case studies in China and Slovenia (2018-2020 Bilateral project Slovenia – China).
- Stochastic rainfall models for rainfall erosivity evaluation (2018-2019 Bilateral project Slovenia – Germany).
- Development of a unified method for estimation of benefits of constructional and non-constructional measures for flood risk reduction (2018-2019) National research project.
- Feasibility study for mitigation measures in the landslide area above the Koroška Bela village, NW Slovenia (2019-2020) Applied research project.

Croatian Landslide Group, UNIRI-GF, UNIZG-RGNF:

- Physical Modelling of Landslide Remediation Constructions Behaviour Under Static and Seismic Actions, Croatian Science Foundation-funded project (2018-2022)
- Research of Rockfall Processes and Rockfall Hazard Assessment, University of Rijeka-funded project (2019-2021)
- Methodology Development for Landslide Susceptibility Assessment for Land-Use Planning Based on LiDAR Technology, Croatian Science Foundation-funded project (2020-2024)
- Applied Landslide Research for Development of Risk Mitigation and Prevention Measures, EU-funded project (2020-2023)

Institute of Rock Structure and Mechanics, Czech Academy of Sciences:

- Maintenance of global database of megalandslides on volcanic islands and sharing of the landslide occurrence database for the Czech Republic with the NASA global landslide database.
- Preparation of educational brochure “Responsible land-use planning – landscape and landslides” and an artistic exhibition dedicated to landslide risk perception.
- Development of low-cost sensors for landslide monitoring.
- Long-term landslide risk reduction at high mountain, rural community, Peru.

Charles University:

- Research of GLOFs (Glacial Lake Outburst Floods) with respect to landslides
- Case studies in landslide risk areas
- Precipitation analysis of landslide prone areas

Landslide group in National Central University, Chinese Taipei:

- 2019 Pre-conference workshop during 12th ARC of IAEG

b) Conferences/Meetings

(key conferences and meetings organized by the Chair or to which its Chairholder contributed)

i) Key conferences and workshops hosted by the Chair

2018 ICL-IPL Conference at the Disaster Prevention Research Institute, Kyoto University and the National Kyoto International Center in Kyoto, Japan from 02-04 December 2018.

2019 ICL-IPL Conference at UNESCO Headquarters in Paris, from 16 - 19 September 2019.

Organization of the ICL-IPL Virtual Conference on 02- 06 November 2020 including the Launching Session of Kyoto Landslide Commitment 2020 (05 November 2020) is under progress.

The Fifth World Landslide Forum (WLF5) at the Kyoto International Conference Center, Japan from 02-06 November 2020 has been postponed for one year to 02-06 November 2021.

UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence

- 2018, November 5. Firenze (Italy). Conference “Flood Risk: 7 challenges for 2020, 1) participatory hydrological safety; 2) effective and compensable and flood forecasting; 3) Who pays? 4) planning and management of flood protection in change; 5) do not leave the match in the hands of the mayors; 6) adequacy, availability and national homogeneity of data and methods; 7) sustainability and effectiveness of hydrogeological risk defenses over time”.
- 2019, April 18. Florence (Italy). Seminar: “Applied landslide research in the area of Dinarides and Pannonian Basin in Croatia”. Held by Snježana Mihalić Arbanas - Professor at Faculty of Mining, Geology and Petroleum Engineering University of Zagreb and Željko Arbanas - Professor at Faculty of Civil Engineering University of Rijeka.
- 2019, April 15. Florence (Italy). “Satellite radar monitoring of the deformations of the soil of the Tuscany Region”.
- 2019, May 21. Florence (Italy). Seminar: “The Vajont landslide and dam disaster”. Held by Nicola Casagli - Professor at the UNESCO Chair on the Prevention and Sustainable Management of Geo-Hydrological Hazards of the University of Florence.
- 2019, November 21. Florence (Italy). Seminars: “Flood risk scenarios for cultural heritage: quantifying resilience” by Chiara Arrighi; “Extreme hydrological events in urban river basins: the case study of Santa Croce in Florence” by Enrica Caporali.
- 2019, December 10-12. Luxor-Assuan. 1st Symposium on Sustainable conservation of UNESCO and other heritages sites through proactive geosciences.

UNESCO Chair on Water-related Disaster Risk Reduction at University of Ljubljana:

- World Construction Forum, Ljubljana, Slovenia, April 8 – 11, 2019
- 14th INTERPRAEVENT Congress in Bergen, Norway (postponed from May 2020 to June 2021).

Landslide group in National Central University, Chinese Taipei:

- 2019 Shackleton Project Advisory Panel Meeting and International Symposium on Geohazards and Risk Analysis

UNESCO Chair: Geoenvironmental Disaster Reduction in Shimane University, ICGdR

- UNESCO Chair Palu Workshop on Geoenvironmental Disaster Reduction, Palu, Indonesia, 28 April – 1 May, 2019

ii) Other conferences/organizational activities undertaken by the Chairholder

UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence

- Conference: “2018 IPL Symposium on Landslides”. 03 December 2018 Kyoto University, Uji campus, Kyoto, Japan.
- Conference: “Hon. Giuseppe Zamberletti’s Commemoration day”. Organized with the Venerabile Arciconfraternita della Misericordia di Firenze. Florence, Italy, March 22, 2019.
- Conference: “2019 IPL Symposium on Landslides”. UNESCO headquarters in Paris, France 16 – 19 September 2019.
- Workshop: “Science for Civil Protection: hydrogeological risk”. Florence, Italy, October 17, 2019.

UNESCO WRDRR Chair at University of Ljubljana:

- 4th Regional Symposium on Landslides in the Adriatic-Balkan Region, Sarajevo, Bosnia and Herzegovina, 13 October 2017

North-East Forestry University, Harbin, China:

- Holding “Academic Seminar on Engineering Geology and Environmental Geology in the Permafrost along the Sino-Russian-Mongolian Economic Corridor under the Background of Climate Change” and the “Annual Academic Conference of 2018 on Cold Region Landslides Research Network of International Landslide Association and Global Centre of Excellence in Cold Region Landslide Research” 16-19, Nov. 2018, Harbin China.
- Participated in the "UNESCO Chair 2019 Field School on Geo-environmental Disaster Reduction in Shimane University, Japan" education and training at Shimane University from 14 to 19 March 2019, and taught at the International Academy.
- The Field scientific observation and research station of the Ministry of Education - Geological environment system of permafrost area in Northeast China (FSSE-PFNEC) were established.
- The Provincial Collaborative Innovation Centre - Environment and road construction & maintenance in permafrost area of Northeast China (PCIC-PFER) were established.

Institute of Rock Structure and Mechanics, Czech Academy of Sciences:

- International Conference “State of geomorphological research in 2019”, April 3-5, 2019, with sections dedicated to landslide risk reduction.

Croatian Landslide Group, UNIRI-GF, UNIZG-RGNF:

- 4th Regional Symposium on Landslides in the Adriatic-Balkan Region, Sarajevo, Bosnia and Herzegovina, 23 - 25 October 2019

iii) A selection of conference presentations by the Chairholder and other colleagues

UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence

- Conference: “Participatory evolution in the protection of the territory from natural hazards”. Nice (France), February 13-14, 2019.
- Nicola Casagli: Workshop IAEG “The study and monitoring of landslides: state of the art and new perspectives”. Aosta (Italy), February 21, 2019.
- Filippo Catani: 4th Global Summit of Research Institutes for Disaster Risk Reduction. Kyoto (Japan), March 13-15, 2019.
- Sandro Moretti: Field School on Geoenvironmental Disaster Reduction. Matsue (Japan), March 14- 18, 2019.
- Veronica Tofani: European Geophysical Union (EGU) General Assembly 2019. Vienna (Austria), 7- 12 April 2019.
- Filippo Catani: Conference: “Landslide monitoring and early warning at the basin scale”. Fullerton (USA), May 1, 2019.

- Nicola Casagli: Seminar: “Satellite radar monitoring of the deformations of the soil of the Tuscany Region”. Collesalveti (Italy), June 3, 2019.
- William Frodella: 17th ICGdR International Symposium on Geo-disaster Reduction. Issyk Kul Lake, Kyrgyz Republic, August 20, 2019
- “38th IAHR World Conference”. September 1-6, 2019”, Panama City, Panama.
- Conference: “XI National Conference of Young Researchers in Engineering Geology”. Matera (Italy), September 19-21, 2019.
- Workshop: "Science for Civil protection". Roma (Italy), October 14, 2019.
- Conference: “The use of drones and laser scanners in environmental and geological-engineering applications”. Bari (Italy), October 25, 2019.
- First Brazilian-Italian workshop on landslides prediction, monitoring and warning. São José dos Campos (Brasil), November 19-20 2019.
- European Forum on Disaster Risk Reduction, 21-23 November 2019 Rome, Italy
- Conference: “The Earth Sciences of Leonardo da Vinci. Earth sciences today”. Trento (Italy), November 21, 2019.
- Italy-China Science, Technology & Innovation Week, established by the Italian Ministry of Education, University and Research and the Ministry of Science and Technology of PRC, with the purpose of promoting the internationalization of research and innovation systems between the two countries. Milan (Italy) 4 December 2018: “Awareness to the mitigation of the hydraulic risk through LEGO models”. Beijing and Jinan, China, Seminar J2. Green Urban Development “Water-ecosystems in a city environment”, 26-29 November 2019.
- Seminar: "Analysis and mitigation of geo-hydrological processes in Italy ". Roma (Italy), November 29, 2019.
- Workshop: "The Scientific Evidence: between fiction, reality and utility for justice purposes". Firenze (Italy), December 4, 2019.
- Conference: "Between geology and geophysics 2019". Rovereto (Italy), December 5- 6, 2019.
- “IMEKO TC-4 International Conference on Metrology for Archaeology and Cultural Heritage - MetroArchaeo2019”. Firenze (Italy), December 6, 2019.
- Conference: "Sustainable conservation of UNESCO and other heritage sites through proactive geosciences". Luxor (Egypt), December 10-12, 2019

UNESCO WRDRR Chair at University of Ljubljana:

- Jošt Sodnik: Debris flow hazard assessment - from regional to basin scale, World Construction Forum “Buildings and infrastructure resilience”, April 8 – 11, 2019.
- Matjaž Mikoš: UNESCO Chair on Water-related Disaster Risk Reduction (WRDRR), World Construction Forum “Buildings and infrastructure resilience”, April 8 – 11, 2019.
- Nejc Bezak: The design rainfall issue: impact on the results of the hydraulic modelling, World Construction Forum “Buildings and infrastructure resilience”, April 8 – 11, 2019.
- Dušan Petrovič: Evidence and analysis of the changes in the active rockfall area above Belca village using geodetic methods, 24. Annual Meeting of the Slovenian Association for Geodesy and Geophysics, January 31, 2019.

Landslide group in National Central University, Chinese Taipei:

- Dong, J. J., How Earthquakes Initiated Huge Rockslides? - Insights from Newmark Displacement Analysis and Velocity-Displacement Dependent Strengths along Sliding Planes, 2018/11/14-16 2018 Taiwan-Japan-New Zealand seismic hazard assessment workshop, New Zealand.
- Dong, J. J., T. V. Nguyen, H. H. Hsu, W. B. Cheng, C. C. Su, Y. C. Yeh, J. Y. Lin, S. K. Hsu, Submarine landslide: A case study from Palm Ridge, Southwestern Taiwan offshore, 2019/4/7-12 EGU General Assembly 2019, Vienna, Austria.
- Dong, J. J., Y. C. Chen, H. H. Hsu, Frictional and kinematical characteristics of the Hungtsaiping landslide, Taiwan, 2019/7/28-8/2 AOGS, Singapore.
- Dong, J. J., Predicting river blockage, early identifying the dam forming and rapidly evaluating

the hazards of landslide dam – A review, 2019/824-25 The 2nd Badong International Geohazards Symposium (BIGS2019) -Prevention and Control of Reservoir Geohazards and Ecological Environmental Protection, Hubei, China.

- Dong, J. J., S. J. Wang, M. J. Tsai, A three-dimensional geological model for a groundwater containment area and simulation of groundwater flow, 2019/9/23-27 12th ARC of IAEG, Jeju, South Korea.
- Nguyen, X. X., J. J. Dong, C. W. Yu, T. M. Le, Laboratory measurement of mechanical and hydraulic apertures of smooth aluminum joints under different confining stresses, 2019/9/23-27 12th ARC of IAEG, Jeju, South Korea.
- Lee, Chyi-Tyi, Wang, C.Z. (2019) Stability analysis of tetrahedral rock wedge, 2019 Cross Strait Three Places Engineering Geology Conference, Abstract.
- Lee, Chyi-Tyi (2019) Reconstruction of complete stress tensor from earthquake fault plane solutions and a rational stress constraint model, the 11th Asian Regional Conference (ARC-12) of IAEG, Abstract.
- Lee, Chyi-Tyi (2019) Automated extraction of event-induced landslides by an image change detection method, Geophysical Research Abstracts, 19, EGU2019-7461.
- Lee, Chyi-Tyi (2019) Early estimates of landslides after a major earthquake. E-DREaM, Taiwan.
- Jia-Cian Gao, Lee, Chyi-Tyi (2019) Probabilistic Fault Displacement Hazard Analysis: An Example from a Safety Evaluation Project of the Wushantou Reservoir, Geophysical Research Abstracts, 19, EGU2019-6514.
- Deffontaines, B., Lee, Chyi-Tyi (2019) Active tectonics of the Hengchun Peninsula from UAS and PS-INSAR Interferometric datasets, Geophysical Research Abstracts, 19, EGU2019-14854.
- Chung, C.-C. Li, Z. (2020) . Risk assessment of slope collapse in Neikuihui tribe in Fuxing District, Taoyuan City, The 163rd TCU-ARL Seminar, International Workshop on Data-driven Infrastructure Maintenance and Risk Management, Tokyo, Japan.
- Chung, C.-C., Tran, Van Nhiem. (2020). Improved TDR deformation monitoring integrating centrifuge physical modeling. 2020 Asia Oceania Geosciences Society, 28 Jun.~4 Jul., Sono Belle Vivaldi Park, Hongcheon.
- Chung, C.-C., Wei, S.-K. (2019). Modification of TDR penetrometer for water content profiling in shallow landslide monitoring. 2019 Asia Oceania Geosciences Society, 27 Jul.~2 Aug., Singapore.
- Chih-Chung Chung, Yi-Chien Wu, Wei-Hsian Wang, Zhi-Yu Chen, Ping-Ting Chen, and Sheng-Yu Chuang (2019). Landslide monitoring using TDR and related numeral stability analysis in Mountain Ali, Taiwan. European Geosciences Union General Assembly (EGU), 7–12 April, Vienna, Austria.

c) Interuniversity Exchanges/Partnerships

(principal exchanges/partnerships between the Chair and other institutions including UNESCO Chairs/UNITWIN Networks)

Within 68 ICL full member organizations from 29 countries, and 20 associate members from 11 countries, and 14 supporters from three countries, 43 members are from universities. ICL organized the annual meeting and symposium once or twice in 2018, 2019 and will organize it by zoom on 2-6 November 2020. 56 projects of the International Programme on Landslides (IPL): a programme of ICL for landslide disaster risk reduction are implemented in 19 countries within the ICL full member organizations. Report of ongoing projects and proposals of new projects were presented in the IPL Symposium during the ICL-IPL Conference in 2018, 2019 and will be presented in 2020. Those oral presentations and discussion in the management of ICL and IPL and planning of the Fifth World Landslide Forum are the place for the annual interuniversity exchange.

ICL Adriatic-Balkan Network (ICL ABN) - regional scientific network of landslide scientists. The Network activities include joint activities related to landslide risk reduction with the scientific and

academic institutions from Croatia, Slovenia and Serbia, scientific institutions from Albania and Slovenia, professional association from Bosnia and Herzegovina and local government from Croatia.

UNESCO Chair at University of Florence:

Memorandums of Understanding exchanged with:

1) International non governmental organizations :

- International Consortium on Landslides (ICL) ;
- International Consortium on Geo-disasters Reduction (ICGdR);
- Global Alliance of Disaster Research Institutes (GADRI);
- Joint International Center on Natural Hazards (JIC-Nh) ;
- Copernicus Academy Network

2) Other Chairs and networks :

- UNESCO Chair on Water Resources Management and Culture at the University for Foreigners in Perugia, Italy;
- UNITWIN-UNESCO/KU/ICL Landslides Risk Mitigation for Society and Environment Cooperation Programme at Kyoto University;
- UNESCO FRIEND-Water initiative (Flow Regimes from International Experimental and Network Data), international research program of a worldwide network for analyzing hydrological data;
- UNESCO Chair on Geoenvironmental Disaster Reduction", Shimane University.
- Centre For Sustainable Heritage Conservation (SHeC)

3) National governmental organizations

- Italian Government - Presidency of the Council of Ministers Civil Protection Department (DPC);
- Institute for Environmental Protection and Research (ISPRA);
- National Alpine Cliff and and Speleological Rescue Corp.

Bilateral agreements with other Universities:

- Department of Geoinformation Engineering, Sejong University (South Korea);
- Tongji University, Shanghai (China);
- Charles University (Czech Republic);
- Institute of Cold Regions Science and Engineering of Northeast Forestry University (China);
- Project Center on Natural Disaster Reduction of Shimane University (Japan);
- Universidad Michoacana de San Nicolas De Hidalgo, Morelia (Mexico)
- Fujian University of Technology (China);
- Universidade FUMEC - Fundação Mineira de Educação e Cultura, Belo Horizonte, Minas Gerais (Brasil);
- Universidade de São Paulo (Brasil);
- Hanoi University (Vietnam);
- Polytechnic University of Tirana (Albania);
- Ss Cyrill and Methodious University, Skopje (Macedonia);
- University of Belgrade (Serbia);
- University of Novi Sad (Serbia);
- Ilia State University (Georgia);
- Indian Institute of Technology Indore (India);
- Universidade Estadual Paulista "Julio de Mesquita Filho" – UNESP (Brazil);
- China University of Geosciences, Beijing (China);
- Universidad Autonoma de San Luis Potosì (UASLP) (Mexico);
- Universidad Mayor de San Simón (Bolivia);
- Sibstrin University (Russia);

- China University of Geosciences di Wuhan (China);
- Shimane University (Japan).

UNESCO WRDRR Chair at University of Ljubljana:

Memorandums of Understanding exchanged with:

- University of Calabria, Cosenza, Italy
- ZAHW Zurich University of Applied Sciences, Winterthur, Switzerland

leading to master double-degrees in Water Science & Technology and Environmental Engineering.

50+ ERASMUS+ partner institutions in 20 European countries and in Turkey for international student exchange.

Amrita Vishwa Vidyapeetham:

- SEED (Summer Course in Environmental Engineering for Development - SeeD) & Live in Labs International collaboration: A group of 20 scientists, researchers and students from the University of Trento, Italy and Amrita Vishwa Vidyapeetham, India have undertaken a joint international collaborative project under SEED & Live in Labs to study the multi-hazard in Munnar town after the massive destructive event in 2018. UNESCO Chair Prof: Guido Zolezzi and Prof. Marco Bezzi from Department of Civil and Mechanical engineering, University of Trento visited Amrita accompanying 7 B.Tech students. Dr. Maneesha Vinodini Ramesh, and other landslide experts from Amrita along with six B Tech civil engineering students worked along with the Trento group. The objective of the group was to analyse and assess the risk by integrating field observations, citizen science and modelling for back analysis of multi-hazard in a data-scarce context in Munnar area, Kerala, India. It was a very productive experiential learning scientific trip which brought useful insights from the people's perspective. The approach was proved to be useful especially in such data-scarce study areas.
- Two M.tech students from Geoinformatics and Earth Observations are selected for pursuing their masters level project in Lawrence Berkeley National Laboratory (LBNL) as part of student exchange activities with LBNL.

Landslide group in National Central University, Chinese Taipei:

- University of Transport Technology (UTT)
- Hanoi University of Mining and Geology (HUMG), Hanoi, Vietnam
- Mien Tay Construction University, Vietnam
- Can Tho University, Vietnam
- Department of Plants, Soils and Climate, Utah State University

d) Publications/Multimedia Materials			
<i>(major publications and teaching/learning materials)</i>			
<i>Please tick relevant fields of output and indicate volume of output:</i>		[tick]	[no.]
	Books	<input checked="" type="checkbox"/>	
	Books (edited)	<input type="checkbox"/>	
	Books (chapters)	<input type="checkbox"/>	
	Monographs	<input type="checkbox"/>	
	Research Reports	<input checked="" type="checkbox"/>	
	Journal Articles (refereed)	<input checked="" type="checkbox"/>	
	Conference Proceedings	<input checked="" type="checkbox"/>	
	Occasional Papers	<input type="checkbox"/>	
	Teaching/Learning Materials	<input checked="" type="checkbox"/>	
	Multimedia Materials (CD-Rom)	<input type="checkbox"/>	

	Multimedia Materials (Video)	<input type="checkbox"/>
	Multimedia Materials (Other)	<input type="checkbox"/>
<p>Give details of major publications and materials including full citations.</p> <p>i) Theses</p> <p>Ph. D theses</p> <p><i>ICL headquarters/Kyoto University</i></p> <ul style="list-style-type: none"> • HA Nguyen Duc (2019) A coupled hydrological geotechnical framework for forecasting shallow landslide hazard, Kyoto University, Japan <p><i>University of Florence:</i></p> <ul style="list-style-type: none"> • Teresa Gracchi, “Wireless Sensor Networks for landslide Early Warning Systems”. International Doctorate in Civil and Environmental Engineering (XXXII Cycle), University of Florence: Department of Civil and Environmental Engineering; Department of Earth Sciences. Tutors: Prof. Claudia Madaia and Prof. Nicola Casagli • Mattia Ceccatelli, “MOBIDIC hydrologic model implementation for numerical modelling and management of groundwater flow” International Doctorate in Civil and Environmental Engineering (XXXII Cycle). University of Florence: Department of Civil and Environmental Engineering; Department of Earth Sciences. Tutors: Prof. Fabio Castelli and Prof. Riccardo Fanti • Elena Benedetta Masi, “The root reinforcement in slope stability models: root biomass estimation by means of field and remote sensing data”. International Doctorate in Civil and Environmental Engineering (XXXII Cycle). Department of Civil and Environmental Engineering; Department of Earth Sciences, University of Florence. Tutors: Prof. Enrica Caporali and Prof. Filippo Catani • Laura Pastonchi, “Analysis and monitoring of geo-hazards in UNESCO world heritage sites”. Regional School of Earth Sciences (XXXI Cycle). Department of Earth Sciences, University of Florence. Tutor: Prof. Veronica Tofani • Federico Marini, “True 3d rockfall analysis from high resolution point clouds”. Regional School of Earth Sciences (XXXI Cycle). Department of Earth Sciences, University of Florence. Tutor: Prof. Giovanni Gigli • Matteo Isola. “Resilience strategies for flood risk management: estimation of damage”. International Doctorate in Civil and Environmental Engineering (XXXII Cycle). University of Florence: Department of Civil and Environmental Engineering. Tutor: Prof. Enrica Caporali. • Liang Feng. “Stability prediction and forecasting of slope of open pit mine”. International Doctorate in Civil and Environmental Engineering (XXXII Cycle). University of Florence: Department of Civil and Environmental Engineering. Tutors: Prof. Nicola Casagli and Prof. Grazia Tucci. • Giulio Calvani. “Interactions between river morphodynamics and riparian vegetation”. International Doctorate in Civil and Environmental Engineering (XXXI Cycle). University of Florence: Department of Civil and Environmental Engineering. Tutor: Prof. Luca Solari • Costanza Carbonari, “Vertical sorting in gravel bed rivers”. International Doctorate in Civil and Environmental Engineering (XXXI Cycle). University of Florence: Department of Civil and Environmental Engineering. Tutor: Prof. Luca Solari <p><i>University of Ljubljana:</i></p> <ul style="list-style-type: none"> • Klun Mateja (PhD Thesis Defence March 2020) Analysis of concrete gravity dam conditions using state-of-the-art experimental and numerical methods. University of Ljubljana, Ljubljana, Slovenia. https://repozitorij.uni-lj.si/IzpisGradiva.php?id=114790 Tutor: Prof. Andrej Kryžanowski 		

- Sapač Kladija (4th year PhD candidate): Relationship between hydrological and seasonal conditions in controlling the nutrient flushing dynamics. University of Ljubljana, Ljubljana, Slovenia. Tutor: Prof. Simon Rusjan
- Gafloor Yasser (4th year PhD candidate): Optimization of Early Seepage Detection in Embankments using a distributed temperature system based on fiber optic sensing. University of Ljubljana, Ljubljana, Slovenia. Tutor: Prof. Andrej Kryžanowski
- Radinja Matej (4th year PhD candidate): Automated modelling and design of urban stormwater control measures. University of Ljubljana, Ljubljana, Slovenia. Tutor: Prof. Nataša Atanasova and Sašo Džeroski
- Kuzmanič Tamara (2nd year PhD candidate): Research on morphological changes of rocks in the fluvial erosion and sedimentation cycle. University of Ljubljana, Ljubljana, Slovenia. Tutor: Prof. Matjaž Mikoš
- Jurček Timotej (1st year PhD candidate): Rheological properties of soils. University of Ljubljana, Ljubljana, Slovenia. Tutor: Prof. Matej Maček

Charles University:

- Kroczeck T. – master’s degree (2019) Evaluation of natural hazards from Imja glacial lake, Nepal. MSc Thesis, Faculty of Physical Geography and Geoecology, Charles University, Czech Republic.
- Dlabáčková T. – master’s degree (2019) Geomorphological conditions of debris flows in the central part West Tatra Mts. MSc Thesis, Faculty of Physical Geography and Geoecology, Charles University, Czech Republic.
- Bařka J. – master’s degree (2020) Hazard evaluation from GLOFs in the Cordillera Huayhuash, Peru. MSc Thesis, Faculty of Physical Geography and Geoecology, Charles University, Czech Republic
- Hulec F. - master’s degree (2020) Hydrological and suspended load regime of the Odlezecké landslide dammed Lake. MSc Thesis, Faculty of Physical Geography and Geoecology, Charles University, Czech Republic
- Fiřer P.- bachelor’s degree (2020) Analysis of debris flows in Otrepo region, the Apennines. MSc Thesis, Faculty of Physical Geography and Geoecology, Charles University, Czech Republic

University of Rijeka:

- Josip Peranić (2019) Importance of geotechnical cross-section unsaturated zone for landslide occurrence in flysch deposits. University of Rijeka, Rijeka, Croatia. Adviser: Prof. Źeljko Arbanas
- Sanja Bernat Gazibara (2019) Methodology for landslide mapping using high resolution digital elevation model in the Podsljeme area (City of Zagreb). University of Zagreb, Zagreb, Croatia. Adviser: Prof. Snjeřana Mihalić Arbanas

Shimane University, Japan

- Shuai Zhang (PhD Thesis Defence July 2019). “Spatial distribution analysis and three-dimensional seismic slope stability assessment of coseismic landslides, --an application to the 2018 Eastern Iburi Earthquake, Hokkaido, Japan—” Shimane University, Japan
- Kounghoon Nam (PhD Thesis Defence March 2020). “Deep learning-based susceptibility assessment and prediction of landslides triggered by earthquake and rainfall using autoencoder combined with random forest”, Shimane University, Japan
- Prakash Dhungana (PhD Thesis Defence March 2020). “Hydro-mechanical constraints and premonitory factors of landslide dam failure caused by seepage, Shimane University, Japan
- Ran Li – PhD (PhD Thesis Defence August 2020). “Controlling role of soil and groundwater on landslide triggered by earthquake” , Shimane University, Japan

Master Theses

University of Florence

- Chiara Fucini, “Satellite radar monitoring of soil deformations and landslides in Tuscany”.
- Department of Earth Sciences, University of Florence. Tutor: Silvia Bianchini, Co-tutor: Federico Raspini
- Roberto Montalti, “Quantitative evaluation of conformance to design geometry of open pit excavation works, using high-resolution Lidar data”. Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani
- Giacomo Minissale, “Continuous monitoring of the subsidence in the Pistoia area through satellite radar data”. Department of Earth Sciences, University of Florence. Tutor: Federico Raspini, Co-tutors: Lorenzo Solari and Federica Bardi
- De Blasi Francesca, “Calibration of a hydrological model for the evaluation of solid transport in the pilot basin of the Carrione torrent”. Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani, Co-tutors: dott. Ascanio Rosi and Stefano Menichetti
- Borri Francesco, “Analysis and comparison between rainfall and satellite interferometric data at regional scale for the characterization of landslides”. Department of Earth Sciences, University of Florence. Tutors: Prof. Filippo Catani, Co-tutor: dott. Ascanio Rosi e Lorenzo Solari.
- Medici Camilla, “Study of deep-seated gravitational slope deformations and rock glaciers in Valle d'Aosta by means of satellite radar interferometry”. Department of Earth Sciences, University of Florence. Tutor: Silvia Bianchini, Co-tutor: Dr. Lorenzo Solari
- Donato Petracca, “Characterization of worldwide submarine landslides for risk zoning purposes”. Department of Earth Sciences, University of Florence. Tutor: Filippo Catani.
- Francesco Delli Santi, “Satellite analysis and monitoring of the urban area of Taranto”. Department of Earth Sciences, University of Florence. Tutor: Nicola Casagli. Co-tutor: Vincenzo Simeone.
- Cardi Francesco “Creation of a geodatabase for storing the values of geotechnical parameters from in-situ and laboratory tests”. Candidate: Department of Earth Sciences, University of Florence. Tutor: Samuele Segoni, Co-tutor: Pietro Vannocci
- Francesco Facchini “Analysis of 3D Kinematic mechanisms of slope instability affecting the monastery of Vardzia (Georgia)”. Department of Earth Sciences, University of Florence. Tutor: Prof. Giovanni Gigli, Co-tutor: Dr. William Frodella.
- Beatrice Puglioli, “3D reconstruction of the sliding surface of the Vajont landslide and its implications regarding the trigger kinematics”. Department of Earth Sciences, University of Florence. Tutor: Prof. Giovanni Gigli, Co-tutors: Chiara del Ventisette and Luca Lombardi
- Federico Berlincioni, “Mitigation of the falling rocks risk along a motorway section”. Department of Earth Sciences, University of Florence. Tutor: Prof. Giovanni Gigli, Co-tutor: Dr. Luca Lombardi
- Rachele Franceschini, “Use of satellite interferometric data to monitor slopes in Alpine regions”. Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani, Co-tutor: Dr. Lorenzo Solari
- Emanuele Montini, “Influence of the mass transport in the upper Rhine valley”. Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani
- Maria Grazia Coccioli, “Morphometric analysis and about reactivation of landslides triggered by the 12 May 2008 Wenchuan earthquake”. Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani. Co-tutor: Dr. Veronica Tofani
- Cosimo Martinelli, “Monitoring of the Perarolo di Cadore landslide (BL)”. Department of Earth Sciences, University of Florence. Tutor: Prof. Nicola Casagli, Co-tutor: Antonio Galgaro.
- Lorenzo Paci, “Assessment of the geo-hydrological and hydraulic risk scenarios for the civil protection plan of the Florentine University”. Department of Earth Sciences, University of Florence. Tutor: Prof. Nicola Casagli, Co-tutor: Dr. Tanteri Luca and Ermini Leonardo.

- Antonella Marinelli, “Specific risk assessment for rapid kinematic landslides in the Aosta Valley”. Department of Earth Sciences, University of Florence. Tutor: Prof. Nicola Casagli, Co-tutor: Ascanio Rosi and Matteo Del Soldato.
- Francesco Caleca, “Quantitative assessment of the risk of slow kinematic landslides in the Arno river basin”, Department of Earth Sciences, University of Florence. Tutor: Prof. Filippo Catani, Co-tutor: Veronica Tofani, Samuele Segoni
- Marco Lompi, “Analysis of Flash Flood Events - Hydrological Modeling and Comparison with the Design Hydrographs”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and prof. Fabio Castelli.
- Andrea Ombrato, “Hydrological and hydraulic analysis to support the final design of the Beccarello detention basin at the confluence of Bruna River and Fossa Creek (GR)”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and prof. Fabio Castelli.
- Giuseppe Parravano, “Urban flood hazard modelling in Florence”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and prof. Luca Solari.
- Claudio Petri. “Hydrosedimentological modelling and investigation about the effect of mining on the San Cipriano Reservoir sedimentation”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and eng. Tommaso Pacetti.
- Luca Sichi, “Hydraulic risk analysis of the terminal reach of Ombrone Pistoiese and of the interaction with the bridges of Poggio a Caiano”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and prof. Fabio Castelli.
- Margutti Francesco, “The role of Canale Macinante in the urban drainage system of Florence”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and prof. Fabio Castelli.
- Andrea Carraresi, “Bivariate frequency analysis of floods to assess flood risk and building damage”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and eng. Chiara Arrighi.
- Andrea Fanti. “Hydrological load characterization at local and regional scale for Sustainable Urban Drainage Systems design”. Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and Tommaso Pacetti.
- Simona Cioli, “Analysis of Bisenzio river dynamics to support the design of a fluvial park in Prato municipality” Department of Civil and Environmental Engineering, University of Florence. Tutors: prof. Enrica Caporali and Tommaso Pacetti.
- Andrea Segat, “Messa in sicurezza del sito archeologico di Vanis Kvabebi (Georgia)”, Department of Civil, Chemical, Environmental and Materials Engineering (DICAM), University of Bologna. Tutor: Daniela Boldini, Co-tutor Daniele Spizzichino
- Saverio Mengoni, “Caratterizzazione e analisi dei processi di instabilità delle tombe etrusche nella necropoli dei Monterozzi a Tarquinia”. Department of Civil, Chemical, Environmental and Materials Engineering (DICAM), University of Bologna. Tutor: Daniela Boldini, Co-tutor: Daniele Spizzichino
- Grazia Luna Guido “Caratterizzazione ed analisi di stabilità della parete tufacea del monastero rupestre in Georgia”. Department of Civil, Chemical, Environmental and Materials Engineering (DICAM), University of Bologna. Tutor: Daniela Boldini, Co-tutor Daniele Spizzichino.
- Rocco Silvaggi “Utilizzo di dati satellitari per la valutazione degli effetti di un evento di frana: il caso della frana di Montescaglioso”. Facoltà di ingegneria civile e industriale, Sapienza University, Roma. Tutor: Daniele Spizzichino.
- Lorenzo Casini, “Study on the low-flow conditions of the Arno river in the urban stretch of Florence”. Tutor: Ing. Simona Francalanci, Cotutor: Prof. Enio Paris
- Serena Aniello, “Interaction between river bars and vegetation: laboratory experiments”. Tutor: Prof. Luca Solari. Cotutors: Ingg. Simona Francalanci, Giulio Calvani
- Begnardi Gabriele, “Hydromorphological analysis of the Ombrone Grossetano River and 2D

modelling for evaluating sediment's extraction intervention". Tutors: Ing. S. Francalanci. Cotutors: Prof. M. Rinaldi, Ingg. V. Francalanci, C. Simoncini.

- Artini Giada, "On the effects of vegetation on the hydrodynamics of Arno River at the confluence with Greve River". Tutor: Prof. L. Solari. Cotutors: Ingg. S. Francalanci, Dott.ri E. Stefanini, G. Calvani, L. Innocenti.
- Martelli Guido, "Research of a method for the quantification and classification of microplastics entering the Anconella". Tutor: Ing. Simona Francalanci, Cotutors: Prof. E. Paris, Ing. L. Rossi

North-East Forestry University, Harbin, China

- Kun Qian (2019) Hydrothermal coupling analysis of pre-melting technology of high temperature frozen soil foundation in permafrost regions. North-East Forestry University, Harbin, China.
- Shuanglin Wang (2020) Permafrost degradation characteristics and foundation settlement prediction along Bei-Hei Expressway. NorthEast Forestry University, Harbin, China.

Shimane University, Japan (2Master):

- Atikar Rahman (2019) Slope Stability Analysis of Rainfall-induced Shallow Landslides Making Use of Database in Shimane Prefecture, Japan
- Akinori Iio (2020) Study on mechanism of landslide generation on volcanic fall pyroclastic slopes caused by earthquakes and characteristics of fallen pyroclastic

ii) Publications

ICL headquarters and Kyoto University

- Sassa, K. Thematic issue: Sendai Landslide Partnerships 2015–2025. *Landslides* 17, 2249–2252 (2020). <https://doi.org/10.1007/s10346-020-01493-5>
- Alcántara-Ayala, I., Sassa, K. Contribution of the International Consortium on Landslides to the implementation of the Sendai Framework for Disaster Risk Reduction: engraining to the Science and Technology Roadmap. *Landslides* (2020). <https://doi.org/10.1007/s10346-020-01539-8>
- Sassa, K. The Fifth World Landslide Forum (WLF5) on 2-6 November 2021, Kyoto, Japan. *Landslides* 17, 2005–2011 (2020). <https://doi.org/10.1007/s10346-020-01487-3>
- Sassa, K. Launching Session of the Kyoto Landslide Commitment 2020. *Landslides* 17, 1743–1744 (2020). <https://doi.org/10.1007/s10346-020-01467-7>
- Sassa, K. Progress of the Fifth World Landslide Forum in Kyoto, Japan, November 2020. *Landslides* 17, 495–498 (2020). <https://doi.org/10.1007/s10346-020-01361-2>
- Sassa, K. The Kyoto Landslide Commitment 2020: First Signatories. *Landslides* 16, 2053–2057 (2019). <https://doi.org/10.1007/s10346-019-01295-4>
- Sassa, K. Journal *Landslides*, the International Consortium on Landslides, and the Kyoto Landslide Commitment 2020. *Landslides* 16, 1623–1628 (2019). <https://doi.org/10.1007/s10346-019-01242-3>
- Sassa, K. The Fifth World Landslide Forum and the final draft of the Kyoto 2020 Commitment. *Landslides* 16, 201–211 (2019). <https://doi.org/10.1007/s10346-018-01133-z>
- Do MD, Dang K et al. (2020) Analysis and modeling of a landslide-induced tsunami-like wave across the Truong river in Quang Nam province, Vietnam. *Landslides*, online published.
- Tan, Q., Sassa, K., Dang, K. et al. Estimation of the past and future landslide hazards in the neighboring slopes of the 2016 Aranayake landslide, Sri Lanka. *Landslides* 17, 1727–1738 (2020). <https://doi.org/10.1007/s10346-020-01419-1>

- Dang K, Sassa K, Konagai K, Karunawardena A, R. M. S. Bandara, Hirota K, Tan Q, Nguyen DH (2019) Recent rainfall-induced rapid and long-traveling landslide on 17 May 2016 in Aranayaka, Kagelle District, Sri Lanka. *Landslides*, Volume 16, Issue 1, pp 155-164.
- Dang K, Doan HL, Sassa K, Do MD, Nguyen DH (2020) Hazard assessment of a rainfall-induced deep-seated landslide in Hakha city, Myanmar. *Understanding and Reducing Landslide Disaster Risk*. Springer, Vol. 4 Testing, Modeling and Risk Assessment. In print
- Doan HL, Sassa K, Dang K, Miyagi T (2020) Simulation of Tsunami waves induced by coastal and submarine landslides in Japan. *Understanding and Reducing Landslide Disaster Risk*. Springer, Vol. 1 Sendai Landslide Partnerships and Kyoto Landslide Commitment. In print.
- Doan HL, Sassa K, Dang K, Le HL (2020) Landslide hazard zoning based on the integrated simulation model (LS-Rapid). *Understanding and Reducing Landslide Disaster Risk*. Springer, Vol. 4 Testing, Modeling and Risk Assessment. In print.
- Nguyen DH, Le QH, Sayama T, Sassa K, Takara K, Dang K (2020) An Integrated WebGIS System for Shallow Landslide Hazard Early Warning. *Understanding and Reducing Landslide Disaster Risk*. Springer, Vol. 2 Hazard and vulnerability mapping and zonation. In print.
- Ha ND, Sayama T, Sassa K, Takara K, Uzuoka R, Dang K, Pham TV (2020). A coupled hydrological-geotechnical framework for forecasting shallow landslide hazard—a case study in Halong City, Vietnam. *Landslides*, 17(7), 1619–1634.
- Nian, T., Wu, H., Li, D., Zao, W., Takara, K., Zheng, D (2020). Experimental investigation on the formation process of landslide dams and a criterion of river blockage. *Landslides* (2020). <https://doi.org/10.1007/s10346-020-01494-4>
- Sahare, A., Ueda, K., Uzuoka, R. (2020). Sensitivity and Numerical Analysis Using Strain Space Multiple Mechanism Model for a Liquefiable Sloping Ground. *Geotechnical Special Publication, GSP 318*, 51-59.
- Matsumaru, T., Sato, T., Uzuoka, R. (2019). Liquefaction analysis of unsaturated ground affected by earthquake with long-term strong ground motion duration. 16th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering, ARC 2019.
- Lin, C.H., Hung, C., Weng, M.C., Lin, M.L., Uzuoka, R. (2019). Failure mechanism of a mudstone slope embedded with steep anti-dip layered sandstones: case of the 2016 Yanchao catastrophic landslide in Taiwan. *Landslides*, 16(11), 2233-2245.
- Adapa, G., Takada, Y., Ueda, K., Uzuoka, R. (2019). Dynamic centrifuge model tests on embankment with different upstream conditions. *Japanese Geotechnical Society Special Publication, 7, 2*, 531-540.
- Uzuoka, R., Unno, T., Matsumaru, T., Ueda, K. (2019). Three-phase coupled seismic analyses of unsaturated/saturated grounds. *Japanese Geotechnical Society Special Publication, 7, 2*, 38-45
- Tamaizumi, S., Ueda, K., Uzuoka, R. (2019). Centrifuge study on the effect of fines content on the lateral flow of an inclined ground. *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions- Proceedings of the 7th International Conference on Earthquake Geotechnical Engineering*, 5183-5190.
- Ueda, K., Uzuoka, R., Wada, T. (2019). Uncertainty quantification of the seismic behavior of liquefiable sloping ground. *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions- Proceedings of the 7th International Conference on Earthquake Geotechnical Engineering*, 5385-5392.

UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence

- Areu-Rangel O. S.; Bonasia R.; Di Traglia F.; Del Soldato M.; Casagli N., (2020). Flood susceptibility and sediment transport analysis of Stromboli island after the 3 July 2019 paroxysmal explosion, *SUSTAINABILITY*, 12(8), 1-18
- Arrighi C, Campo L (2019) Effects of digital terrain model uncertainties on high-resolution

urban flood damage assessment. *J Flood Risk Manag* 12:1–12 .
<https://doi.org/10.1111/jfr3.12530>

- Arrighi, C, Masi, M., Iannelli, R. (2018). Flood risk assessment of environmental pollution hotspots. *Environmental Modelling & Software*, vol. 100, p. 1-10, ISSN: 1364-8152, doi: <https://doi.org/10.1016/j.envsoft.2017.11.014>
- Arrighi, C., Pregolato, M., Dawson, R.J., Castelli, F. (2019). Preparedness against mobility disruption by floods. *Science of Total Environment*, 654, 1010-1022.
- Baccani, Guglielmo; Bonechi, Lorenzo; Bonghi, Massimo; Brocchini, Debora; Casagli, Nicola; Ciaranfi, Roberto; Cimmino, Luigi; Ciulli, Vitaliano; D'Alessandro, Raffaello; Del Ventisette, Chiara; Dini, Andrea; Gigli, Giovanni; Gonzi, Sandro; Guideri, Silvia; Lombardi, Luca; Melon, Barbara; Mori, Nicola; Nocentini, Massimiliano; Noli, Pasquale; Saracino, Giulio; Viliiani, Lorenzo, (2019). Muon Radiography of Ancient Mines: The San Silvestro Archaeo-Mining Park (Campiglia Marittima, Tuscany), *UNIVERSE*, 5, 1-10.
- Bandecchi A.E.; Pazzi V.; Morelli S.; Valori L.; Casagli N. (2019), Geo-hydrological and seismic risk awareness at school: Emergency preparedness and risk perception evaluation, *INTERNATIONAL JOURNAL OF DISASTER RISK REDUCTION*, 40, 1-11.
- Banfi A.; Casagli N.; de Nicolao G. (2019), Il legislatore improvvisato. A proposito di due recenti progetti di legge su università e ricerca, *NUOVA SECONDARIA*, 10, 5-10.
- Bianchini S.; Solari L.; Del Soldato M.; Raspini F.; Montalti R.; Ciampalini A.; Casagli N. (2019), Ground Subsidence Susceptibility (GSS) mapping in Grosseto plain (Tuscany, Italy) based on satellite InSAR data using frequency ratio and fuzzy logic, *REMOTE SENSING*, 11(17), 1-27.
- Bicocchi G.; Tofani V.; D'Ambrosio M.; Tacconi-Stefanelli C.; Vannocci P.; Casagli N.; Lavorini G.; Trevisani M.; Catani F. (2019), Geotechnical and hydrological characterization of hillslope deposits for regional landslide prediction modeling, *BULLETIN OF ENGINEERING GEOLOGY AND THE ENVIRONMENT*, 78(7), 4875-4891.
- Boldini, D., Guido, G. L., Margottini, C., & Spizzichino, D. (2018). Stability analysis of a large-volume block in the historical rock-cut city of Vardzia (Georgia). *ROCK MECHANICS AND ROCK ENGINEERING*, 51(1), 341-349.
- Bonechi L.; Baccani G.; Bonghi M.; Brocchini D.; Casagli N.; Ciaranfi R.; Cimmino L.; Ciulli V.; D'Alessandro R.; Del Ventisette C.; D'Errico M.; Dini A.; Gigli G.; Gonzi S.; Guideri S.; Lombardi L.; Mori N.; Nocentini M.; Starodubtsev O.; Pazzi V.; Saracino G.; Strolin P.; Viliiani L., (2020). Multidisciplinary applications of muon radiography using the MIMA detector, *JOURNAL OF INSTRUMENTATION*, 15, 1-11
- Calvani, G.; Francalanci, S.; Solari, L. (2019). A Physical Model for the Uprooting of Flexible Vegetation on River Bars. *Journal of Geophysical Research: Earth Surface*, 124(4), pp. 1018-1034.
- Calvari S.; Di Traglia F.; Ganci G.; Giudicepietro F.; Macedonio G.; Cappello A.; Nolesini T.; Pecora E.; Bilotta G.; Centorrino V.; Corradino C.; Casagli N.; Del Negro C., (2020). Overflows and pyroclastic density currents in March-April 2020 at Stromboli volcano detected by remote sensing and seismic monitoring data, *REMOTE SENSING*, 12(18), 1-26
- Canavesi V.; Segoni S.; Rosi A.; Xiao T.; Nery T.; Catani F.; Casagli N. (2020). Different approaches to use morphometric attributes in landslide susceptibility mapping based on meso-scale spatial units: A case study in Rio de Janeiro (Brazil), *REMOTE SENSING*, 12(11), 1-24
- Carlà T.; Farina P.; Intrieri E.; Ketizmen H.; Casagli N. (2018), Integration of ground-based radar and satellite InSAR data for the analysis of an unexpected slope failure in an open-pit mine, *ENGINEERING GEOLOGY*, 235, 39, 52
- Carlà T.; Intrieri E.; Di Traglia F.; Nolesini T.; Gigli G.; Casagli N. (2018), Reply to discussion on “Guidelines on the use of inverse velocity method as a tool for setting alarm thresholds and forecasting landslides and structure collapses” by F. Bozzano, P. Mazzanti, and S. Moretto, *LANDSLIDES*, 15(7), 1443, 1444
- Carlà T.; Intrieri E.; Raspini F.; Bardi F.; Farina P.; Ferretti A.; Colombo D.; Novali F.; Casagli N. (2019), Perspectives on the prediction of catastrophic slope failures from satellite

InSAR, SCIENTIFIC REPORTS, 9, 1-9.

- Carlà T.; Nolesini T.; Solari L.; Rivolta C.; Dei Cas L.; Casagli N. (2019), Rockfall forecasting and risk management along a major transportation corridor in the Alps through ground-based radar interferometry, *LANDSLIDES*, 16(8), 1425-1435.
- Carlà T.; Tofani V.; Lombardi L.; Raspini F.; Bianchini S.; Bertolo D.; Thuegaz P.; Casagli N. (2019), Combination of GNSS, satellite InSAR, and GBInSAR remote sensing monitoring to improve the understanding of a large landslide in high alpine environment, *GEOMORPHOLOGY*, 335, 62-75.
- Casagli N., 2020. L'applicazione dei metodi e degli strumenti scientifici all'operatività in emergenza, *INGEGNERE ITALIANO*, 378, 56-63
- Casagli N.; Tofani V. (2018). Establishment of ICL Italian network Landslides, 15: 1907. <https://doi.org/10.1007/s10346-018-1053-6>
- Casagli N.; Tofani V. (2019), Department of Earth Sciences, University of Florence, *LANDSLIDES*, 1-5.
- Ciampalini A.; Frodella W.; Margottini C.; Casagli N. (2019), Rapid assessment of geo-hydrological hazards in Antananarivo (Madagascar) historical centre for damage prevention, *GEOMATICS, NATURAL HAZARDS & RISK*, 10(1), 1102-1124.
- Ciampalini A.; Solari L.; Gianecchini R.; Galanti Y.; Moretti S. (2019), Evaluation of subsidence induced by long-lasting buildings load using InSAR technique and geotechnical data: The case study of a Freight Terminal (Tuscany, Italy), *INTERNATIONAL JOURNAL OF APPLIED EARTH OBSERVATION AND GEOINFORMATION*, 82, 1-14.
- Crosetto M.; Solari L.; Mroz M.; Balasis-Levinsen J.; Casagli N.; Frei M.; Oyen A.; Moldestad D.A.; Bateson L.; Guerrieri L.; Comerci V.; Andersen H.S. (2020). The evolution of wide-area DInSAR: From regional and national services to the European ground motion service, *REMOTE SENSING*, 12(12), 1-20
- De Cicco, P. N.; Paris, E.; Ruiz-Villanueva, V.; Solari, L.; Stoffel, M. (2018). 'In-channel wood-related hazards at bridges: A review'. *River Research and Applications*, 34, 617-628, doi:10.1002/rra.3300.
- De Cicco, P.N.; Paris, E.; Solari, L.; Ruiz-Villanueva V., (2020). 'Bridge pier shape influence on wood accumulation: outcomes from flume experiments and numerical modelling'. *J. Flood Risk Management*, 2020.
- Del Soldato M.; Bianchini S.; De Vita P.; Di Martire D.; Tomás R.; Calcaterra D.; Casagli N., (2020). Relation between on-field and InSAR data on landslide-induced damage, In: *Applied Geology*, Springer, Cham, 107-129
- Del Soldato M.; Del Ventisette C.; Raspini F.; Righini G.; Pancioli V.; Moretti S., Ground deformation and associated hazards in NW peloponnese (Greece) (2018), *EUROPEAN JOURNAL OF REMOTE SENSING*, 51(1), 710, 722
- Del Soldato M.; Di Martire D.; Bianchini S.; Tomás R.; De Vita P.; Ramondini M.; Casagli N.; Calcaterra D. (2019), Assessment of landslide-induced damage to structures: the Agnone landslide case study (southern Italy), *BULLETIN OF ENGINEERING GEOLOGY AND THE ENVIRONMENT*, 78(4), 2387-2408.
- Del Soldato M.; Solari L.; Poggi F.; Raspini F.; Tomas R.; Fanti R.; Casagli N. (2019), Landslide-induced damage probability estimation coupling InSAR and field survey data by fragility curves, *REMOTE SENSING*, 11(12), 1-25.
- Del Soldato M.; Solari L.; Raspini F.; Bianchini S.; Ciampalini A.; Montalti R.; Ferretti A.; Pellegrineschi V.; Casagli N. (2019), Monitoring ground instabilities using SAR satellite data: a practical approach, *ISPRS INTERNATIONAL JOURNAL OF GEOINFORMATION*, 8(7), 1-24.
- Di Traglia F.; Ciampalini A.; Pezzo G.; Battaglia M. (2019), Editorial: Synthetic aperture radar and natural hazards: Applications and outlooks, *FRONTIERS IN EARTH SCIENCE*, 7, 1-2.
- Di Traglia F.; Fornaciai A.; Favalli M.; Nolesini T.; Casagli N. (2020). Catching geomorphological response to volcanic activity on steep slope volcanoes using multi-platform remote sensing, *REMOTE SENSING*, 12(3), 1-23

- Errico, A., Lama, G.F.C., Francalanci, S., Chirico G.B., Solari, L., Preti, F. (2019). Flow dynamics and turbulence patterns in a drainage channel colonized by common reed (*Phragmites australis*) under different scenarios of vegetation management. *Ecological Engineering*, 133, pp. 39-52.
- Ezquerro P.; Del Soldato M.; Solari L.; Tomás R.; Raspini F.; Ceccatelli M.; Fernández-Merodo J. A.; Casagli N.; Herrera G., (2020). Vulnerability assessment of buildings due to land subsidence using InSAR data in the ancient historical city of Pistoia (Italy), *SENSORS*, 20(10), 1-23.
- Fan X.; Dufresne A.; Siva Subramanian S.; Strom A.; Hermanns R.; Tacconi Stefanelli C.; Hewitt K.; Yunus A.P.; Dunning S.; Capra L.; Geertsema M.; Miller B.; Casagli N.; Jansen J.D.; Xu Q., (2020). The formation and impact of landslide dams – State of the art, *EARTH-SCIENCE REVIEWS*, 203, 1-28
- Fanti R. (2019), Earth Sciences and STEM initiatives: the Geology Project in the framework of "Piano Lauree Scientifiche", *RENDICONTI ONLINE DELLA SOCIETÀ GEOLOGICA ITALIANA*, 49, 94-98.
- Farolfi G.; Del Soldato M.; Bianchini S.; Casagli N. (2019), A procedure to use GNSS data to calibrate satellite PSI data for the study of subsidence: an example from the north-western Adriatic coast (Italy), *EUROPEAN JOURNAL OF REMOTE SENSING*, 1-10.
- Farolfi G.; Piombino A.; Catani F. (2019), Fusion of GNSS and satellite radar interferometry: Determination of 3D fine-scale map of present-day surface displacements in Italy as expressions of geodynamic processes, *REMOTE SENSING*, 11-
- Feng L.; Pazzi V.; Intrieri E.; Gracchi T.; Gigli G. (2019), Rockfall seismic features analysis based on in situ tests: frequency, amplitude, and duration, *JOURNAL OF MOUNTAIN SCIENCE*, 16(5), 955, 970
- Francalanci, S., Paris E., Solari, L. (2019). On the vulnerability of woody riparian vegetation during flood events. *Environ. Fluid Mech.* doi.org/10.1007/s10652-019-09726-5.
- Francalanci, S.; Lanzoni S.; Solari L.; Papanicolaou A.N. (2020). Equilibrium cross section of river channels with cohesive erodible banks. *Journal of Geophysical Research: Earth Surface*, 125, e2019JF005286. <https://doi.org/10.1029/2019JF005286>.
- Frodella W.; Elashvili M.; Spizzichino D.; Gigli G.; Adikashvili L.; Vacheishvili N.; Kirkitadze G.; Nadaraia A.; Margottini C.; Casagli N. (2020). Combining infrared thermography and UAV digital photogrammetry for the protection and conservation of rupestrian cultural heritage sites in Georgia: A methodological application, *REMOTE SENSING*, 12(5), 1-25
- Frodella W.; Spizzichino D.; Ciampalini A.; Margottini C.; Casagli N., (2020). Hydrography and geomorphology of Antananarivo High City (Madagascar), *JOURNAL OF MAPS*, , 1-12
- Galloway G.; Seminara G.; Blöschl G.; Garcia M.H.; Montanari A.; Solari L. (2020). 'Reducing the flood risk of art cities: the case of Florence'. *J. of Hydraulic Engineering (ASCE)*, doi:10.1061/(ASCE)HY.1943-7900.0001741, 2020.
- Garduño-Monroy, V. H., Macías, J. L., Morelli, S., Figueroa-Soto, A., Ruiz-Figueroa, A., Robles-Camacho, J., Veronica, P. 2020. Landslide impact on the archaeological site of Mitla, Oaxaca. *Geoarchaeology*, 35(5), 644-658. <https://doi.org/10.1002/gea.21790>
- Gracchi T.; Gigli G.; Noël F.; Jaboyedoff M.; Madiari C.; Casagli N. (2019), Optimizing wireless sensor network installations by visibility analysis on 3D point clouds, *ISPRS INTERNATIONAL JOURNAL OF GEO-INFORMATION*, 8(10), 1-18.
- Haubrock, P.; Inghilesi, A.; Mazza, G.; Bondoni, M.; Solari, L.; Tricarico, E. (2019), 'Burrowing activity of *Procambarus clarkii* on levees analysing behaviour and burrow structure'. *Wetlands Ecology and Management*.
- Hobbs S. E.; Guarnieri, Monti Guarnieri A.; Broquetas A.; Calvet J.C.; Casagli N.; Chini M.; Ferretti R.; Nagler T.; Pierdicca N.; Prudhomme C.; Wadge G. (2019), G-CLASS: geosynchronous radar for water cycle science – orbit selection and system design, *THE JOURNAL OF ENGINEERING*, 2019, 7534-7537.
- Intrieri E.; Carla T.; Gigli G. (2019), Forecasting the time of failure of landslides at slope-scale: A literature review, *EARTH-SCIENCE REVIEWS*, 193, 333-349.

- Intrieri E.; Dotta G.; Fontanelli K.; Bianchini C.; Bardi F.; Campatelli F.; Casagli N., (2020). Operational framework for flood risk communication, *INTERNATIONAL JOURNAL OF DISASTER RISK REDUCTION*, 46, 1-9
- Intrieri E.; Frodella W.; Raspini F.; Bardi F.; Tofani V. (2020). Using satellite interferometry to infer landslide sliding surface depth and geometry, *REMOTE SENSING*, vol. 12, pp. 1-26.
- Lama G.F.C; Errico A.; Francalanci S.; Solari L.; Preti F.; Giovanni Battista Chirico G.B., (2020). Evaluation of Flow Resistance Models Based on Field Experiments in a Partly Vegetated Reclamation Channel. *Geosciences* 10(2), 47. <https://doi.org/10.3390/geosciences10020047>.
- Liu S.; Segoni S.; Raspini F.; Yin K.; Zhou C.; Zhang Y.; Casagli N., (2020). Satellite InSAR as a new tool for the verification of landslide engineering remedial works at the regional scale: A case study in the Three Gorges Reservoir area, China, *APPLIED SCIENCES*, 10(18), 1-18
- Liu C.; Shao X.; Wu H.; Li N.; Qu T.; Dotta G.; Huang Y. (2019), Giant landslide displacement analysis using a point cloud set conflict technique: a case in Xishancun landslide, Sichuan, China, *INTERNATIONAL JOURNAL OF REMOTE SENSING*, 40(8), 3247-3266.
- Lu P.; Bai S.; Tofani V.; Casagli N. (2019), Landslides detection through optimized hot spot analysis on persistent scatterers and distributed scatterers, *ISPRS JOURNAL OF PHOTOGRAMMETRY AND REMOTE SENSING*, 156, 147-159.
- Lu P.; Qin Y.; Li Z.; Mondini A.C.; Casagli N. (2019), Landslide mapping from multi-sensor data through improved change detection-based Markov random field, *REMOTE SENSING OF ENVIRONMENT*, 231(15), 1-17.
- Luti T.; Segoni S.; Catani F.; Munafò M.; Casagli N., Integration of remotely sensed soil sealing data in landslide susceptibility mapping, *REMOTE SENSING*, 12(9), 1-19
- Margottini C. (2019). Leonardo Da Vinci and landslides. *LANDSLIDES*.
- Mazzanti, P., Schilirò, L., Martino, S., Antonielli, B., Brizi, E., Brunetti, A., Margottini, C., Scarascia Mugnozza, G. (2018). The contribution of terrestrial laser scanning to the analysis of cliff slope stability in Sugano (Central Italy). *REMOTE SENSING*, 10(9), 1475.
- Meng Q.; Confuorto P.; Peng Y.; Raspini F.; Bianchini S.; Han S.; Liu H.; Casagli N., (2020). Regional recognition and classification of active loess landslides using two-dimensional deformation derived from Sentinel-1 Interferometric Radar data, *REMOTE SENSING*, 12(10), 1-23
- Montalti R.; Solari L.; Bianchini S.; Del Soldato M.; Raspini F.; Casagli N. (2019), A Sentinel-1-based clustering analysis for geo-hazards mitigation at regional scale: a case study in Central Italy, *GEOMATICS, NATURAL HAZARDS & RISK*, 10(1), 2257-2275.
- Morelli S., Pazzi V., Tanteri L., Nocentini M., Lombardi L., Gigli G., Tofani V., Casagli N. 2020. Characterization and geotechnical investigation of a riverbank failure in Florence, Italy, an UNESCO World Heritage Site. *Journal of Geotechnical and Geoenvironmental Engineering*, 146(10), 05020009. [https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0002305](https://doi.org/10.1061/(ASCE)GT.1943-5606.0002305).
- Morelli S.; Del Soldato M.; Bianchini S.; Pazzi V.; Krymbi E.; Shpori E.; Casagli N. (2019), Detection of seasonal inundations by satellite data at Shkoder Urban Area, North Albania for sustainable management, *SUSTAINABILITY*, 11(16), 1-20.
- Morelli S., Uti S., Pazzi V., Castellanza R., Fan X. 2019. Landslides and Geophysical Investigations: Advantages and Limitations. *International Journal of Geophysics*, 2019, 2. <https://doi.org/10.1155/2019/8732830>
- Mucchi L.; Jayousi S.; Martinelli A.; Caputo S.; Intrieri E.; Gigli G.; Gracchi T.; Mugnai F.; Favalli M.; Fornaciai A.; Nannipieri L. (2018), A flexible wireless sensor network based on ultra-wide band technology for ground instability monitoring, *SENSORS*, 18(9), 1, 21
- Pazzi V.; Ceccatelli M.; Ciani L.; Patrizi G.; Guidi G.; Cappuccini L.; Casagli N.; Catelani M., (2020). Analysis of the influence of the GPS errors occurred while collecting electrode coordinates on the electrical resistivity of tumuli, *SENSORS*, 20(10), 1-23
- Pazzi V., Morelli S., Fanti R. 2019. A Review of the Advantages and Limitations of

Geophysical Investigations in Landslide Studies. *International Journal of Geophysics*, 2019, 27. <https://doi.org/10.1155/2019/2983087>

- Pazzi V.; Ceccatelli M.; Gracchi T.; Masi E. B.; Fanti R. (2018), Assessing subsoil void hazards along a road system using H/V measurements, ERTs and IPTs to support local decision makers, *NEAR SURFACE GEOPHYSICS*, 16, 282, 297
- Peruzzi, C.; Castaldi, M.; Francalanci, S.; Solari, L. (2018). Three-dimensional hydraulic characterisation of the Arno River in Florence, *Journal of Flood Risk Management*, p. 1-13, ISSN: 1753-318X, doi: 10.1111/jfr3.12490.
- Pranzini G.; Fanti R.; Fontanelli K.; Di Martino F. (2019), Map of the vulnerability to pollution of the Apuo-Versilia aquifer (Tuscany - Italy), *ACQUE SOTTERRANEE*, AS29, 53-63.
- Raspini F.; Bianchini S.; Ciampalini A.; Del Soldato M.; Montalti R.; Solari L.; Tofani V.; Casagli N. (2019), Persistent Scatterers continuous streaming for landslide monitoring and mapping: the case of the Tuscany region (Italy), *LANDSLIDES*, 16(10), 2033-2044.
- Riquelme A.; Del Soldato M.; Tomas R.; Cano M.; Jorda Bordehore L.; Moretti S. (2019), Digital landform reconstruction using old and recent open access digital aerial photos, *GEOMORPHOLOGY*, 329, 206-223.
- Rosi A.; Canavesi V.; Segoni S.; Dias Nery T.; Catani F.; Casagli N. (2019), Landslides in the mountain region of Rio De Janeiro: A proposal for the semi-automated definition of multiple rainfall thresholds, *GEOSCIENCES*, 9(5), 1-15.
- Rosi A.; Segoni S.; Canavesi V.; Monni A.; Gallucci A.; Casagli N. (2020), Definition of 3D rainfall thresholds to increase operative landslide early warning system performances, *LANDSLIDES*, , 1-13
- Sassa K.; Dang K.; Guzzetti F.; Casagli N.; Tiwari B.; Mikoš M.; Vilimek V.; Bobrowsky P.; Konagai K.; Arbanas Ž.; Mihalić Arbanas S.; Lu P.; Sasahara K.; Alcantara-Ayala I.; Strom A.; Hendry M.; Yamagishi H.; Tofani V.; Cuomo S.; Fathani F.; Klimeš J.; Wang F.; Reichenbach P.; Gokceoglu C.; Higaki D.; Koyama T. (2019), Invited and accepted speakers of the Fifth World Landslide Forum in Kyoto, 2020, *LANDSLIDES*, 16, 431-446.
- Sassa K.; Guzzetti F.; Casagli N.; Tiwari B.; Mikoš M.; Vilimek V.; Bobrowsky P.; Arbanas Ž., (2019). Registered speakers in the Fifth World Landslide Forum, *LANDSLIDES*, 16, 1595-1611.
- Sassa K.; Guzzetti F.; Casagli N.; Tiwari B.; Mikoš M.; Vilimek V.; Bobrowsky P.; Arbanas Ž.; Dang K., (2020). Registered speakers in the Fifth World Landslide Forum (WLF5), *LANDSLIDES*, 17, 725-751
- Schaefer L.N.; Di Traglia F.; Chaussard E.; Lu Z.; Nolesini T.; Casagli N. (2019), Monitoring volcano slope instability with Synthetic Aperture Radar: A review and new data from Pacaya (Guatemala) and Stromboli (Italy) volcanoes, *EARTH-SCIENCE REVIEWS*, 192, 236, 257.
- Segoni S.; L Piciullo L.; SL Gariano S.L. (2018) A review of the recent literature on rainfall thresholds for landslide occurrence. *Landslides*, 1-19.
- Solari L.; Raspini F.; Del Soldato M.; Bianchini S.; Ciampalini A.; Ferrigno F.; Tucci S.; Casagli N. (2018), Satellite radar data for back-analyzing a landslide event: the Ponzano (Central Italy) case study, *LANDSLIDES*, 15(4), 773, 782
- Solari L.; Del Soldato M.; Montalti R.; Bianchini S.; Raspini F.; Thuegaz P.; Bertolo D.; Tofani V.; Casagli N. (2019), A Sentinel-1 based hot-spot analysis: landslide mapping in north-western Italy, *INTERNATIONAL JOURNAL OF REMOTE SENSING*, 40(20), 7898-7921.
- Solari L.; Del Soldato M.; Raspini F.; Barra A.; Bianchini S.; Confuorto P.; Casagli N.; Crosetto M., (2020). Review of satellite interferometry for landslide detection in Italy, *REMOTE SENSING*, 12(8), 1-29
- Suzuki A.; Vettori S.; Giorgi S.; Carretti E.; Di Benedetto F.; Dei L.; Benvenuti M.; Moretti S.; Pecchioni E.; Costagliola P., (2018). Laboratory study of the sulfation of carbonate stones through SWIR hyperspectral investigation, *JOURNAL OF CULTURAL HERITAGE*, 32, 30, 37.

- Tacconi Stefanelli C.; Casagli N.; Catani F., (2020). Landslide damming hazard susceptibility maps: a new GIS-based procedure for risk management, *LANDSLIDES*, 17, 1635-1648
- Tofani V.; Catani F.; Takara K. (2019) , EGU 2019 Sergey Soloviev Medal Lecture, *LANDSLIDES*, 16(8), 1613-1617.
- Tomás R.; Pagán J. I.; Navarro J. A.; Cano M.; Pastor J. L.; Riquelme A.; Cuevas-González M.; Crosetto M.; Barra A.; Monserrat O.; Lopez-Sanchez J. M.; Ramón A.; Ivorra S.; Del Soldato M.; Solari L.; Bianchini S.; Raspini F.; Novali F.; Ferretti A.; Costantini M.; Trillo F.; Herrera G.; Casagli N. (2019), Semi-Automatic identification and pre-screening of geological–geotechnical deformational processes using persistent scatterer interferometry datasets, *REMOTE SENSING*, 11(14), 1-22.
- Xiao T.; Segoni S.; Chen L.; Yin K.; Casagli N. (2020). A step beyond landslide susceptibility maps: a simple method to investigate and explain the different outcomes obtained by different approaches, *LANDSLIDES*, 17, 627-640.
- Zhang H.; Ma C.; Pazzi V.; Zou Y.; Casagli N., (2020). Microseismic signal denoising and separation based on fully convolutional encoder–decoder network, *APPLIED SCIENCES*, 10(18), 1-15
- Zhou C.; Yin K.*; Cao Y.; Intrieri E.; Ahmed B; Catani F. (2018), Displacement prediction of step-like landslide by applying a novel kernel extreme learning machine method, *LANDSLIDES*, 1, 15.

UNESCO Chair on Water-related Disaster Risk Reduction at University of Ljubljana:

- Major Chair's publications are listed on the chair's web page: <https://www.unesco-floods.eu/category/publications/>.
- One can see publications also following the Researchgate profiles of the Chair's permanent staff on the chair's web page: <https://www.unesco-floods.eu/staff/>.
- For the World Centre of Excellence 2017-2020 the publications are listed on the web under:
- <https://www.researchgate.net/project/World-Centre-of-Excellence-in-Landslide-Risk-Reduction-2017-2020-Landslides-in-Weathered-Flysch-from-activation-to-deposition>

Northeast Forestry University:

- Guo Y, Zhang C, Han Q, et al. Seminar on "Engineering and environmental geology in the permafrost region along the Sino-Russian-Mongolian Economic Corridor under the background of climate change" and the Annual Academic Conference of 2018 of ICL-CRLN and the Cold Region Landslide Research of IPL-WCoE held in Harbin(2019) . *Landslides*.
- Guo, Y., Shan, W., Zhang, C. et al. Monitoring of permafrost degradation along the Bei'an-Heihe Expressway in China. *Bull Eng Geol Environ* (2020). <https://doi.org/10.1007/s10064-020-01919-3>

Charles University:

- Bařka J., Vilímek V., Štefanová E., Cook S.J., Emmer A. (2020): Glacial Lake Outburst Floods (GLOFs) in the Cordillera Huayhuash, Peru: Historic Events and Current Susceptibility. *Water*, 12, 2664; doi:10.3390/w12102664
- Vilímek V., Klimeř J., Třito Mamani R.V., Bastante Abuhadba J., Astete Victoria F., Champi Monterroso P.Z., (2020, on-line first): Contribution of the collaborative effort of the Czech WCoE to landslide risk reduction at the Machupicchu, Peru. *Landslides*.
- Vilímek V., Klimeř J., Stemberk J., Burda J., Kycł P., Blahůt J. (2020, in print): Complex geomorphological and engineering geological research of landslides with adverse societal impacts. In: Sassa et al. (eds.) *Sendai Landslide Partnerships and Kyoto Landslide Commitment*, Springer.
- Burda J., Vilímek V. (2020, in print): An interdisciplinary assessment of a coal-mining-induced catastrophic landslide (Czech Republic). In: Vilimek et al. (eds.) *Catastrophic Landslides and Frontiers of Landslide Science*, Springer.

- Kroczek T., Vilímek V. (2020, in print): Rockfall hazard, lake expansion and dead-ice melting assessment: Imja Lake, Nepal. In: Vilímek et al. (eds.) *Catastrophic Landslides and Frontiers of Landslide Science*, Springer.
- Harrison S., Kargel J.S., Huggel C., Reynolds J., Shugar D.H., Betts R.A., Emmer A., Glasser N., Haritashya U.K., Klimeš J., Reinhardt L., Schaub Y., Wiltshire A., Rezmi D., Vilímek V. (2018): Climate change and the global pattern of moraine-dammed glacial lake outburst floods. *Cryosphere*, 12, 1195–1209
- Acquafotta F., Faccini F., Fratianni S., Paliaga G., Sacchini A., Vilimek V. (2019): Increased flash flooding in Genoa Metropolitan Area: a combination of climate changes and soil consumption? *Meteorology and Atmospheric Physics*, 131, 4, 1099-1110. DOI 10.1007/s00703-018-0623-4
- Märker M., Schillaci C., Melis R.T., Kropáček J., Bosino A., Vilímek V., Hochschild V., Sommer C., Altamura F., Mussi M. (2019): Geomorphological processes, forms and features in the surroundings of the Melka Kunture Palaeolithic site, Ethiopia. *Journal of Maps*, 15, 2, 797-806.

Institute of Rock Structure and Mechanics, Czech Academy of Sciences:

- Balek, J., Klimeš, J., Blahut, J., Štroner, M., Urban R., Hartivch, F. (2019): Shallow landslide movements in clay rich rocks detected during subnormal precipitation period. *Acta Geodyn. Geomater.*, 16:409-417.
- Blahůt J, Balek J, Klimeš J, Rowberry MD, Kusák M, Kalina J (2019) A comprehensive global database of giant landslides on volcanic islands. *Landslides*, 16:2045-2052, <https://doi.org/10.1007/s10346-019-01275-8>
- Emmer A, Klimeš J, Hölbling D, Abad L, Draebing D, Skalák P, Štěpánek P, Zahradníček P (2020) Distinct types of landslides in moraines associated with the post-LIA glacier thinning: Observations from the Kinzl Glacier, Huascarán, Peru. *Sci Tot Env*, 139997, <https://doi.org/10.1016/j.scitotenv.2020.139997>.
- Klimeš J, Calvello M, Auflič MJ (2019) Objectives and main results of “Community Participation for Landslide Disaster Risk Reduction” thematic papers. *Landslides*, 16:1745-1746. <https://doi.org/10.1007/s10346-019-01246-z>
- Klimeš, J., Rosario, A.M., Vargas, R., Raška, P., Vicuña, L., Jurt, C. (2019) Community participation in landslide risk reduction: a case history from Central Andes, Peru. *Landslides*, 16:1763-1777
- Klimeš J, Müllerová H, Woitsch J, Bíl M, Křížová B (2020) Century-long history of rural community landslide risk reduction. *International Journal of Disaster Risk Reduction*, 51: 101756. <https://doi.org/10.1016/j.ijdr.2020.101756>

Amrita Vishwa Vidyapeetham:

- Thirugnanam, H., Ramesh, M. V., & Rangan, V. P. (2020). Enhancing the reliability of landslide early warning systems by machine learning. *Landslides*, 1-16.
- Harilal, G. T., Madhu, D., Ramesh, M. V., & Pullarkatt, D. (2019). Towards establishing rainfall thresholds for a real-time landslide early warning system in Sikkim, India. *Landslides*, 16(12), 2395-2408.
- Hemalatha, T., Ramesh, M. V., & Rangan, V. P. (2019). Effective and accelerated forewarning of landslides using wireless sensor networks and machine learning. *IEEE Sensors Journal*, 19(21), 9964-9975.
- Kumar, S., Duttagupta, S., Rangan, V. P., & Ramesh, M. V. (2020). Reliable network connectivity in wireless sensor networks for remote monitoring of landslides. *Wireless Networks*, 26(3), 2137-2152.
- Vezhapparambu, S., Madhusoodanan, M. S., Sharma, T. V., & Ramesh, M. V. (2020). Characterizing satellite-derived soil moisture and its relationship with rainfall over India. *International Journal of Climatology*, 40(3), 1909-1918.
- Guntha, R., Rao, S. N., & Ramesh, M. V. (2020, January). Architectural Considerations for

Building a Robust Crowdsourced Disaster Relief Application. In 2020 International Conference on COMMunication Systems & NETWORKS (COMSNETS) (pp. 638-641). IEEE.

- Simi, S., & Ramesh, M. V. (2019). Intelligence in wireless network routing through reinforcement learning. *International Journal of Communication Networks and Distributed Systems*, 23(2), 231-251.
- Swathi, B., Kumar, M. N., Pullarkatt, D., & Ramesh, M. V. (2017, March). Wireless movement sensor network for real-time monitoring of slope instability. In 2017 International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET) (pp. 1518-1523). IEEE.
- Guntha, R., Rao, S., Benndorf, M., & Haenselmann, T. (2017, August). A Comprehensive Crowd-Sourcing Approach to Urban Flood Management. In International Conference on Ubiquitous Communications and Network Computing (pp. 13-24). Springer, Cham.

Institute of Geography, National Autonomous University of Mexico

- Alcántara-Ayala, I., Sassa, K., Mikoš, M., Han, Q., Rhyner J., Takara, K., Nishikawa, S., Rouhban, B., Briceño, S. (2017) The 4th World Landslide Forum: Landslide research and risk reduction for advancing the culture of living with natural hazards, *International Journal of Disaster Risk Science* 8, 4, 498–502.
- Alcántara Ayala, I., Garnica-Peña, R.J., Murillo-García, F.G., Salazar-Oropeza, M.O., Méndez-Martínez A., Coll-Hurtado, A., (2018) Landslide disaster risk awareness in Mexico: community access to mapping at local scale, *Landslides*, 15, 8, 1691–1704.
- Alcántara-Ayala, I., Oliver-Smith A. (2019), Early Warning Systems: Lost in Translation or Late by Definition? A FORIN Approach, *International Journal of Disaster Risk Science* 10, 317–331.
- Murillo-García, F.G., Steger, S., Alcántara-Ayala, I. (2019), Landslide susceptibility: a statistically-based assessment on a depositional pyroclastic ramp, *Journal of Mountain Science*, 16, 3, 561–580.
- Ruiz-Cortés N.S., Alcántara-Ayala I. (2020). Landslide exposure awareness: a community-based approach towards the engagement of children. *Landslides* 17, 1501–1514.
- Satake, K., McLean, C., Alcántara-Ayala, I. (2018), Understanding Disaster Risk: The Role of Science and Technology, *Journal of Disaster Research*, 13, 7, 1168-1176.
- Wu, C., Cui, P., Li, Y., Alcántara-Ayala, I., Huang C., Yi, S. (2018). Seismogenic fault and topography control on the spatial patterns of landslides triggered by the 2017 Jiuzhaigou earthquake, *Journal of Mountain Science*, 15(4): 793-807.

Landslide group in National Central University from Graduate Institute of Applied Geology, Department of Civil Engineering, Center for Environmental Studies, Chinese Taipei:

- Chung, C.-C., Lin, C.-P. Ngui Y.-J., Lin, W.-C., and Yang, C.-S. (2020) TDR Landslide Monitoring - Improved Guideline from Physical Model Tests, *Engineering Geology*. (Under review)
- Chung, C.-C., Lin, C.-P. (2019) A Comprehensive framework of TDR landslide monitoring and early warning substantiated by field examples, *Engineering Geology*, 262, 105330, doi: 10.1016/j.enggeo.2019.
- Chung, C.-C., Huang, C.-Y., Guan, C.-R., and Jian, J.-H. (2019) Applying OGC Sensor Web Enablement standards to develop a TDR multi-functional measurement model. *Sensors*, 19, 4070; doi:10.3390/s19194070.
- Chung, C.-C., Lin, C.-P., Yan, S.-H. Lin, J.-Y., and Lin, C.-H. (2019) investigation of non-unique relationship between soil electrical conductivity and water content due to drying-wetting rate using TDR, *Engineering Geology*, 252, 54-64.
- Hung, C. C., L. W. Kuo, E. Spagnuolo, C. C. Wang, G. Di Toro, W. J. Wu, J. J. Dong, W. Lin, H. S., Sheu, E. C. Yeh, P. S. Hsieh, 2019/11, Grain fragmentation and frictional melting during initial experimental deformation and implications for seismic slip at shallow depths, *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*, 124 (11), 11150-11169.

- Dong, J. J., L. Tang, W. Gong, S. Utili, G. Crosta, 2019/11, Preface Special Issue on Mega Engineering Projects in Challenging Geological Environments – A Modern Perspective, *ENGINEERING GEOLOGY*, 262 105308.
- Wu, Tso-Ren, Thi-Hong-Nhi Vuong, Jun-Wei Lin, Chia-Ren Chu and Chung-Yue Wang, “Three-Dimensional Numerical Study on the Interaction Between Dam-Break Wave and Cylinder Array,” *Journal of Earthquake and Tsunami*, 12(2), 1840007, May 2018.
- Wu, Tso-Ren, Thi-Hong-Nhi Vuong, Chun-Wei Lin, Chun-Yu Wang, Chia-Ren Chu, “Modeling the Slump-type Landslide Tsunamis part I: Developing a Three-Dimensional Bingham-type Landslide Model,” *Applied Sciences-Basel*, 10(18), 6501, September 2020.
- Vuong, Thi-Hong-Nhi, Tso-Ren Wu*, Chun-Yu Wang, Chia-Ren Chu, “Modeling the Slump-type Landslide Tsunamis part II: Numerical Simulation of Tsunamis with Bingham Landslide Model,” *Applied Sciences-Basel*, September 2020.
- Sung, C.H., Lee, Chyi-Tyi* (2019) Improvement of the quantification of epistemic uncertainty using single-station ground-motion prediction equations. *Bull. Seism. Soc. Am.*, Vol. 109, No.4, pp 1358-1377.
- Deffontaines, B., Chang, K.J., Lee, Chyi-Tyi, Magalhaes, S., & Serries, G. (2019) Neotectonics of the Southern Hengchun Peninsula (Taiwan): Inputs from high resolution UAS Digital Terrain Model, updated geological mapping and PSInSAR techniques. *Tectonophysics*, Vol. 767, 128149.
- Wei, L.W, Huang, C.M., Chen, H., Lee, Chyi-Tyi, Chi, C.C., Chiu, C.L. (2018) Adopting I3–R24 rainfall index and landslide susceptibility on the establishment of early warning model for rainfall-induced shallow landslides, *Natural Hazards & Earth System Sciences*, Vol. 18, issue 6, pp 1717-1733.
- Deffontaines, B., Chang, K.J., Champenois, J., Lin, K.C., Lee, Chyi-Tyi, Chen, R.F., Hu, J.C., Fruneau, B. (2018) Active tectonics of the onshore Hengchun Fault using UAS DTM combined with ALOS PS-InSAR time series (Southern Taiwan), *Natural Hazards and Earth System Sciences*, Vol. 18, issue 3, pp 829-845.

International Consortium on Geo-disaster Reduction (ICGdR)

- Wang FW, Dai Z, Takahashi I, Tanida Y (2020) Soil moisture response to water infiltration in a 1-D slope soil column model. *Engineering Geology*. Volume 267, 105482
- Nam K, Wang FW (2020) An extreme rainfall-induced landslide susceptibility assessment using autoencoder combined with random forest in Shimane Prefecture, Japan. *Geoenvironmental Disasters* 7 (1), 6
- Li R, Wang FW, Zhang S (2020) Controlling role of Ta-d pumice on the coseismic landslides triggered by 2018 Hokkaido Eastern Iburu Earthquake. *Landslides*, 1-18
- Zhang S, Wang FW (2019) Three-dimensional seismic slope stability assessment with the application of Scoops3D and GIS: a case study in Atsuma, Hokkaido. *Geoenvironmental Disasters* 6 (1), 9
- Nam K, Wang FW (2019) The performance of using an autoencoder for prediction and susceptibility assessment of landslides: A case study on landslides triggered by the 2018 Hokkaido Eastern Iburu earthquake. *Geoenvironmental Disasters* 6 (1), 19
- Dhungana P, Wang FW (2019) The relationship among the premonitory factors of landslide dam failure caused by seepage: an experimental study. *Geoenvironmental Disasters* 6 (1), 17
- Guo X, Nian T, Wang FW, Zheng L (2019) Landslides impact reduction effect by using honeycomb-hole submarine pipeline. *Ocean Engineering* 187, 106155
- Dai Z, Wang FW, Cheng Q, Wang Y, Yang HF, Lin Q, Yan K, Liu F, Li K (2019) A giant historical landslide on the eastern margin of the Tibetan Plateau. *Bull Eng Geol Environ*, 78 (3), 2055-2068
- Wang FW (2019) Liquefactions caused by structure collapse and grain crushing of soils in rapid and long runout landslides triggered by earthquakes. *Chinese Journal on Engineering Geology*, 27 (1), 98-107
- Zhang S, Wang FW (2019) Three-dimensional seismic slope stability assessment with the

application of Scoops3D and GIS: a case study in Atsuma, Hokkaido. *Geoenvironmental Disasters*, 6:9

- Guo XS, Nian TK, Wang FW, Zheng L (2019) Landslides impact reduction effect by using honeycomb-hole submarine pipeline. *Ocean Engineering*, 187, 106155
- Zhang S, Li R, Wang FW, Iio A (2019) Characteristics of landslides triggered by the 2018 Hokkaido Eastern Iwate earthquake, Northern Japan. *Landslides*, 16 (9), 1691–1708

Book (editors):

- Sassa K, Mikoš M, Sassa S, Bobrowsky P, Takara K, Dang K eds. (2020, in print) *Understanding & Reducing Landslide Disaster Risk, Vol. 1 Sendai Landslide Partnerships and Kyoto Landslide Commitment*, Springer.
- Guzzetti F, Mihalić Arbanas S, Reichenbach P, Sassa K, Bobrowsky P, Takara K eds. (2020, in print) *Understanding & Reducing Landslide Disaster Risk. Vol. 2 From mapping to hazard and risk zonation*, Springer
- Casagli N, Tofani V, Sassa K, Bobrowsky P, Takara K eds. (2020, in print) *Vol. 3 Monitoring and early warning*
- Tiwari B, Sassa K, Bobrowsky P, Takara K eds. (2020, in print) *Understanding & Reducing Landslide Disaster Risk, Vol. 4 Testing, Modeling and Risk Assessment*, Springer
- Vilímek V, Wang F, Strom A, Sassa K, Bobrowsky P, Takara K eds. (2020, in print): *Understanding & Reducing Landslide Disaster Risk, Vol. 5 Catastrophic Landslides and Frontiers of Landslide Science*, Springer.
- Arbanas Z, Bobrowsky P, Konagai K, Sassa K, Takara K eds. (2020, in print): *Understanding & Reducing Landslide Disaster Risk, Vol. 6 Specific Topics in Landslide Science and Applications*, Springer
- Kuhar, M., Vreča, P., Zupančič, P., Čop, R., Šraj, M., Kralj, P., Ličer, M., Skok, G., Stopar, B., Čarman, M., Triglav Čekada, M. (Eds) 2019, *Research in the field of geodesy and geophysics 2018: Proceedings*. Ljubljana: Fakulteta za gradbeništvo in geodezijo, 155 pp.
- Kuhar, M., Vreča, P., Zupančič, P., Čop, R., Šraj, M., Ličer, M., Skok, G., Stopar, B., Čarman, M., Triglav Čekada, M. (Eds) 2020, *Research in the field of geodesy and geophysics 2019: Proceedings*. Ljubljana: Fakulteta za gradbeništvo in geodezijo, 146 pp.
- Mikoš, M., Bezak, N. (Eds) 2019, *Buildings and infrastructure resilience: WCF2019 book of abstracts with programme*. Ljubljana: Fakulteta za gradbeništvo in geodezijo, 168 pp., ISBN 978-961-6884-60-0.

e) Cooperation with UNESCO Headquarters, Field Offices

ICL was founded by UNESCO-Kyoto University Joint symposium (IGCP-425 Landslide Hazard Assessment and Cultural Heritage) in 2002. IPL (International Programme on Landslides) was founded as a landslide version of IGCP. The Chair of the IPL Global Promotion Committee which manages all of IPL matters, is Qunli Han (the former Director of the Ecological Sciences and Earth Sciences of UNESCO, the current Executive Director of the Integrated Research on Disaster Risk (IRDR). The deputy chair is Giuseppe Arduino (Chief Ecohydrology, Water Quality and Water Education Section Division of Water Sciences, of UNESCO). Soichiro Yasukawa Programme Specialist, Coordinator for Disaster Risk Reduction and Resilience, Section on Earth Sciences and Geo-hazards Risk Reduction, Natural Sciences Sector of UNESCO is a focal point of ICL and attended most of ICL meetings and also attend 2018 ICL-IPL Conference in Kyoto, Japan and 2019 ICL-IPL Conference at UNESCO, Paris.

ISDR-ICL Sendai Partnerships 2015-2025 for global promotion of understanding and reducing landslide disaster risk was proposed by ICL under the strong support from UNESCO during the 3rd World Conference on Disaster Risk Reduction in Sendai, Japan. It was established with signing by

ICL, UNESCO, Kyoto University, UNISDR, WMO, FAO, UNU, ICSU, WFEO, IUGS, IUGG, Government of Japan, Italy and Croatia. UNESCO took major role to create the Sendai Partnerships 2015-2025 and also Dr. Badaoui Rouhban (former Special Advisor to the Assistant Director-General for Sciences of UNESCO) worked as the moderator of the Working Session No.4 “Underlying Risk Factors” of WCDRR and led the adoption of the Sendai Partnerships 2015-2025.

Qunli Han, the former Director of Ecological and Earth Sciences and the current Executive Director of International Research on Disaster Risk (IRDR) has contributed to the International Programme on Landslides (IPL) as the chair of the Global Promotion Committee of the IPL from 2014 to present.

Irina Bokova, Director General of UNESCO attended the Third World Landslide Forum and handed over the certificates to the leaders of World Centre on Excellence in 2014, and wrote a Foreword to the five volumes of books of WLF4 “Advancing Culture of Living with Landslides”.

Vol.1 Sendai Partnerships 2015-2025 is a free online book as well as print book for the Fourth World Landslide Forum. UNESCO headquarters published an article “UNESCO's contribution to the implementation of UNISDR's global initiative and ICL” in it. This book downloaded free of charge from the world. The download of this books is from its publication in May 2017 to 30 September 2020 is 521,000.

Ms Shamila Nair-Bedouelle, Assistant Director-General for Natural Sciences supported the International Journal *Landslides* and also the publication of 6 volumes of full color books for the Fifth World Landslide Forum (WLF5). Her supporting message « Foreword by Shamila Nair-Bedouelle for the Journal of the International Consortium on Landslides” was published in Vol.17-1, 2020. Her Foreword for all six volumes of books « Understanding and Reducing Landslide Disaster Risk » for WLF5 are under press. These books will be published in December 2020.

ICL, UNESCO and others based on UNITWIN Network will organize the Fifth World Landslide Forum in Kyoto, Japan, on 2-6 November 2021. UNESCO will contribute to organize a session in WLF5; Landslide hazard assessment for UNESCO designated sites proposed by Qunli Han and Soichiro Yasukawa. 6 papers of this session will be published in Vol.1 Sendai Partnerships and Kyoto Commitment of Understanding and Reducing Landslide Risk, in December 2020.

UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence

The Chair participates to several national and international missions, in collaboration with UNESCO and official partners, to promote the protection of the World's cultural heritage threatened by geo-hydrological hazards, some of which part of the UNESCO World Heritage list, especially in developing countries: Georgia (Vardzia, Vanis Kvabebi, David Gareja and Uplistsikhe), Iran, Madagascar (Antananarivo), Mexico (Mitla). Hereafter a detailed description of the missions and activities of cultural heritage protection carried out in the last two years:

- November 6-10, 2018. Field and remote surveys for preliminary hazard assessment in the Byzantine rupestrian monasteries of Vardzia, Vanis Kvabebi, David Gareja and Uplistsikhe (Georgia), part of the UNESCO Tentative List, on behalf of the National Agency of Cultural Heritage Protection of Georgia.
- April 11-16th, 2019. Field mission in the UNESCO World Heritage site of Shushtar (Iran), with the coordination of the Director and Representative of UNESCO Teheran Cluster Office, the direct supervision of the Culture Unit of UNESCO Teheran Cluster Office and the Deputy for Cultural Heritage at the Iranian Cultural Heritage Handicrafts and Tourism Organization (ICHHTO). The aim was to give consultancy and technical advice for stabilization of Shushtar Historical Hydraulic System.
- May 30th, 2019: hydraulic consultancy for the Minaret of Jam, part of the UNESCO World

Heritage List.

- May 31st -June 5th, 2019: joint mission with Région Ile-de-France à Madagascar at the High City of Antananarivo (part of the UNESCO Tentative List) for hazard assessment refinement.
- October 26th – 31st, 2019: field mission and monitoring data analysis of the bizantyne rupestrian monasteries of Vardzia; preliminary hazard assessment in the sites of Vanis Kvabebi, David Gareja and Uplitshtike·(Georgia), part of the UNESCO Tentative List, on behalf of the National Agency of Cultural Heritage Protection of Georgia.
- December 12th – 18th, 2019: scientific mission for field surveys and geophysical surveying campaigns, in the UNESCO site of Oaxaca Valley (Mitla, Mexico) in collaboration started in 2019 with the Institute of Earth Sciences investigation (INICIT) of the Michoacan University of S. Nicolás de Hidalgo for the investigation of possible buried structures of the Zapotec civilization.

Northeast Forestry University:

- Holding “Academic Seminar on Engineering Geology and Environmental Geology in the Permafrost Along the Sino-Russian-Mongolian Economic Corridor under the Background of Climate Change” and the “Annual Academic Conference of 2018 on Cold Region Landslides Research Network of International Landslide Association and Global Centre of Excellence in Cold Region Landslide Research”16-19, Nov. 2018, Harbin China.
- Participated in the "UNESCO Chair 2019 Field School on Geo-environmental Disaster Reduction in Shimane University, Japan" education and training at Shimane University from 14 to 19 March 2019, and taught at the International Academy.
- The Field scientific observation and research station of the Ministry of Education - Geological environment system of permafrost area in Northeast China (FSSE-PFNEC) were established.
- The Provincial Collaborative Innovation Centre - Environment and road construction & maintenance in permafrost area of Northeast China (PCIC-PFER) were established.

Amrita Vishwa Vidyapeetham:

- Dr. Maneesha attended and presented Amritas work on landslides in ICL-IPL UNESCO Conference on 16th – 19th September 2019
- Amrita Vishwa Vidyapeetham was one among the ICL members to take part in the first signatories of the Kyoto Landslide Commitment 2020 held on 18 September 2019
- Amrita Vishwa Vidyapeetham also submitted a proposal for conducting “World-Landslide Forum-6” in India

f) Other

(any other activities to report)

UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence: The Earth Sciences Department of the University of Firenze (UNIFI) is the official Centre of Competence of the Italian Civil Protection for Remote Sensing and Geohazards (Directive of the Italian Prime Minister of 27 February 2004; Decree of the Head of the Italian National Civil Protection Department no. 252 of 26 January 2005); this achievement was confirmed four consecutive times: in 2007, 2011, 2013 and 2018 respectively.

Charles University

The geomorphological group from Charles University realised two field research campaigns at the Glacier de la Morte in Swiss Alps during July 2019 and August 2020 for glacier hazards.

Amrita Vishwa Vidyapeetham:

- Landslides Early Warnings during 2019 and 2020: Data from our IoT system for landslide monitoring showed possible conditions for landslides and landslide warnings were issued on August-08-2019, August-06-2020 and August-08-2020. Recently, a regional level landslide warning was issued on August-6-2020 in Munnar, Western Ghats and on August-7-2020, a devastating landslide happened in Pettimudi, Rajamalai which is 20 km away from our deployment site in Munnar. Landslides that had occurred after the warnings in Munnar surroundings, validates the reliability of early warnings from our IoT system.
- Landslides Tracker Mobile Application: The Landslide tracker application allows volunteers to share the location of landslides and rains across the world. The volunteers can upload the location, event date, images, comments and answer questions. The volunteers can also update the information. The application presents the available events to all the users through the map and list interface.
- New research initiatives at Amrita: As part of the new PhD in sustainable development, along with the IoT system for landslide monitoring and Early Warning, research is started in the areas of
 - Regional and catchment scale vulnerability assessment and landslide mapping
 - Decision support system for early warning of landslides
 - Characterization of geological settings contributing to increased landslide susceptibility
 - Hydro-geomechanical models and improved early warning systems

3. Future Plans and Development Prospects:

Outline of action plan for the next biennium and short/medium and long-term development prospects. Please do not hesitate to refer to difficulties that the Chair has experienced
(Not exceeding 300 words)

ICL headquarters.

Members of the UNITWIN Cooperation Programme have made efforts to establish a new long-term and wide-ange global framework to develop the ISDR-ICL Sendai Partnerhips 2015-2025. The full title of this initiative is shown below.

Kyoto 2020 Commitment

for Global Promotion of Understanding and Reducing Landslide Disaster Risk

To the ISDR-ICL Sendai Partnerships 2015-2025, the Sendai Framework for Disaster Risk Reduction 2015-2030 and the 2030 Agenda Sustainable Development Goals

The Sendai Partnership 2015 - 2025 has been very successful to promote the globla landslide risk reduction. Howeve, it will be terminated in 2015. The Parnterhips was singed by 22 orgnaizations from United Nation Organizations, Gobal NGO (ICSU, WFEO, IUGS, IUTT etc) and government organizations. We wish to create a wider network of all types of landslide related organizations including national and small orgnizatins, and private sctors from developping countries as well as developed countries and also a longer framework.

Then, ICL created to ICL associates (20 % membership fee of the ICL full members), namely 200, 400, 600 USD from 2018 and add 100 USD from 2019. ICL publishes fulll color monthly journal « Landslides ». It published more than 2500 pages/year in 2018, 2019. The impact factor of this journal in 2019 was 4.708 released by Thomson Reuters and CiteScore released by Elsevier was 8.02. This value was No.2 rank for 39 journals in the field of Engineering, Geological of the Impact Factors, and No.1 for 189 journals in the field of Geotechnical Engineering and Engineering Geology of the CiteScore.

ICL has created a new category « News/Kyoto Commitment » from March 2018. To this category, all ICL members (full members, associated members and suppoters) and also ICL supporting

organizations can contribute their activity reports and the announcement of news of meeting contributing to Kyoto Landslide Commitment 2020 (KLC2020). Namely this monthly journal is the central platform for global cooperation activities of Kyoto Commitment. All members can receive the Journal free of charge. ICL and UNITWIN network colleagues and IPL Global Promotion Committee will organize World Landslide Forum every three years. At each Forum, members will review the previous activities of KLC2020, and update the priority actions of KLC2020 and the participating members. The content and members of KLC2020 will be updated every three years. But the members will agree with the updated KLC2020, it will be extended another three years. So the ending time is not decided.

20 new organizations have already joined ICL as ICL associates in the period of March 2018 to September 2020. We will create 100 USD associate members for low income countries from 2019 to create this network to smaller organizations in low income countries. KLC2020 is a development prospect of this network.

UNESCO CHAIR: Prevention and Mitigation of Geo-hydrological Hazards at University of Florence

The activities foreseen for the next biennium will be in line with the UN 2030 Agenda for sustainable development and Sustainable Development Goals and with the UNISDR Sendai Framework (2015-2030). In particular, these will include:

- To promote the development of innovative technologies for the prevention and mitigation of geo-hydrological hazards with special emphasis to research and technological development and transfer of knowledge through the organization of stakeholder workshop on geo-hydrological hazards assessment;
- To develop tools and procedures for supporting risk reduction policies and emergency management for the safety of human life through the development of early warning systems and toolkit for disaster response preparedness. Both these objectives will be achieved by managing and developing the current projects and partnerships with scientific institutions, research centers, public administrations and technical stakeholders for research and innovation
- To promote the protection of cultural heritage threatened by geo-hydrological hazards through scientific mission in less developed countries and capacity building through short-term training and practical field training. This activity will include the update, check, management and implementation of the mitigation measures for geo-hydrological hazard reduction in all the Cultural Heritage sites under investigation.
- To promote research and training at international level by hosting more workshops, conferences and seminars, as well as by offering scientific facilities to post-graduated students and visiting researchers through scientific networking and professional training and continuous risk reduction.
- To update, integrate and improve the Landslide Dynamics - ISDR-ICL Landslide Interactive Teaching Tools, based on feedback from users and on experiences obtained during its application.
- To contribute to the networking activity by organizing of the 5th World landslide Forum (WLF5), to be held in Kyoto (Japan), November 2-6, 2021.
- To contribute to the networking activity by organizing of the 6th World landslide Forum (WLF6), to be held in Florence (Italy), November 2023

University of Ljubljana, Ljubljana, Slovenia:

Supporting organization of the 5th World Landslide Forum in Kyoto, Japan in November 2020, and the 5th Regional Symposium on Landslides in the Adriatic-Balkan Region to be held in Rijeka, Croatia in October 2021.

Chair's efforts will also be focused on the Kyoto 2020 Landslide Commitment, contributing to its drafting, acceptance in November 2020 and further implementation and development supporting Sendai Framework for DRR 2015-2030 & UN Agenda 2030 Sustainable Development Goals Nr. 13 & 17, being also related to SDGs 6 & 9.

UNESCO Chair at University of Ljubljana will be further supporting also activities of the UNESCO

IHP Programme:

- Supporting the activities of the Slovenian National Committee for IHP UNESCO (since December 2019, UNESCO WRDRR Chairholder is also chairing the NC IHP UNESCO in Slovenia and is a member of the Slovenian National Commission for UNESCO, and two more members of the UNESCO WRDRR Chair are members of the Slovenian NC IHP UNESCO).
- Slovenia is coordinating national committees for IHP UNESCO in the Danube River Basin and their research efforts, and a workshop is planned to be held in November 2020 in Ljubljana to host national committees of the II. region.
- We will support the work of IHP Bureau and IHP Council in Paris. We will support the IHP project World's Large Rivers Initiative (WLRI).
- We will further on develop and intensify our research activities in experimental basins and cooperation in the Euro-Mediterranean Network of Experimental and Representative Basins (ERB, <https://erb-network.simdif.com/>). We plan to attend the next ERB Conference in Elba, Italy in September 2021.
- UNESCO Chair in WRDRR will contribute to the draft of IXth Programme of IHP UNESCO, and continue to support activities of other UNESCO chairs within the existing network, especially through the ICL community in the field of landslide risk reduction, and through already established cooperation within the international hydrology community.
- We will support the forthcoming 4th Congress on Waters in Slovenia to be held tentatively in 2021.
- We will support water diplomacy efforts of the Slovenian Government and will support the organization of the Slovenian Presidency of EU in the second half of 2021.
- We will proceed with digitalization of existing materials (e.g. reports and proceedings from the Danubian countries) and with production of new materials in electronic form, freely available for the hydrology scientific community. Also supporting publishing of the SCOPUS journal Acta hydrotechnica is a part of these efforts.
- We will further support all kind of national and international University of Ljubljana educational efforts and activities in the field of hydrological sciences and integrated water management, as well as in flood risk management and community (society) capacity building and development through risk dialogue with diverse stakeholders.
- Cooperation on further development and maintenance of the multi-lingual Glossary of hydrology.
- Maintenance and development of the existing Experimental river basins.

Northeast Forestry University:

The Geological environment risk research plan for permafrost degraded areas in Northeast China(GERRP) was launched.Through cooperation with IRDR (Integrated Research on Disaster Risk), as well as IPL-WCoE ICL-CRLN (International Consortium on Landslides – Cold Regions Landslide Network), ICGdR(International Consortium on Geo-disaster Reduction)academic activities and the regular academic symposium, shared a case study on geological and environmental changes in the permafrost region of Northeast China. The main goal of establishing a platform for researchers and decision makers is to work together to find actionable policies to promote research on disaster risk and mitigation in permafrost areas in the context of climate change.

Collaborating with network members to apply for international projects.

Landslide group in National Central University from Graduate Institute of Applied Geology, Department of Civil Engineering, Center for Environmental Studies. Chinese Taipei:

- Will be contributing to the CD session in Fifth World Landslide Forum
- Will be participating in the 2020 ICL-IPL Kyoto Conference to examine CD sessions and other programme of WLF5
- To promote research and training at international level by hosting more workshops, conferences and seminars, as well as by offering scientific facilities to post-graduated students and visiting researchers through scientific networking and professional training and continuous risk reduction.

Appendix:

1) Human Resources

Disaster Prevention Research Institute, Kyoto University (host institution)

Kaoru Takara: Professor, Disaster Prevention Research Institute, Kyoto University

Ryosuke Uzuoka: Professor of the Disaster Prevention Research Institute, Kyoto University.

International Consortium on Landslides (ICL)

ICL consists of ICL headquarters and 68 full member organizations, 20 associate member organizations and 14 supporters, total 102 organizations.

Disaster Prevention Research Institute, Kyoto University and ICL headquarters are regarded as the host institution. 68 full member organizations, 20 ICL associates and 14 supporters are regarded as partner institutions. This report includes ICL headquarters and major member organizations of ICL.

ICL Headquarters (host institution)

Kyoji Sassa: Professor Emeritus, Secretary General (Landslide Dynamics)

Kaoru Takara: Professor-Dean, Kyoto University (Hydrology and Hydrogeology)

Kazuo Konagai: Professor Emeritus, Principal Researcher (Civil Engineering)

Hirota Ochiai: Auditor and researcher (Landslide Monitoring)

Khang Dang: Research Promotion Officer (Landslide Dynamics)

Loi Doan: Researcher (Landslide dynamics)

Kiyoharu Hirota: Information officer (Geology)

Mie Ueda: Secretary for ICL-IPL management

Kumiko Fujita : Secretary for International Projects.

Salvano Briceno: ICL Senior advisor

Badaoui Rouhban: IPL advisor

Satoru Nishikawa: ICL advisor

Zeljko Arbanas: Journal Publication.

Binod Tiwari: Auditor

Ikuo Towhata: ICL-Japan advisor

UNESCO Chair University of Florence (ICL World Centre of Excellence, UNITWIN Partner Institution)

Chair holder: Paolo Canuti

Deputy Chair holder: Nicola Casagli

Deputy Chair holder: Fabio Castelli

Programme Coordinator: Veronica Tofani

Chair Associate: Carlo Alberto Garzonio

Chair Associate: Giorgio Valentino Federici

Chair Associate: Enio Paris

Chair Associate: Sandro Moretti

Chair Associate: Filippo Catani

Chair Associate: Massimo Rinaldi

Chair Associate: Enrica Caporali

Chair Associate: Luca Solari

Chair Associate: Riccardo Fanti

Chair Associate: Giovanni Gigli

Chair Associate: Grazia Tucci

Chair Associate: Chiara Arrighi

Chair Associate: Simona Francalanci

Chair Associate: Silvia Bianchini

Chair Associate: Federico Di Traglia

Chair Associate: William Frodella
 Chair Associate: Emanuele Intrieri
 Chair Associate: Federico Raspini
 Chair Associate: Ascanio Rosi
 Chair Associate: Samuele Segoni
 Chair Associate: Francesco Mugnai
 Chair Associate: Andrea Masiero
 Chair Associate: Valentina Bonora
 Adjunct Professor: Claudio Margottini
 Adjunct Professor: Ignazio Becchi
 Adjunct Professor: Daniele Spizzichino

The Unesco staff is supported by 29 UNESCO Chair Research Assistant and administrative staff members

UNESCO WRDRR Chair University of Ljubljana (ICL World Centre of Excellence, UNITWIN Partner Institution)

Matjaž Mikoš: Professor – Chair holder
 Mitja Brilly: Professor Emeritus (Hydrology)
 Ana Petkovšek: retired Associate Professor (Engineering Geology)
 Janko Logar: Associate Professor (Geotechnical Engineering)
 Mojca Šraj: Associate Professor (Hydrology)
 Marko Komac: Adjunct Professor (Geology)
 Andrej Kryžanowski: Assistant Professor (Hydraulic Engineering)
 Simon Rusjan: Assistant Professor (Hydraulic Engineering)
 Dušan Petrovič: Assistant Professor (Geodetic Engineering)
 Matej Maček: Assistant Professor (Geotechnical Engineering)
 Dejan Grigillo: Assistant Dr. (Geodetic Engineering)
 Nejc Bezak: Assistant Dr. (Hydrology)
 Jasna Smolar: Assistant Dr. (Geotechnical Engineering)
 Mateja Klun: Assistant Dr. (Hydraulic Engineering)
 Katarina Zabret: Researcher Dr. (Hydrology)
 Sašo Petan: Researcher Dr. (Hydrology)
 Jošt Sodnik: Senior Lecturer Dr. (Hydraulic Engineering)
 Kladija Sapač: PhD Student (Hydrology)
 Katarina Sirk: PhD Student (Geotechnical Engineering)
 Timotej Jurček: PhD Student (Geotechnical Engineering)
 Tamara Kuzmanič: PhD Student (Hydraulic Engineering)
 Yasser Ghafoori: PhD Student (Hydraulic Engineering)
 Matej Radinja: PhD Student (Urban Hydrology)

Northeast Forestry University (ICL World Centre of Excellence, UNITWIN Partner Institution)

Wei Shan: Professor Dr. (Hydrogeology and Engineering Geology)
 Ying Guo: Associate Professor Dr. (Soil physics and soil mechanics)
 Yanqiu Xing: Professor Dr. (Remote Sensing Geology)
 Chengcheng Zhang: Engineer Dr. (Geophysics)

Czech Landslide Group (ICL World centre of Excellence, UNITWIN Partner Institution)

Josef Stemberk (Engineering Geology)
 Vít Vilímek (Geomorphology)
 Jana Smolíková (Geomorphology)
 Jan Klimeš (Engineering Geomorphology)
 Jan Blahůt (Engineering Geomorphology)
 Jan Balek (Engineering Geomorphology)

International Consortium on Geo-disaster Reduction (ICGdR)

ICGdR consists of 53 full member organizations, 2 individual members from 13 nations.

ICGdR Organization Members:

1. University of Liege (Representative: Hans-Balder HAVENITH)
2. Faculty of Land Resource Engineering, Kunming University of Science and Technology (Representative: Guangzhu CAO)
3. Department of Geological Engineering, Southwest Jiaotong University (Representative: Qiangong CHENG)
4. School of Architectural Engineering, Beijing University of Technology (Representative: Fuchu DAI)
5. School of Civil Engineering, Southeast University (Representative: Guoliang DAI)
6. College of Water Resources and Hydropower, Sichuan University (Representative: Jianhui DENG)
7. Department of Civil Engineering, National Taiwan University (Representative: Louis GE)
8. State Key Laboratory of Lake Science and Environment, Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences (Representative: Bin HE)
9. Chinese Society for Rock Mechanics and Engineering (CSRME) (Representative: Manchao HE)
10. Institute of Mountain Hazards and Environment, Chinese Academy of Sciences (Representative: Siming HE)
11. School of Civil Engineering, Qingdao University of Technology (Representative: Yong HONG)
12. State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Sciences (Representative: Mingjian HU)
13. China Three Gorges University (Representative: Bolin HUANG)
14. College of Civil Engineering, Tongji University (Representative: Yu HUANG)
15. Three Gorges Research Center for Geo-Hazards, China University of Geosciences (Wuhan), Ministry of Education (Representative: Wenxing JIAN)
16. Institute of Geographic Sciences and Natural Resources Research (IGSNRR), Chinese Academy of Sciences (Representative: Hengxing LAN)
17. School of Geological Engineering and Geomatics, Chang'an University (Representative: Tonglu LI)
18. International Institute for Hydroinformatics and Hazard Resilience (IIHHR), Hebei University of Engineering (Representative: Qinhuo LIANG)
19. College of Surveying and Geo-Informatics, Tongji University (Representative: Chun LIU)
20. Department of Geo-science and Engineering, Experiment Center of Earth Science, Taiyuan University of Technology (Representative: Jianhui LONG)
21. School of Civil and Hydraulic Engineering, Dalian University of Technology (Representative: Tingkai NIAN)
22. Institute of Geology and Geophysics, Chinese Academy of Sciences (Representative: Shengwen QI)
23. Key Laboratory of Earthquake Engineering and Engineering Vibration, Institute of Engineering Mechanics, China Earthquake Administration (Representative: Wenhao QI)
24. Institute of Cold Region Science and Engineering, Northeast Forestry University (Representative: Wei SHAN)
25. China Institute of Disaster Prevention (Representative: Jun SHEN)
26. China Geological Survey (Representative: Jusong SHI)
27. Institute of Geomechanics, Chinese Academy of Geological Sciences (Representative: Ping SUN)
28. Liaoning Investigation Institute of Hydrogeology and Engineering Geology (Representative: Shuheng SUN)
29. School of Earth Sciences and Engineering, Nanjing University (Representative: Chao-Sheng TANG)
30. School of Civil Engineering, Tongji University (Representative: Fawu WANG)

31. School of Civil Engineering and Mechanics, Huazhong University of Science and Technology (Representative: Huabin WANG)
32. Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences (Representative: Qingbai WU)
33. School of Naval Architecture, Ocean and Civil Engineering, Shanghai Jiao Tong University (Representative: Aiguo XING)
34. State Key Laboratory of Geohazard Prevention & Geoenvironment Protection, Chengdu University of Technology (Representative: Qiang XU)
35. Institute of Geology, China Earthquake Administration (Representative: Xiwei XU)
36. School of Construction Engineering, Jilin University (Representative: Yan XU)
37. Institute of Geomechanics, Chinese Academy of Geological Sciences (Representative: Xin YAO)
38. Faculty of Science, Charles University in Prague (Representative: Vít VILIMEK)
39. Laboratoire de Géographie Physique, Meudon / University of Strasbourg (Representative: Patrick WASSMER)
40. Faculty of Engineering, Universitas Gadjah Mada (Representative: Teuku Faisal FATHANI)
41. Department of Civil Engineering, Universitas Muhammadiyah Yogyakarta (Representative: Agus Setyo MUNTOHAR)
42. Department of Earth Sciences, University of Firenze (Representative: Nicola CASAGLI)
43. GEG (Geotechnical Engineering Group), University of Salerno, Italy (Representative: Sabatino CUOMO)
44. Center for Disaster Management Informatics Research, Ehime University (Representative: Netra Prakash BHANDARY)
45. Study Group of Deformation Restraint by Geosynthetics (Representative: Mikio KUBO)
46. School of Environmental Design, Kanazawa University (Representative: Masakatsu MIYAJIMA)
47. Fukui College, National Institute of Technology (Representative: Masaho YOSHIDA)
48. Korea Institute of Geoscience and Mineral Resources (KIGAM) (Representative: Joong Ho SYNN)
49. Institute of Geomechanics and Mining, National Academy Sciences of the Kyrgyz Republic (Representative: Isakbek TORGOEV)
50. Tribhuvan University (Representative: Ranjan Kumar DAHAL)
51. Risk-group, Institute of Earth Sciences, University of Lausanne (Representative: Michel JABOYEDOFF)
52. Winter Associates (Representative: Mike WINTER)
53. Collage of Engineering and Computer Science, California State University Fullerton (Representative: Binod TIWARI)

ICGdR Individual Member

Yonggui CHEN (Tongji University, China)

Nicola TROCCOLI (IN.CO. spa, ingegneri consulenti, Italy)

Landslide group in National Central University from Graduate Institute of Applied Geology, Department of Civil Engineering, Center for Environmental Studies. Chinese Taipei

Ray-Shyan Wu Professor (Water Resource Engineering)
 Yong-Ming Tien Professor (Geotechnical Engineering)
 Jin-Hung Hwang Professor (Geotechnical Engineering)
 Chyi-Tyi Lee Professor (Engineering Geology)
 Jia-Jyun Dong Professor (Engineering Geology)
 Chuen-Fa Ni Professor (Engineering Geology)
 Hsien-Ter Chou Professor (Water Resource Engineering)
 Shu-Kun Hsu Professor (Oceanography)

Chung-Pai Chang (Remote Sensing)
 Tso-Ren Wu Associate Professor (Water Resource Engineering)
 Wen-Chao Huang Professor (Geotechnical Engineering)
 Wen-Yi Hung Associate Professor (Geotechnical Engineering)
 Chih-Chung Chung Associate Professor (Geotechnical Engineering)

Croatian Landslide Group (ICL World Centre of Excellence, UNITWIN Partner Institution)

Željko Arbanas: Professor (Soil Mechanics and Geotechnical Engineering)
 Snježana Mihalić Arbanas: Professor (Engineering Geology)
 Vedran Jagodnik, Assistant Professor (Soil Mechanics and Geotechnical Engineering)
 Sanja Dugonjić Jovančević, Assistant Professor (Soil Mechanics and Geotechnical Engineering)
 Martin Krkač, Assistant Professor (Engineering Geology)
 Martina Vivoda Prodan, Assistant Professor (Soil Mechanics and Geotechnical Engineering)
 Sanja Bernat Gazibara, Postdoc Researcher (Engineering Geology)
 Petra Jagodnik, Lecturer (Engineering Geology)
 Josip Peranić, Postdoc Researcher (Soil Mechanics and Geotechnical Engineering)
 Marin Sečanj, Researcher (Engineering Geology)
 Sara Pajalić, Researcher (Soil Mechanics and Geotechnical Engineering)
 Vedran Damjanović, Researcher (Engineering Geology)
 Marko Sinčić, Researcher (Engineering Geology)

2) Financial Resources

<i>Please tick sources of financial contribution and specify the amount in U.S. dollars</i>	[tick]	Amount (\$)
Host Institution	<input checked="" type="checkbox"/>	___ 285,360 ___
Partner Institution	<input type="checkbox"/>	_____
Government Body	<input checked="" type="checkbox"/>	___ 13,328,608 ___
Other Public Institution/Body (incl. Research Councils)	<input type="checkbox"/>	_____
UNESCO	<input checked="" type="checkbox"/>	___ 100,000 ___
Other UN Agency	<input type="checkbox"/>	_____
IGO	<input checked="" type="checkbox"/>	___ 2,000,000 ___
NGO	<input checked="" type="checkbox"/>	___ 6,000 ___
Industry	<input checked="" type="checkbox"/>	___ 1,832,221 ___
Other Private	<input checked="" type="checkbox"/>	___ 45,083 ___

Give details of financial contributions, material resources and space.

A: Financial resources of ICL headquarters and some of major member organizations within 67 members for the current two years

ICL headquarters

Host Institution (285,360 USD)

Government Body (596,477 USD)

NGO (6,000 USD)

Industry (163,977 USD)

UNESCO Chair University of Florence

Government Body (1,261,437 USD)
National Service of Civil Protection (2,240,694.46 USD)
Industry (468,244.30 USD)
Private companies (45,082.84 USD)

UNESCO Chair University of Ljubljana

Direct financial resources for UNESCO Chair are only available as a part of the UL FGG activities financed by the National UNESCO Commission (part of in total 100,000 USD)

Government Body (UL FGG overall budget for teaching 7 million USD)

European Union (UL FGG for projects 2 million USD)

R&D Projects, mainly through Slovenian Research Agency (UL FGG for research projects and early stage researchers 2 million USD)

Industry (UL FGG roughly 1 million USD)

Northeast Forestry University

Government Body (230,000 USD)

Ministry of Communications of China, Department of Transportation of Heilongjiang Province

Take County People's Government of Heilongjiang Province

The National Natural Science Foundation of China

Industry (200,000 USD)

Northeast Forestry University Engineering Consulting & Design Institute

B1: Material resources and space of the above organizations selected from 65 member organizations.

ICL headquarters

A: Major facilities provided by ICL to UNITWIN Programme are:

1) Undrained dynamic loading ring shear apparatus for large-scale landslides which was developed by UNITWIN programme (400,000 USD) for landslide hazard assessment with support of SATREPS (Science and Technology Research Partnerships for Sustainable Development) programme with Vietnam.

2) Transportable undrained dynamic loading ring shear apparatus for smaller landslides landslides which was developed by UNITWIN programme (350,000 USD) for landslide hazard assessment with support of SATREPS (Science and Technology Research Partnerships for Sustainable Development) programme with Vietnam. It was developed by UNITWIN programme (300,000 USD) for landslide hazard assessment with support of SATREPS (Science and Technology Research Partnerships for Sustainable Development) programme with Croatia.

3) Dynamic geotechnical centrifuge at DPRI, Kyoto University, has been in operation since 1988. The geotechnical research group in Kyoto University has been supporting the centrifuge facility. Every year, from undergraduates, masters and doctoral students to post doctoral researchers from all over the world are working and sharing knowledge in the laboratory.

3) Facilities at UNESCO Chair in Florence:

Laboratories:

- GIS and thematic mapping laboratory
- Remote Sensing laboratory specialized on SAR interferometry, optical and hyperspectral remote sensing
- Rock and Soil mechanics laboratory

Equipment:

- GBInSAR monitoring systems
- UAV (Unmanned Aerial Vehicle, SATURN)
- Compact submarine remotely controlled (NEMO-ROV)
- Rock and soil mechanics field and laboratory equipment

- Advanced geotechnical and hydrogeological modelling software
- GPS and topographical survey instrumentation
- 3D laser scanner
- Access to real-time meteorological services
- Fieldspec spectroradiometer
- Infrared thermal Camera and UAV sensor
- Robotized total stations
- Electrical resistivity, electromagnetic and seismic surveying instrumentation
- Portable laser scanner

UAV Ground Penetrating Radar (GPR)

4) Facilities at Institute of Cold Regions Science and Engineering(ICRSE) in Northeast Forestry University, China: ICRSE has two parts, ICRSE research center(ICRSE-RC) and ICRSE field observation stations(ICRSE-FOS).The facilities in ICRSE-RC mainly are low-temperature laboratory(20m²),automatic monitoring systems of soil temperature and moisture, triaxial and consolidation instruments and other indoor test equipment, ground penetrating radar, high-density electrical instrument, small rig, light touch detector, unmanned aerial vehicles. The facilities in ICRSE-R are automatic weather stations, automatic monitoring and transmission systems of soil temperature and moisture.

B2: Space provided to UNITWIN Programme.

Spaces at UNITWIN Headquarters in Kyoto, Japan

- 1) UNITWIN Headquarters Building which was jointly constructed by ICL and Kyoto University in the Kyoto University Uji campus and donated to Kyoto University in 2004. It has three rooms, a meeting rooms for 30 persons, a IPL research room for 5 persons, and a joint research and the editorial room for the journal *Landslides*.
- 2) UNITWIN Laboratory which is located in Kyoto University Main Campus, Kyoto Japan. The main facilities are two undrained dynamic loading ring shear apparatuses. All students and trainees from Vietnam, China, Indonesia, Pakistan, Croatia and others as well as Japan under the UNITWIN programme have implemented landslide experiments and writing thesis for Doctors and Masters in Kyoto University and other network universities.
- 3) ICL headquarters which is located in a side of the Kyoto University North campus. A room for UNITWIN Coordinator from ICL and the research promotion office and two secretaries who promote and manage the International Programme on Landslides, and a meeting room for 20 persons.
- 4) A new SATREPS Project from 2019-2025 has launched for the development of early warning technology of rain-induced long-travelling landslides (RLL) in Sri Lanka. A new ICL-SATREPS (2 stories building which is being reformed from a private house for a labo, a research room and a meeting room) will be opened from 14 December 2020 in 90 m apart from ICL headquarters.

Spaces at UNESCO Chair in Florence:

- 1) UNESCO Chair Headquarters Building in the University of Florence Campus of Arcetri with offices for 25 researchers and meeting room for 20 persons
- 2) Civil Protection Laboratories in the University of Florence Campus of Arcetri with 400 sqm of labs and a conference room for 40 persons
- 3) Engineering Geology Group in the University of Florence main Campus of Arcetri with offices and labs for 25 researchers

Spaces at UNESCO Chair in Ljubljana: 1) UNESCO Chair is hosted by the Faculty of Civil and Geodetic Engineering of the University of Ljubljana (UL FGG) – the Chair is in the building of the UL FGG Department of Environmental Civil Engineering at Hajdrihova 28 in Ljubljana – the main UL FGG building is at Jamova c. 2, Ljubljana. 2) UNESCO Chair also uses experimental river basins around Slovenia for applied hydrology research, established by the Chair of Hydrology and Hydraulic Engineering at UL FGG and plenty of field hydrologic and hydraulic equipment, as well as hydraulic

and geotechnical (soil mechanics) laboratory available at the UL FGG, and its computer facilities. 3) Furthermore, remote sensing equipment such as TLS or UAV from the UL FGG Department of Geodesy is also available for the UNESCO Chair. 4) The Research Institute on Geo- and Hydro Threats at UL FGG established a Laboratory on Aggregates that is available to UNESCO Chair for research purposes.

Spaces at Institute of Cold Regions Science and Engineering in Northeast Forestry University, China: ICRSE has two parts, ICRSE research center (ICRSE-RC) has laboratories and conference rooms, a total of 400 m². Another is ICRSE field observation stations.

End of the Form