MEGE 2018

会议手册

第五届强震地质灾害及其后效应国际研讨会

2018年5月11日–16日 | 中国成都

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MEGE 2018

会议手册

第五届强震地质灾害及其后效应国际研讨会

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纪念 2008 年汶川大地震十周年

目录

会议简介

十年前，四川省汶川县发生了一场灾难性的地震（即 5.12 大地震），造成近 9 万人丧生，对当地居民和经济造成了严重损失。此次地震在大范围内触发了数万处同震地质灾害。震后几年，暴雨又多次触发了大量山体滑坡和泥石流灾害。为减轻地震的长期灾害链效应，一系列地质灾害危险性评估和风险管控措施得以实施。然而，10 年来，汶川地区仍然受到各种震后地质灾害的威胁。这些灾害的时空演化规律提升了国内外学者对地震地质灾害长期灾害链效应的认识和关注。

近年来，全球范围内的气候变化、环境破坏和人口爆炸性增长，进一步加剧了地质灾害的发生频率及其影响。因此，国内外相关研究人员、工程师和决策者，都迫切需要一次关于地质灾害机理和减灾技术方面最新研究进展的交流机会。一直以来，成都理工大学地质灾害防治与地质环境保护国家重点实验室都积极举办相关论坛活动，为此类交流提供平台。为了纪念地震中的遇难同胞，到目前为止，我们已成功举办了四次国际性会议：“2009 国际工程地质与环境协会年会（IAEG）暨第七届亚洲工程地质会议”、“2011 汶川地震三周年纪念：地震诱发地质灾害与减灾国际研讨会”、“2013 纪念汶川地震五周年国际学术研讨会：强震区地质灾害风险与长期效应国际研讨会”、“2015 第四届强震地质灾害及其后效应国际研讨会”。基于这些经验与其带来的社会效益，在汶川地震十周年之际，成都理工大学地质灾害防治与地质环境保护国家重点实验室将于 2018 年 5 月举办“第五届强震地质灾害及其后效应国际研讨会”，以纪念汶川地震中的遇难者。本次大会旨在为各国专家与学者提供一个展示与交流的机会，以加强对强震区地质灾害的发生及其后效应的研究与交流。

主要议题

MEGE 2018 研讨会将集中讨论如何提高强震区城镇抵御灾难性地表运动过程和地质灾害的能力，包括：

1. 同震滑坡与震后泥石流的发生和演化规律最新进展；
2. 滑坡与泥石流灾害的起动与长期演化机制；
3. 震后地质灾害监测预警与防治措施设计研究；
4. 地震重灾区地质灾害易发性、危险性和风险评价及其在灾后重建和土地利用规划中的应用；
5. 地震滑坡风险的抵御能力；
6. 强震区地质灾害风险与工程建设。

会议语言

大会官方语言为英文，所有报告及摘要均为英文，现场不设翻译。

主办单位

地质灾害防治与地质环境保护国家重点实验室
中国岩石力学与工程学会

承办、协办单位

成都理工大学

ENGEO 国际工程地质与环境协会(IAEG)中国国家小组

地质灾害减灾国际联合会

地质灾害协同创新中心

国际大滑坡协会

香港化学、生物与环境工程学会

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北京博科测试系统股份有限公司

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The Wenchuan Earthquake Chain of Geohazards: A Decade of Research a nd Challenges

Mauri McSaveney

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An Update on the Hot Topic of Long-Runout Rock Avalanches

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Initiation Mechanism and Risk Assessment of Flash Flood and Debris Flow Disaster

Micheal Jaboyedoff
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How to Assess Large Landslide Hazard and the Importance of Their Indirect Induced Hazard

王思敬
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Self-Restoration of Nature after a Major Disaster or Human Disturbance

Toshi Shimamoto
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Chengdu Experimental System for Comprehensive Landslide Studies: Research Plans and Constitutions of Apparatuses

Giovanni Crosta
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Analysis of Controlling Factors on Co-Seismic Landslide Size

殷跃平
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The June 2017 Maoxian Landslide: Geological Disaster in an Earthquake Area After the Wenchuan Ms 8.0 Earthquake

Steven G. Evans
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Landslide Disasters caused by Earthquakes

Ikuo Towhata
东京大学，日本

Long-term Instability of Slopes along Major Seismic Faults

Joshua West
南加州大学，美国

Towards Building a Landslide Sediment Budget for the Min Jiang Basin following the Wenchuan Earthquake: Grain Size and Reservoir Sedimentation Constraints

William Murphy
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The Role of Event Sequencing in Understanding Large Scale Rock Slope Failure during Strong Earthquakes

Niels Hovius
GFZ 德国地球科学研究中心，德国

Elevated Landslide Rates After Earthquakes: Coupling Geomorphological and Geophysical Data to Constrain Rock Damage and Healing

Cees van Westen
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Where to Build-Back-Better? Analyzing Changing Risk for Post-disaster Reconstruction Planning"

Masahiro Chigira
京都大学，日本

Landslides Induced by the 2016 Kumamoto Earthquake and Its Application to Future Earthquake-Induced Landslides

David Frost
佐治亚理工学院，美国

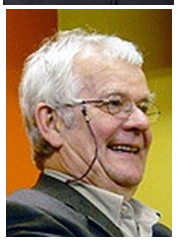
Infrastructure Failure: Addressing Resilience and Sustainability during Reconstruction

Filippo Catani
弗洛伦萨大学，意大利

Susceptibility and Magnitude Assessment for Landslides Driving Factors and Scaling Issues in Different Environments

Oliver Korup
波茨坦大学，德国

Ongoing River Response to Medieval Earthquakes, Central Nepal Himalaya



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Pore Pressure Evolution in Bed Material by Overrunning Debris Flows; Experiments and Modelling

Hans-Balder Havenith
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Seismic VS. Climatic Origin of Large Rockslides

Vincenzo Del Gaudio
巴里大学，意大利

Drawing Knowledge from Ambient Noise: Challenges for Ground Dynamic Response Investigations

张利民
香港科技大学，中国香港

10-Year Evolution of Geohazards in the Epicentral Area of the Wenchuan Earthquake

李锡堤
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A Review and Perspectives on the Methodology of Landslide Hazard Analysis

董家钧
台湾中央大学，中国台湾

Apparent Steady-State Friction Coefficient of Kaolin Clay under Different Slip Rates and Drainage Conditions

王功辉
京都大学，日本

Estimation of Ground Motion for Slope Instability during Earthquake and Experimental Validation

Kerry McSaveney
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Beyond the Thin Blue Line – Community Input into Readiness and Response

Simon Cox
GNS Science，新西兰

Earthquake-induced Fluid Pressure Changes and the Hydrological Response in Landslides

Tristram Hales
卡迪夫大学，英国

How do We Develop Resilience to Post-Earthquake Landsliding?

Thomas Streil
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Gas Geochemical Precursors and Chance for the Forecast of Earthquakes and Volcanic Eruption

Alexander Strom
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Prehistoric Co-Seismic Rockslides: Criteria of Identification Illustrated by Central Asian Case Studies

陈光齐
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Simulation of Earthquake Ground Motions

唐春安
大连理工大学，中国

Spalling in Extreme Ground Motion and Evidence from the 2008 Wenchuan Earthquake

孟兴民
兰州大学，中国

Seismic Loess Landslides and Their Implications for Land Utilization in North-western China

石振明
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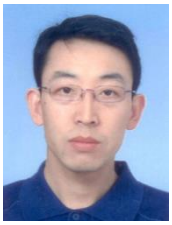
Stability Analysis and Evaluation of Landslide Dams



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Dynamic Behavior of Dip Bedded Rock Slopes with Large Shaking Table Tests

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The Catastrophic Debris Flow Hazards and Mitigation in the Wenchuan Earthquake Area

范宣梅
地质灾害防治与地质环境保护国家重点实验室，中国

Evolution of Geohazards and Consequent Risk after the 2008 Wenchuan Earthquake

日程概要：

2018 年 5 月 11 日	
10:00 - 18:00	注册报到 （怡东酒店大厅）
18:00 - 20:30	欢迎晚宴
2018 年 5 月 12 日	
8:30 - 9:10	开幕式
9:10 - 9:30	集体照
9:30 - 12:45	主旨报告
12:50 - 13:50	午餐
13:50 - 16:10	邀请报告
16:30 - 18:30	分组报告 1 分组报告 2 分组报告 3
18:50 - 20:30	晚宴
2018 年 5 月 13 日	
9:00 - 12:30	主旨报告
12:30 - 13:30	午餐
13:30 - 15:30	邀请报告
15:50 - 17:50	分组报告 4 分组报告 5 分组报告 6
18:30 - 20:00	晚餐
18:30 - 22:00	iRALL 会议，晚餐
2018 年 5 月 14 日	
9:00 - 12:30	主旨报告
12:30 - 13:30	午餐
13:30 - 16:00	邀请报告
16:20 - 17:50	集体讨论会
17:50 - 18:00	闭幕式
18:30 - 19:30	晚餐
2018 年 5 月 15 日-16 日	
两天	野外考察

详细日程：

May 11, 2018		Venue
10:00 - 18:00	Symposium sign-in	Chengdu Eastar Hotel Lobby
18:00 - 20:30	Ice-break Dinner	Chengdu Eastar Hotel

May 12, 2018				Venue
8:00 - 18:00		Symposium sign-in		Auditorium of SKLGP
8:30 - 9:10		Opening Ceremony		Auditorium of SKLGP
9:10 - 9:30		Group photo		Outside of Auditorium of SKLGP
Keynote Presentations, Opening session Chairs: Niek Rengers, Niels Hovius				
Time	Name	Affiliation	Title	Venue
9:30 -10:00	Runqiu Huang	Ministry of Environmental Protection of the PRC, China & SKLGP,China	The Wenchuan Earthquake Chain of Geohazards: A Decade of Research and Challenges	Auditorium of SKLGP
10:00- 10:30	Peng Cui	Institute of Mountain Hazards and Environment,CAS,China	Initiation Mechanism and Risk Assessment of Flash Flood and Debris Flow Disaster	Auditorium of SKLGP
10:30 - 11:00	Yueping Yin	China Institute of Geo-Environment Monitoring, China	The June 2017 Maoxian Landslide: Geological Disaster in an Earthquake Area After the Wenchuan Ms 8.0 Earthquake	Auditorium of SKLGP
11:00-11:15		Coffee Break		Outside of Auditorium of SKLGP
Keynote Presentations: Factors controlling co-seismic and post-seismic landsliding Chairs: Mauri McSaveney, Qiang Xu				
Time	Name	Affiliation	Title	Venue
11:15 - 11:45	Niels Hovius	GFZ German Research Center for Geosciences, Germany	Elevated Landslide Rates After Earthquakes: Coupling Geomorphological and Geophysical Data to Constrain Rock Damage and Healing	Auditorium of SKLGP
11:45 - 12:15	Giovanni Crosta	Universit à degli Studi di Milano-Bicocca, Italy	Analysis of Controlling Factors on Co-Seismic Landslide Size	Auditorium of SKLGP

12:15 - 12:45	Masahiro Chigira	Kyoto University, Japan	Landslides Induced by the 2016 Kumamoto Earthquake and Its Application to Future Earthquake-Induced Landslides	Auditorium of SKLGP
12:50 - 13:50		Lunch		Xiangzhang Dinning Hall (3rd Floor)
Invited Presentations: Sedimentary process related to earthquke events Chairs: Oliver Korup, Yu Huang				
Time	Name	Affiliation	Title	Venue
13:50 - 14:10	Joshua West	University of Southern California, USA	Towards Building a Landslide Sediment Budget for the Min Jiang Basin following the Wenchuan Earthquake: Grain Size and Reservoir Sedimentation Constraints	Auditorium of SKLGP
14:10 - 14:30	Sijing Wang	Institute of Geology and Geophysics, CAS, China	Self-Restoration of Nature after a Major Disaster or Human Disturbance	Auditorium of SKLGP
14:30 - 14:50	Limin Zhang	Hongkong University of Science and Technology,Hongkong, China	10-Year Evolution of Geohazards in the Epicentral Area of the Wenchuan Earthquake	Auditorium of SKLGP
14:50 - 15:10	Chuan Tang	SKLGP, China	The Catastrophic Debris Flow Hazards and Mitigation in the Wenchuan Earthquake Area	Auditorium of SKLGP
15:10 - 15:30	Theo van Asch	Utrecht University, the Netherlands	Pore Pressure Evolution in Bed Material by Overrunning Debris Flows; Experiments and Modelling	Auditorium of SKLGP
15:30 - 15:50	Guangqi Chen	Kyushu University, Japan	Simulation of Earthquake Ground Motions	Auditorium of SKLGP

15:50 - 16:10	Simon Cox	GNS Science, New Zealand	Earthquake-Induced Fluid Pressure Changes and the Hydrological Response in Landslides	Auditorium of SKLGP
16:10 - 16:30		Coffee Break		Outside of Auditorium of SKLGP
16:30 - 18:30		Subsession 1 (Parallel) : Advances in research on triggering and development of co-seismic landslides and debris flows(Part I) Chairs: Van Asch Theo,Chaosheng Tang		Auditorium of SKLGP
Time	Name	Affiliation	Title	Venue
16:30 - 16:45	Huiling Xing	The University of Queensland, Australia	Fault Geometry Effect on Earthquakes	Auditorium of SKLGP
16:45 - 17:00	Yonggang Jia	Ocean University of China, China	Dynamic Response Characteristics and Penetration Depth of Seabed Sediments by Shoaling Internal Solitary Waves	Auditorium of SKLGP
17:00 - 17:15	Zerkal O.V.	Lomonosov Moscow State University, Russia	The Role of the Additional Seismic Stresses in the Formation of Abnormally Moving Rockslides and Rock Avalanches (According to the Results of Conceptual Modeling)	Auditorium of SKLGP
17:15 - 17:30	Oliver Francis	Cardiff University, UK	Large Earthquakes Build Mountain Ranges	Auditorium of SKLGP
17:30 - 17:45	Tao Zhao	Sichuan University, China	Discrete Element Analyses of the Co-seismic Tangjiashan Landslide	Auditorium of SKLGP

17:45 - 18:00	Wengang Zhang	Chongqing University, China	Characteristics Analys of Granular Landslide Using Shaking Table Model Test	Auditorium of SKLGP
18:00 - 18:15	Yufeng Wang	Southwest Jiaotong University, China	Velocity Dependent Frictional Weakening of Large Rock Avalanche Basal Facies	Auditorium of SKLGP
18:15 -18:30	Christopher Gomez	Kobe University, Japan	Dome Evolution at Unzen Volcano between 2003 and 2015: Erosion and Destabilization	Auditorium of SKLGP
16:30 - 18:30		Subsession 2 (Parallel) : Long-term development of post-earthquake hazards in the area for landslides and debris flows Initiation and evolution mechanisms of geo-hazards. Chairs: Tianbin Li, Jia-jyun Dong		SKLGP Room 318
Time	Name	Affiliation	Title	Venue
16:30 - 16:45	Maxwell P. Dahlquist	University of Southern California, USA	Controls on Debris Flows Associated with the 2015 Gorkha Earthquake	SKLGP Room 318
16:45 - 17:00	Guillem Dom ènech	Chengdu University of Technology, China	Processes in co-seismic deposits influence the evolution of rainfall thresholds for debris flow	SKLGP Room 318
17:00 - 17:15	Alexander J. Horton	Cardiff University, UK	A Physically based Assessment of Post-seismic Debris Flow Hazards	SKLGP Room 318
17:15 - 17:30	Ming Wang	Beijing Normal University, China	Evolution Characteristics of the Landslides and Debris Flows Triggered by the Wenchuan Earthquake	SKLGP Room 318
17:30 - 17:45	Zili Dai	Shimane University, Japan	A Preliminary Report on Two Landslides Triggered by the 2016 Kumamoto Earthquake, Japan	SKLGP Room 318

17:45 - 18:00	Kang Liu	National Earthquake Response Support Service, China	Response to Landslides after the Mw7.8 Nepal Earthquake in 2015	SKLGP Room 318
18:00 - 18:15	Zainab Khalid	Lanzhou University, China	Attabad Lake, Pakistan: Formation, Mechanism and Aftereffects	SKLGP Room 318
18:15 -18:30	Zhi Song	Chengdu Institute of Geology and Mineral Resources, China	Study on Debris Flow Numerical Analog and River-blocking Mode at Rainfall Conditions of Different Frequencies	SKLGP Room 318
16:30 - 18:30		Subsession 3 (Parallel) : Monitoring and analysis of post-earthquake areas for early warning and design of mitigation measures. Chairs: Tristram Hales, Qiangong Chen		SKLGP Room 211
Time	Name	Affiliation	Title	Venue
16:30 - 16:45	Chris Massey	Institute of Geological and Nuclear Science (GNS Science), New Zealand	A Prototype Earthquake-Induced Landslide Forecast Tool for New Zealand	SKLGP Room 211
16:45 - 17:00	Chaosheng Tang	Nanjing University, China	Soil Hydro-Mechanical Response to Climate Change	SKLGP Room 211
17:00 - 17:15	William Ries	University of Vienna, Austria	What didn't Move? – Some Challenges with Remotely Sensed Data Collected in Response to the 2016 KaikŌUra Earthquake, New Zealand	SKLGP Room 211
17:15 - 17:30	Zhi Cui	Earth Products China Limited	Hisitory, development and innvotation of the GDS test system	SKLGP Room 211
17:30 - 17:45	Lin Wang	Chuo Kaihatsu Corporation	An Early Warning Monitoring of Earthquake-induced Slope Failures based on Multi-Point Tilt Sensors	SKLGP Room 211
17:45 - 18:00	Chun Liu	Nanjing University, China	Three-dimensional Discrete Element Modeling of Large-scale Landslide and the Application	SKLGP Room 211

18:00 - 18:15	Kai Gu	Nanjing University, China	Full section monitoring of land subsidence borehole using distributed fiber optic sensing (DFOS) techniques	SKLGP Room 211
18:15 -18:30	Shun Yang	Technical Center for Geological Hazard Prevention and Control, CGS, China	The Research on the Movable Solid Materials under Seepage Flow Effect in Debris Flow Source Area	SKLGP Room 211
18:50 - 20:30		Banquet		Easter Hotel
May 13, 2018				
Keynote Presentations: Large slope failure hazards Chairs: Gonghui Wang, Janusz Wasowski				
Time	Name	Affiliation	Title	Venue
9:00 - 9:30	Mauri McSaveney	GNS Science, New Zealand	An Update on the Hot Topic of Long-Runout Rock Avalanches	Auditorium of SKLGP
9:30 - 10:00	Micheal Jaboyedoff	University of Lausanne, Switzerland	How to Assess Large Landslide Hazard and the Importance of Their Indirect Induced Hazard	Auditorium of SKLGP
10:00 - 10:30	William Murphy	University of Leeds, UK	The Role of Event Sequencing in Understanding Large Scale Rock Slope Failure during Strong Earthquakes	Auditorium of SKLGP
10:30 - 11:00		Coffee Break		Outside of Auditorium of SKLGP
Keynote Presentations: Experimental systems Chairs: William Murphy, Yonggang Jia				
Time	Name	Affiliation	Title	Venue
11:00 - 11:30	Toshi Shimamoto	Shimamoto Earth & Environment Laboratory Ltd., Japan	Chengdu Experimental System for Comprehensive Landslide Studies: Research Plans and Constitutions of Apparatuses	Auditorium of SKLGP

11:30 - 12:00	Jia-jyun Dong	National Central University, Taiwan, China	Apparent Steady-State Friction Coefficient of Kaolin Clay under Different Slip Rates and Drainage Conditions	Auditorium of SKLGP
12:00 - 12:30	Gonghui Wang	Kyoto University, Japan	Estimation of Ground Motion for Slope Instability during Earthquake and Experimental Validation	Auditorium of SKLGP
12:30 - 14:00		Lunch		Xiangzhang Dinning Hall (3rd Floor)
Invited Presentations: From events to reponse Chairs: Cees van Westen, Chuan Tang				
Time	Name	Affiliation	Title	Venue
13:30 - 13:50	Alexander Strom	Geodynamics Research Center – branch of JSC "Hydroproject Institute", Russia	Prehistoric Co-Seismic Rockslides: Criteria of Identification Illustrated by Central Asian Case Studies	Auditorium of SKLGP
13:50 - 14:10	Xinming Meng	Lanzhou University, China	Seismic Loess landslides and their implications for land untilization in the north western China	Auditorium of SKLGP
14:10 - 14:30	Zhenming Shi	Tongji University, China	Stability analysis and evaluation of landslide dams	Auditorium of SKLGP
14:30 - 14:50	Chunan Tang	Dalian University of Technology, China	Spalling in extreme ground motion and evidence from the 2008 Wenchuan earthquake	Auditorium of SKLGP
14:50 - 15:10	Tristram Hales	Cardiff University, UK	How do We Develop Resilience to Post-Earthquake Landsliding?	Auditorium of SKLGP
15:10 - 15:30	Kerry McSaveney	Wellington Region Emergency Management Office, New Zealand	Beyond the Thin Blue Line: Community Input into Readiness and Response	Auditorium of SKLGP
15:30 - 15:50		Coffee Break		Outside of Auditorium of SKLGP

15:50 - 17:50		Subsession 4 (Parallel) :Susceptibility, hazard, and risk assessment for rehabilitation and land-use planning in earthquake struck areas. Chairs: Cees van Westen, Zhenming Shi		Auditorium of SKLGP
Time	Name	Affiliation	Title	Venue
15:50 - 16:05	Trias Rahardianto	University of Canterbury, New Zealand	Assessing the Frequency Ratio-Based Model of Landslide Susceptibility at Kashiwazaki-Kariwa, Niigata-Japan	Auditorium of SKLGP
16:05 - 16:20	Chenxiao Tang	University of Twente, the Netherlands	Multi-Temporal Landslide Volumetric Analysis and Suitability Evaluation of Multi-Sourced Dems	Auditorium of SKLGP
16:20 - 16:35	Chong Xu	China Earthquake Administration, China	A Database of Landslides Triggered by the 2017 Ms7.0 (Mw6.5) Jiuzhaigou (China) Earthquake Based on Geoeye-1 Satellite Imagery	Auditorium of SKLGP
16:35 - 16:50	Kaushal Raj Gnyawali	Shanghai Jiao Tong University, China	Intensity and Distribution Control of Co-Seismic Landslides in Large Earthquakes	Auditorium of SKLGP
16:50 - 17:05	Zhengguo Li	Xi'an Center of Geological Survey, China Geology Survey	Analysis of the Process and Mechanism of Landslide Destroying Loess Platform based on Remote Sensing Image and DEM	Auditorium of SKLGP
17:05 - 17:20	Yanchao Gao	ISPRA, Geological Survey of Italy, Italy	Comparison of Earthquake Environmental Effects and ESI Intensities for Recent Seismic Events in Different Tectonic Settings: Sichuan (SW China) and Central Apennines (Italy)	Auditorium of SKLGP
17:20 - 17:35	Xuewen Ding	Earthquake Administration of Shanxi Province, China	Study on Slope Seismic Stability of Dagoba in Mountain Scenic Area in Taiyuan	Auditorium of SKLGP
17:35 -17:50	Muhammad Shafique	University of Peshawar, Pakistan	Spatial and Temporal Dynamics of the 2005 Kashmir Earthquake Induced Landslides, Northern Pakistan	Auditorium of SKLGP

15:50 - 17:50		Subsession 5 (Parallel) : Advances in research on triggering and development of co-seismic landslides and debris flows(Part II), Chairs: Xiaoqing Chen, Shengwen Qi		SKLGP Room 318
Time	Name	Affiliation	Title	Venue
15:50 - 16:05	Julian S. H. Kwan	Government of the Hong Kong Special Administrative Region, Hong Kong, China	Managing Risks of Earthquake-induced Geo-hazards:Recent Technical Development in Hong Kong	SKLGP Room 318
16:05 - 16:20	Wenjie Xu	Tsinghua University, China	Failure Process of Landslide under Earthquake: Take Hongshiyan Landslide as an Example	SKLGP Room 318
16:20 - 16:35	Yanjun Shang	Institute of Geology and Geophysics, CAS, China	Observation of Craters and Test Results of Ejecta above the Rock Avalanches of the Wenchuan Earthquake in 2008	SKLGP Room 318
16:35 - 16:50	Jing Ran	Cardiff University, UK	Measurement of Social Vulnerability in Relation to Geo-Physical Hazards in Low and Middle Income Countries: A Systematic Review	SKLGP Room 318
16:50 - 17:05	Jiawen Zhou	Sichuan University, China	Numerical Simulation of Entrainment Effect during Mass Movement Process in High-Speed Debris Avalanches	SKLGP Room 318
17:05 - 17:20	Huayong Ni	Chengdu Center of China Geological Survey, China	Hourly Rainfall Pattern and Critical Hourly Rainfall Condition of Debris Flow Occurrence in Wenchuan Earthquake Extremely Stricken Areas	SKLGP Room 318
17:20 - 17:35	Wentao Yang	Beijing Forestry University, China	Landslides-Damaged Vegetation and its Recovery Process in the Wenchuan Earthquake Affected Region	SKLGP Room 318
17:35 -17:50	Tao Xu	Northeastern University, China	Modeling of Time-Dependent Deformation and Fracturing of Heterogeneous Brittle Rocks	SKLGP Room 318

15:50 - 17:50		Subsession 6 (Parallel) : Geological disaster risk and engineering construction in meizoseismal area, Chair: Oliver Korup,Yunsheng Wang		SKLGP Room 211
Time	Name	Affiliation	Title	Venue
15:50 - 16:05	Stefano Utili	Newcastle University, U.K	Dimensionless Stability Charts for C-Phi Slopes with Tension Cracks Subject to Seismic Action	SKLGP Room 211
16:05 - 16:20	Kravchenko N.S.	Moscow State University, Russia	Stabilization of Slopes Seismic Induced Landslides and Rockfalls Using Polymer Compounds	SKLGP Room 211
16:20 - 16:35	Hua Ge	China Geological Survey - Chengdu Center, China	Regional Seismic Landslide Hazards Mapping: A Case Study Using Calibrated Newmark Model in the Yingxiu Area, Sichuan, China	SKLGP Room 211
16:35 - 16:50	Ni Zhang	Xi'an Jiaotong University, China	Erosion Process of Sliding Mud by the Entered External Flow	SKLGP Room 211
16:50 - 17:05	Andrey A. Ponomarev	Lomonosov Moscow State University, Russia	The Impact of Anthropogenic Factors on the Stability of Weathered Slopes and New Methods for Their Stabilization	SKLGP Room 211
17:05 - 17:20	Jun Liang	Sichuan Provincial Water Resources Department, China	Survey of Quake Lakes Caused by the "5.12 Wenchuan" Earthquake and Related Danger Elimination	SKLGP Room 211
17:20 - 17:35	Mohib Ur Rehman	Lanzhou University, China	Investigations of Mass Movements along the Karakorum Highway from Khunjarab to Islamabad	SKLGP Room 211
17:35 -17:50	Qiuhua Chen	Powerchina Chengdu Engineering Corporation Limited, China	Post-Earthquake Inspection and Rehabilitation for Hydropower Stations after 2008 Wenchuan Mega Earthquake	SKLGP Room 211
18:00 - 19:30		Dinner		Xiangzhang Dinning Hall (3rd Floor)
18:30-22:00		iRALL Meeting and dinner(Coordinator: Runqiu Huang, Gonghui Wang, Mauri McSaveney, Xuanmei Fan, Wei Hu)		Easter Hotel

May 14, 2018				
Keynote Presentations:Long-term earthquake effects and ground dynamic response Chairs: Thomas Streil, Alexander Strom				
Time	Name	Affiliation	Title	Venue
9:00 - 9:30	Ikuo Towhata	University of Tokyo, Japan	Long-Term Instability of Slopes along Major Seismic Faults	Auditorium of SKLGP
9:30 - 10:00	Oliver Korup	University of Potsdam, Germany	Ongoing River Response to Medieval Earthquakes, Central Nepal Himalaya	Auditorium of SKLGP
10:00- 10:30	Vincenzo Del Gaudio	University of Bari, Italy	Drawing Knowledge from Ambient Noise: Challenges of Ground Dynamic Response Investigations	Auditorium of SKLGP
10:30 - 11:00		Coffee Break		Outside of Auditorium of SKLGP
Keynote Presentations : Hazard and risk. Chairs: Giovanni Crosta; Steven G. Evans				
Time	Name	Affiliation	Title	Venue
11:00- 11:30	Chyi-Tyi Lee	National Central University, Taiwan, China	A Review and Perspectives on the Methodology of Landslide Hazard Analysis	Auditorium of SKLGP
11:30 - 12:00	Xuanmei Fan	SKLGP, China	Evolution of Geohazards and Consequent Risk after the 2008 Wenchuan Earthquake	Auditorium of SKLGP
12:00 - 12:30	Cees van Westen	ITC, University of Twente, the Netherlands	Where to Build-Back-Better? Analyzing Changing Risk for Post-Disaster Reconstruction Planning	Auditorium of SKLGP
12:30 - 14:00		Lunch		Xiangzhang Dinning Hall (3rd Floor)
Invited Presentations:Geohazards in seismically active areas Chairs: Christopher Massey, Chyi-Tyi Lee				
Time	Name	Affiliation	Title	Venue
14:00 - 14:20	Steven G. Evans	University of Waterloo, Canada	Landslide Disasters caused by Earthquakes	Auditorium of SKLGP

14:20 - 14:40	Hans-Balder Havenith	University of Li ège, Belgium	Seismic vs. Climatic origin of Large Rockslides	Auditorium of SKLGP
14:40 - 15:00	David Frost	Georgia Institute of Technology, USA	Infrastructure Failure: Addressing Resilience and Sustainability during Reconstruction	Auditorium of SKLGP
15:00 - 15:20	Shengwen Qi	Instititute of geology and geophysics,CAS, China	Dynamic Behaviour of Dip Bedded Rock Slopes with Large Shaking Table Tests	Auditorium of SKLGP
15:20 - 15:40	Filippo Catani	University of Firenze, Italy	Susceptibility and Magnitude Assessment for Landslides Driving Factors and Scaling Issues in Different Environments	Auditorium of SKLGP
15:40 - 16:00	Thomas Streil	Sarad GmbH, Germany	Gas Geochemical Precursors and Chance for the Forecast of Earthquakes and Volcanic Eruption	Auditorium of SKLGP
16:00 - 16:20		Coffee Break		Outside of Auditorium of SKLGP
16:20 - 17:50		**Plenary Session Discussion** **Moderators: Niels Hovius, Gonghui Wang**		Auditorium of SKLGP
17:50 - 18:00		Closing Ceremony		Auditorium of SKLGP
18:20 - 19:30		Dinner		Xiangzhang Dinning Hall (3rd Floor)
May 15, 2018				
8:00 - 17:00		Field excursion Group 1& Group 2 Day 1		Maoxian Wenchuan
May 16, 2018				
8:00 - 17:00		Field excursion Group 1& Group 2 Day 2		Maoxian Wenchuan

演讲说明

演讲注意事宜

请发言者在每个组会开始前至少提前 10 分钟前往会议室在各自的会议室内。

主旨报告的持续时间为 30 分钟。其中包括 25 分钟的演讲报告和 5 分钟的问答。邀请报告的持续时间为 20 分钟。其中包括 15 分钟的演讲报告和 5 分钟的问答。其余普通报告的持续时间为 15 分钟。其中包括 12 分钟的演讲报告和 3 分钟的问答。为了保证会议正常进行，请所有演讲者能严格遵守该时间限制。

演讲报告演示内容要求使用 Microsoft Power Point 或 PDF 文件格式。SKLGP 报告厅屏幕比例为 4:3。会议室 211 和会议室 318 房间的屏幕比例可以在 4:3 和 16:9 之间相互调整。请按照该比例制作演示文件。请演讲者在各分会开始前至少提前 10 分钟到场并将演示文件从自带的 U 盘上传到会议电脑中。现场会有会务组工作人员协助上传。

分会主席说明

各会场主席台将放有计时器及按铃，请根据下列提示按铃提醒报告人时间：

主旨报告： 23 分钟时 1 声铃响提示还有 2 分钟报告结束，25 分钟时 2 声铃响提示报告结束；

邀请报告： 13 分钟时 1 声铃响提示还有 2 分钟报告结束，15 分钟时 2 声铃响提示报告结束；

普通报告： 10 分钟时 1 声铃响提示还有 2 分钟报告结束，12 分钟时 2 声铃响提示报告结束；

请在各分会前告知所有分会参会人员铃声规则。分会结束后请将计时器和按铃留在主席台上，工作人员会来收理。

控制时间对于会议正常有序进行有着非常重要的意义，请各分会主席严格按照会议日程把控报告时间。

海报张贴报告

张贴海报大小为 A1（594mm×841mm），单面彩色印刷。现场可打印海报，但组委会还是建议报告人提前打印好海报。请将海报带至会议注册台问讯处，会有工作人员指引您进行海报张贴。每张海报需要至少有一位作者在海报分组会期间对海报进行演讲说明。

会议地点

成都理工大学地质灾害防治与地质环境保护国家重点实验室学术报告厅

会议地点位于成都理工大学地质灾害防治与地质环境保护国家重点实验室。成都理工大学主校区位于成都市二仙桥东路 1 号，距离成都双流国际机场 35 公里，距离成都火车北站 5 公里。如乘坐出租车，机场到学校大约花费 90 元，火车北站到学校大约花费 15 元。机场乘坐地铁 10 号线，在太平园站转乘 7 号线，成都理工大学站下车即到。火车东站乘坐地铁 7 号线，成都理工大学站下车。

5 月 11 日注册台将设立在怡东国际酒店大堂。5 月 12 日至 14 日注册台将设立在地质灾害防治与地质环境保护国家重点实验室学术报告厅入口处。

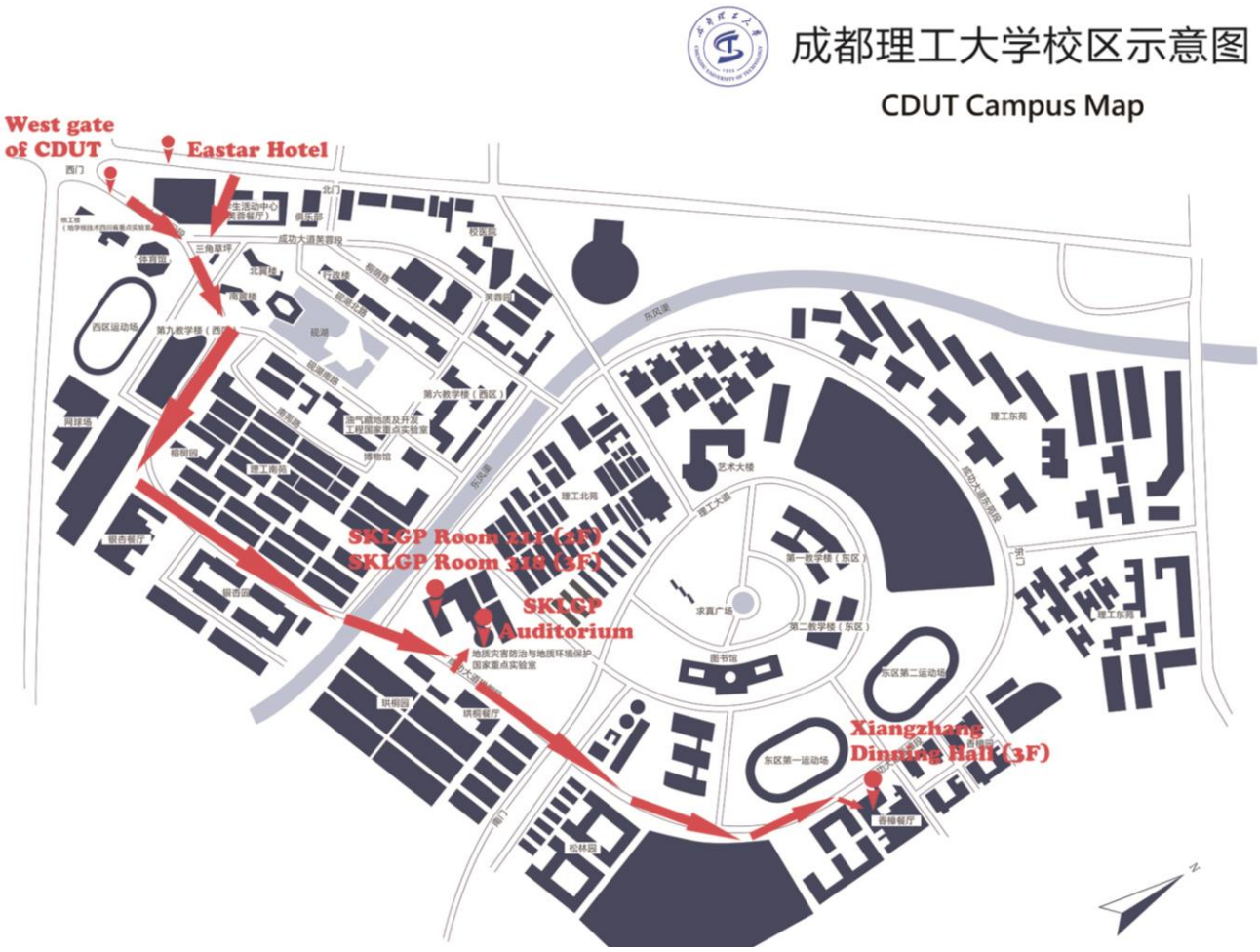
主会场将设立在地质灾害防治与地质环境保护国家重点实验室学术报告厅，分会场将设立在地质灾害防治与地质环境保护国家重点实验室 211 会议室（2 楼）以及 318 会议室（3 楼）。

现场志愿者

身着下图所示马甲的会议志愿服务者将在机场，火车站，地铁站以及校园为参会者服务，协助指引参会者寻找会议地点。如果您需要帮助的地方，请您向各热情友善的志愿者咨询。

校园地图

成都理工大学西校门及怡东国际酒店距离地质灾害防治与地质环境保护国家重点实验室约1.6公里。步行大约需要15-20分钟。你可以选乘校内的“小白龙”通勤车至珙桐园站下车或骑乘共享单车前往实验室。校园地图如下图所示:



天气

成都五月份天气晴朗炎热，平均气温为 27 至 30 摄氏度。夏季常有阵雨，建议着夏季着装并佩戴雨具。

白天	说明	高 / 低	降雨概率	风力	湿度
星期五 5月 11日	上午有阵雨	24°/18°	40%	东南偏南 12 公里 /小时	74%
星期六 5月 12日	局部多云	31°/18°	10%	西南偏南 11 公里 /小时	51%
星期日 5月 13日	大部地区晴朗	32°/20°	0%	东南偏南 11 公里 /小时	49%
星期一 5月 14日	大部地区晴朗	34°/22°	0%	东南偏东 6 公里 /小时	48%
星期二 5月 15日	局部多云	34°/23°	10%	东南偏南 8 公里 /小时	51%
星期三 5月 16日	局部多云	33°/23°	10%	东 7 公里 /小时	54%

交通指南

会议组委会不负责机场或车站接送，请各参会者按下述指南乘前往会议地点。

1. 双流国际机场前往怡东酒店或华都时代酒店

(1) 双流国际机场距离酒店约 25 公里。乘坐出租车前往需要约 40 分钟左右，话费约 90 元人民币。

(2) 推荐乘坐地铁：地铁 10 号线转 7 号线（1 小时 5 分钟，7 元人民币）

机场 T1 或 T2 航站楼地铁站乘坐前往太平园方向的列车----> 4 站以后，在太平园站下车，站内换乘 7 号线火车北站方向列车---->14 站以后在理工大学站下车---->由 B2 口出站，步行约 600m 抵达酒店

2. 火车东站前往怡东酒店或华都时代酒店

(1) 火车东站距离酒店约 10 公里。乘坐出租车前往需要约 15 分钟左右，话费约 26 元人民币。

(2) 乘坐地铁：地铁 7 号线（29 分钟，3 元人民币）

在火车东站乘坐 7 号线火车北站方向列车---->5 站以后在理工大学站下车---->由 B2 口出站，步行约 600m 抵达酒店

3. 火车北站前往怡东酒店或华都时代酒店

(1) 火车东站距离酒店约 9 公里。乘坐出租车前往需要约 15 分钟左右，话费约 22 元人民币。

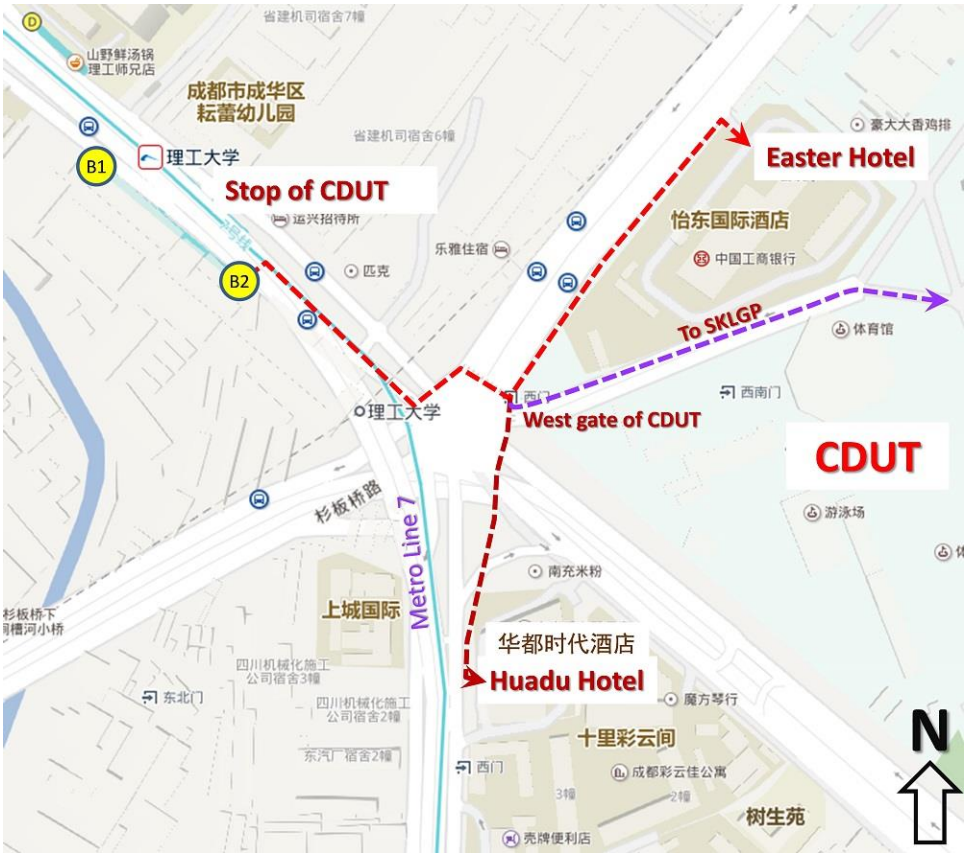
(2) 乘坐地铁：地铁 7 号线（23 分钟，3.5 元人民币）

在火车东站乘坐 7 号线火车东站方向列车---->5 站以后在理工大学站下车---->由 B2 口出站，步行约 600m 抵达酒店

交通路线图

机场地铁站示意图:

地铁 B2 出口至西门，怡东国际酒店，华都时代酒店步行示意图：



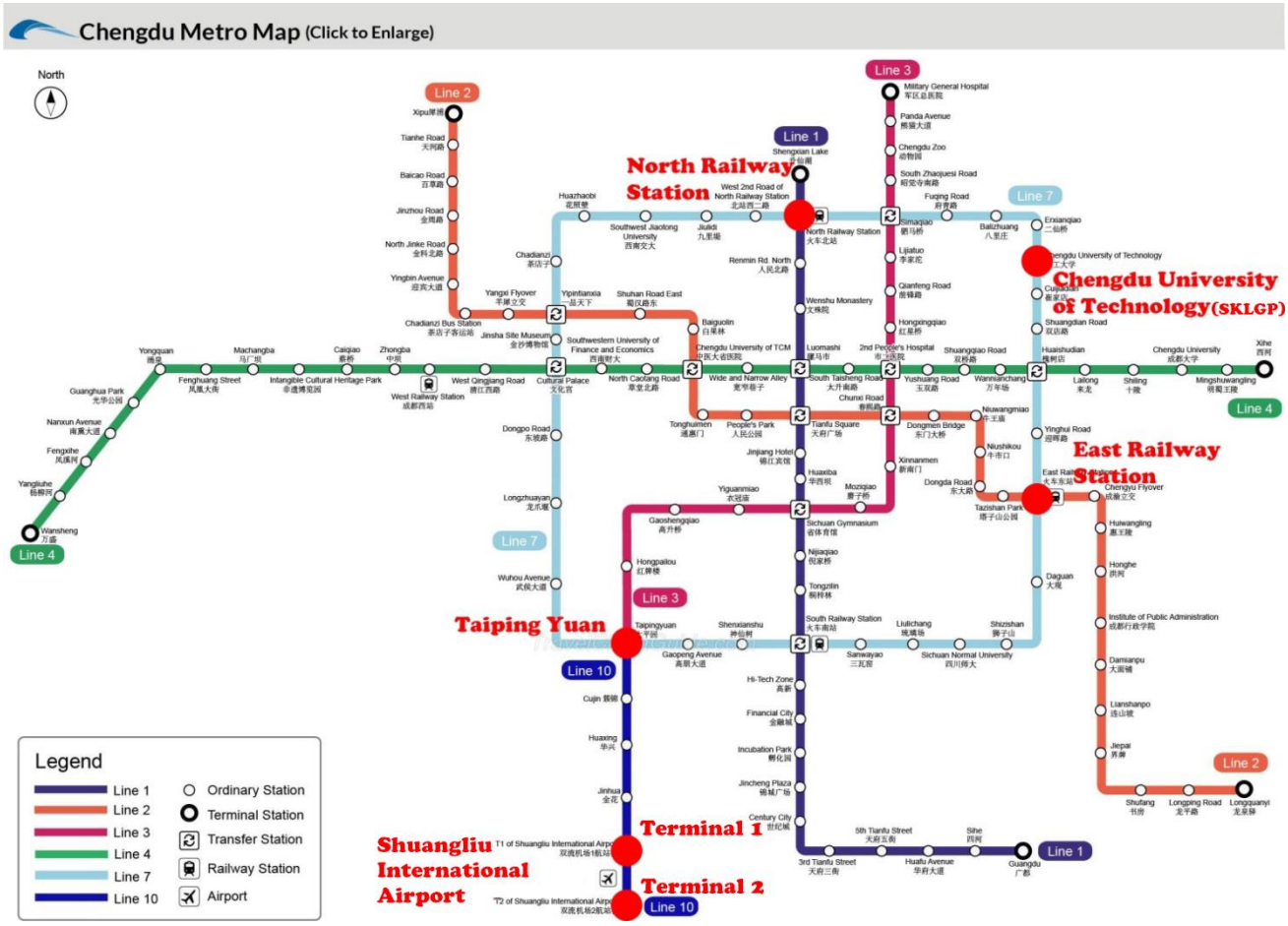
怡东国际酒店外观

华都时代酒店外观

地铁主要站点时刻表:

站点	首班车	末班车	班次及方向
机场 T2	06:05	23:05	10 号线太平园方向
机场 T1	06:08	23:08	10 号线太平园方向
太平园	06:19	23:33	换乘 7 号线，外环线
火车东站	06:15	23:54	7 号线，外环线，火车北站方向
理工大学	06:17	22:57	7 号线，外环线，火车北站方向
火车北站	06:18	23:49	7 号线，内环线，火车东站方向

成都地铁线路图:

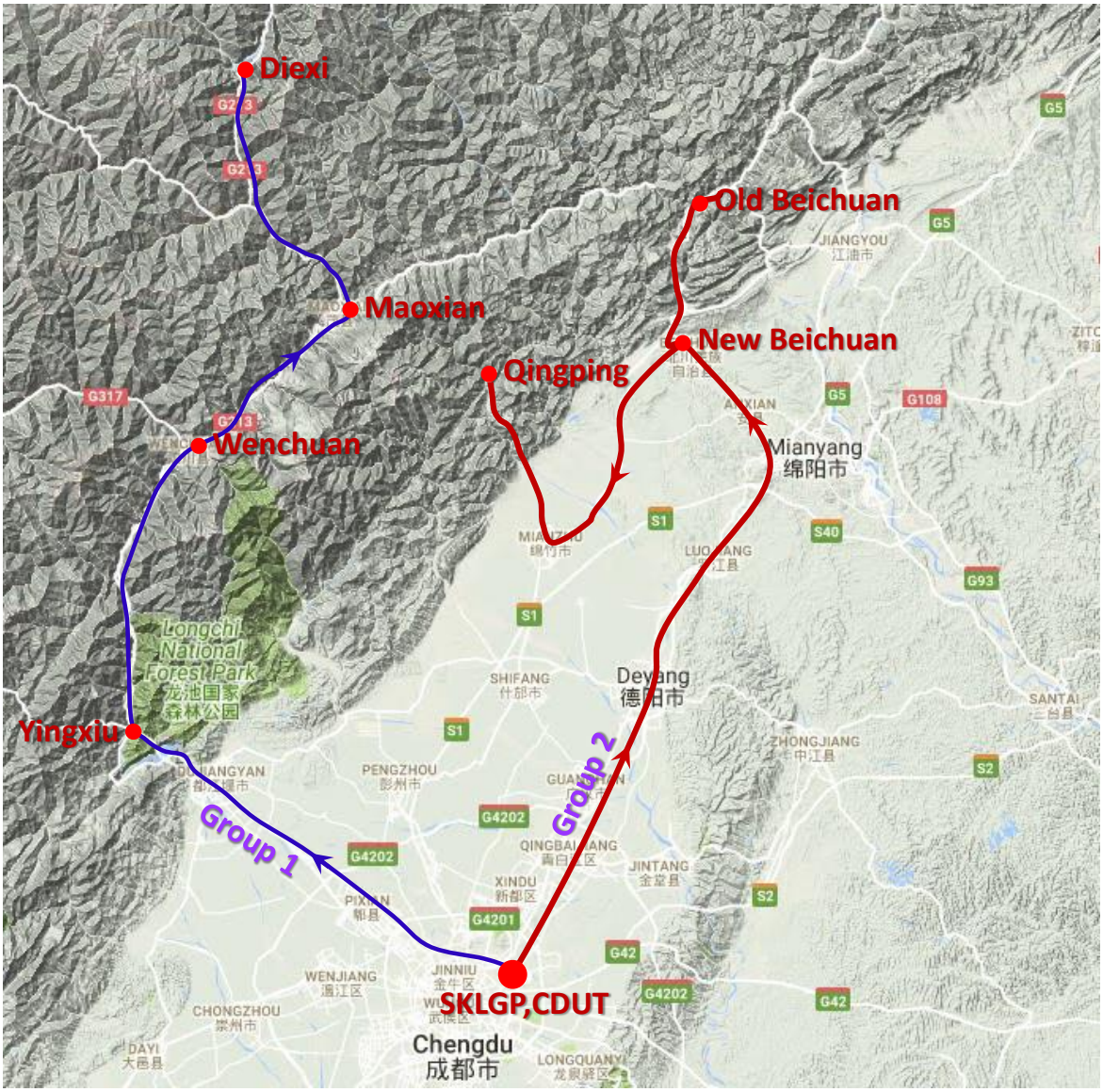


野外考察

The field trip will be divided into two groups. The participants can choose either group to join at the registration desk. Please be prepared with outdoor gear (i.e.: walking boots, waterproof jackets, hat and etc.).

- **Group one：Chengdu---Maoxian---Wenchuan---Chengdu (Organized by Chengdu University of Technology, SKLGP)**

- **Group two：Chengdu---Beichuan---Mianzhu---Chengdu (Organized by Society for Rock Mechanics and Engineering of Sichuan Province)**



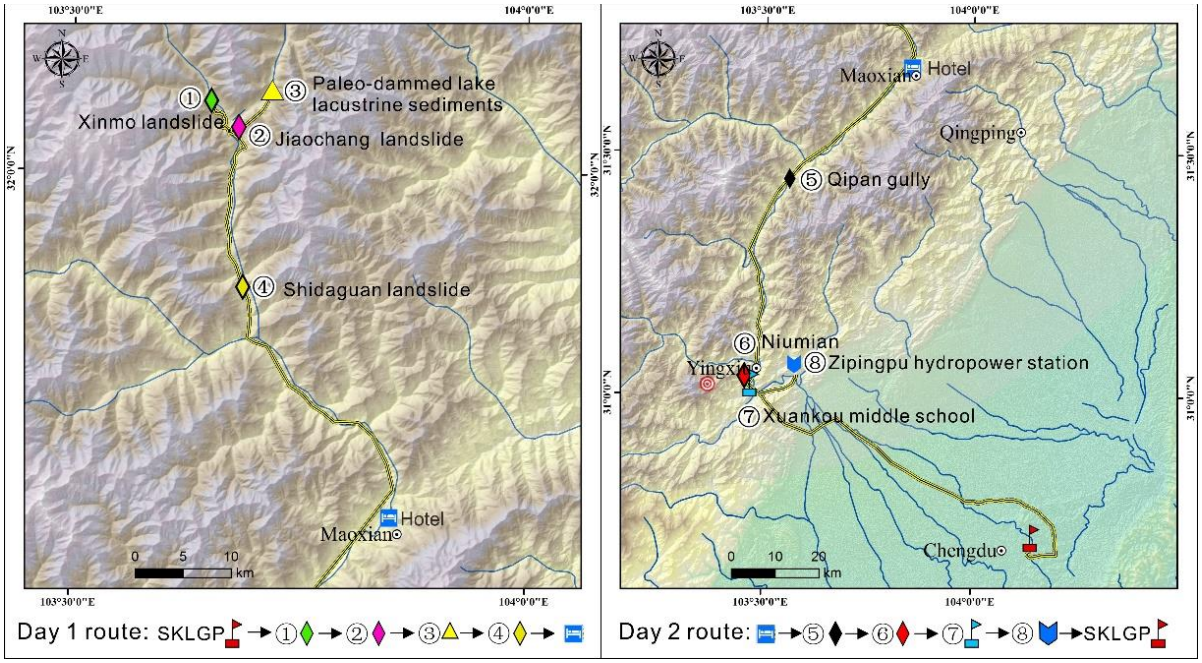
The route map of Group one and Group two

Introduction of group one

- **Day 1 (May 15, 2018): Xinmo landslide→Old landslides, barrier lakes and paleo-dammed lake lacustrine sediments near the Diexi town→the Shidaguan landslide**

- **Day 2 (May 16, 2018): Qipan debris flow gully→Niumian debris flow→ Xuankou middle school→Zipingpu hydropower station**

Due to the continuous uplifting of Qinghai-Tibet Plateau, the south-western China is characterised by extremely high and steep alpine terrain, and is prone to large earthquakes. In the past 100 years, several large magnitude earthquakes have occurred in this region, such as the 1933 Diexi earthquake (Ms 7.5), the 1976 Songpan-Pingwu earthquake (Ms 7.2), the 2008 Wenchuan earthquake (Ms 8.0), the 2013 Lushan earthquake (Ms 7.0), the 2017 Jiuzhaigou earthquake (Ms 7.0). These earthquakes triggered many landslides, particularly because of the steep terrain and the fragile geological environment. We will visit an area severely affected by both the 1933 Diexi earthquake and the 2008 Wenchuan earthquake. You will see many old landslides, even paleo-landslides as well as relative new landslides triggered by the Wenchuan earthquake and post-earthquake rainfalls, such as the Xinmo landslide and the Shidaguan landslide. Some of the landslides triggered by the Diexi earthquake dammed the Minjiang river, forming barrier lakes that still exist today, such as the Daihaizi, Xiaohaizi and Diexi. You will also observe the destructive landslides triggered by the Wenchuan earthquake and post-earthquake debris flows induced by heavy rainfall, such as the Niumian debris flow and Qipan debris flow gully, as well as the Xuankou middle school earthquake relic, some reconstruction sites, well-designed highways, the magnificent mitigation projects of the large-scale debris flows, and a hydropower station, Zipingpu near the epicenter of the Wenchuan earthquake.



Route map of Day 1 and Day 2 of Group One

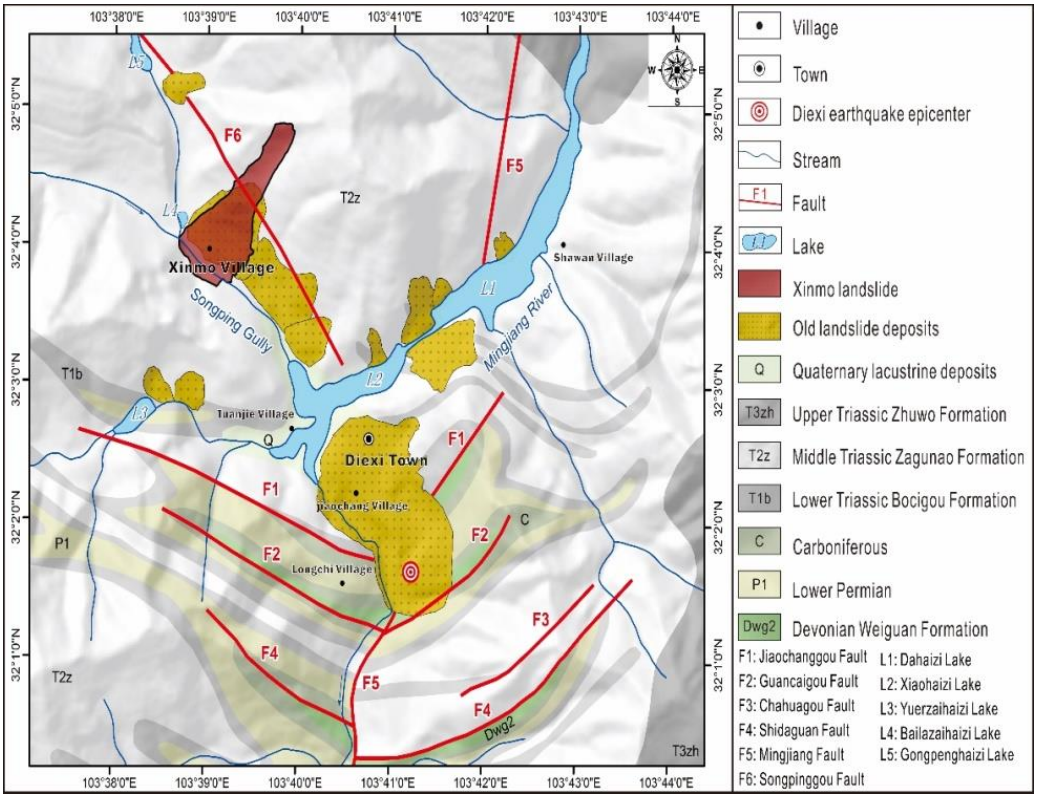
Day 1 (May 15, 2018): ① Xinmo landslide→② Old landslides, barrier lakes→③ paleo-dammed lake lacustrine sediments near the Diexi town→④ the Shidaguan landslide

Day 2 (May 16, 2018): ⑤ Qipan debris flow gully→⑥ Niumian debris flow→⑦ Xuankou middle school→ ⑧ Zipingpu hydropower station

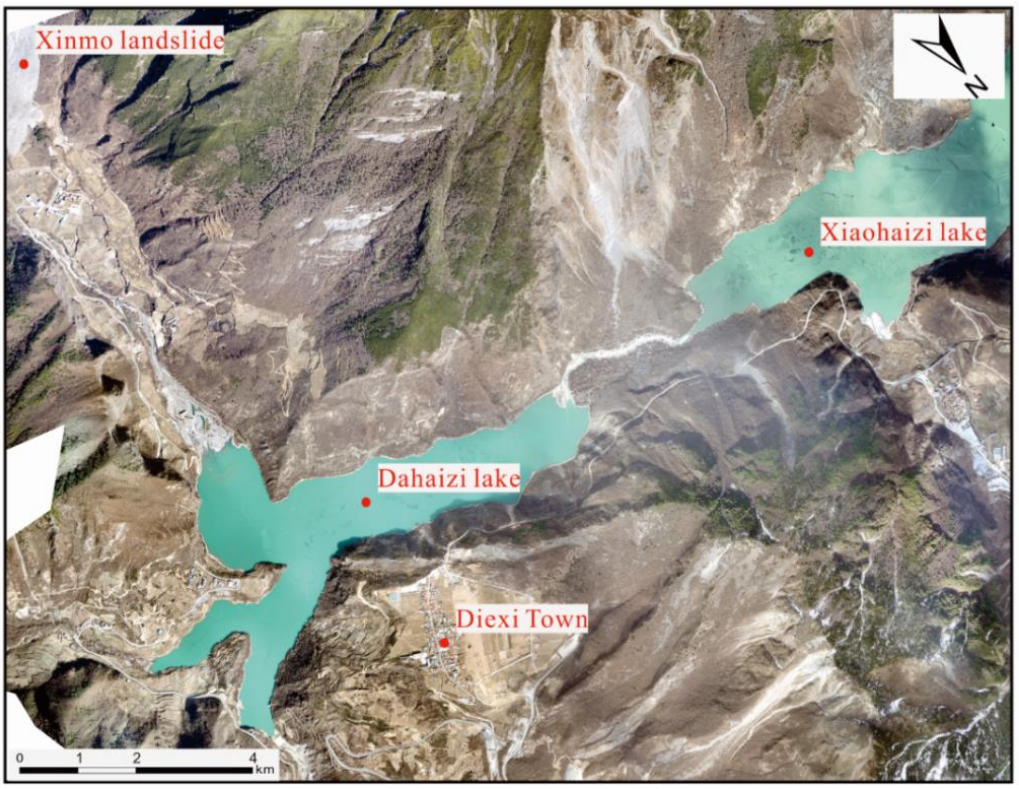
Day 1 (May 15, 2018)

Xinmo landslide → Old landslides, barrier lakes and paleo-dammed lake lacustrine sediments near the Diexi town→the Shidaguan landslide

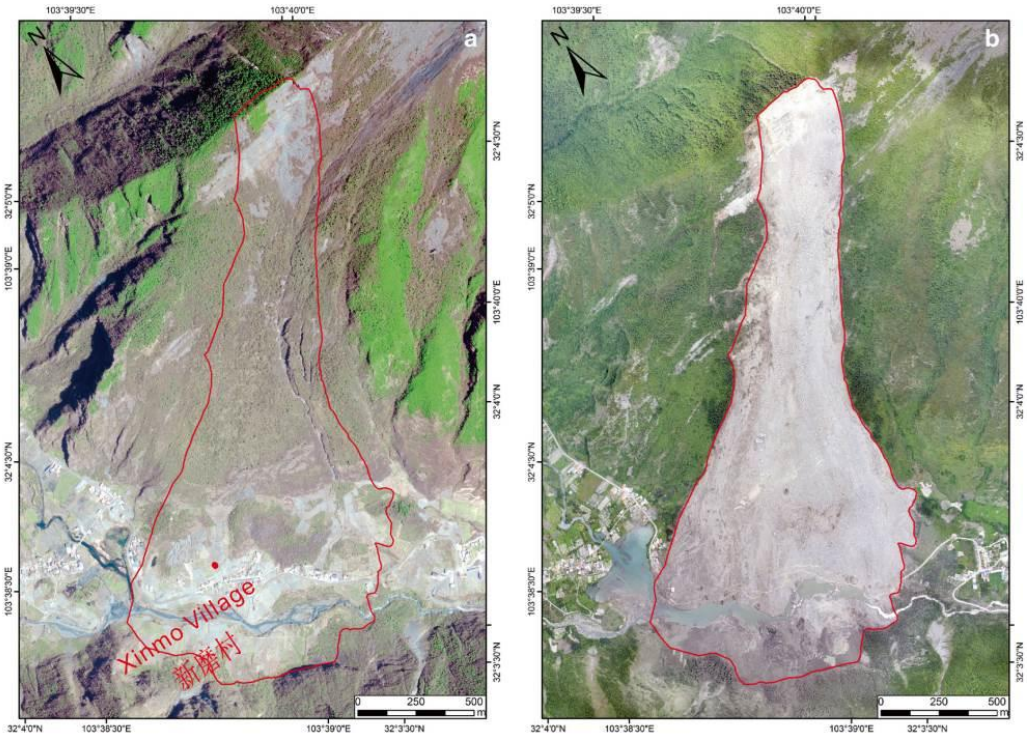
During the first day, participants will observe the 2017 Xinmo landslide, the Shidaguan landslide, the 1933 Jiaochang landslide and ancient lacustrine sediments near Diexi Town. At about 5:38 am local time on Saturday, 24th June, 2017, a massive rock avalanche destroyed the village of Xinmo in Maoxian County (N 32° 04′ 47″, E 103° 39′ 46″, Fig. 6). The landslide buried 64 houses and killed 10 people. A further 73 people are reported missing. The sliding mass blocked 1.0 km of river and damaged 1.5 km of road. It was one of the most catastrophic landslide events in recent years in China.



Geological map of the Diexi region indicating the location of the Xinmo landslide, old landslide deposits, barrier lakes and active faults（from Fan et al., 2017a）



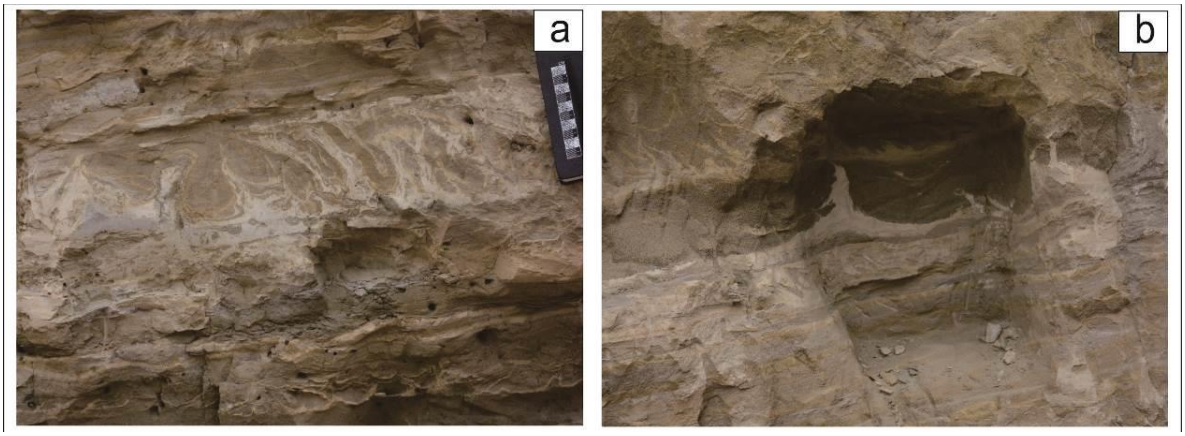
UAV image of the area near the Diexi town, showing Dahaizi and Xiaohaizi dammed lakes



Pre-sliding image on April 8th, 2017 (a) and post-sliding image on June 26th, 2017 (b) (from Fan et al., 2017a)

This trip, will give you an impressive view of lacustrine sediments formed in the paleo-dammed lake. Besides the direct flooding disasters caused by the breach of the paleo-dam, the impact of landslide dams and dammed lakes is extremely important for its long-term environmental effects on the sediment content of rivers, the changes of riverbed morphology, and the evolution of landforms and geohazards. This effect can last up to tens of thousands of years depending on the formation and survival time of landslide dams and their paleo-lakes. Prof. Lansheng Wang, discovered the lacustrine sediments in the paleo-dammed lake in the Diexi area in 1999. These sediments were deposited 30 thousand years ago.

Ten climatic periods have been identified for the Diexi barrier lake area within the time span from 30,000 to 15,000 years BP, based on examination of climatic indicators in the sediments, such as spore-pollen, organic matter, carbon and oxygen isotopes, calcium carbonate and particle size. Ten earthquake-induced disturbance layers in the lake sediments were identified through examination of a drill core. This indicates that from 30 000 to 15 000 years BP, there were at least 10 strong earthquakes in the Diexi area. The sedimentary sections disturbed by earthquakes show good coincidence with the climate changes, indicating that the geologic evolution and the climatic and environmental changes are associated (Wang et al., 2014).



The lake lacustrine sediments: a. the wave structure; b. the flame structure

You will visit the 2017 Shidaguan landslide, located in Shidaguan Town, Maoxian County, on the right bank of Minjiang river. It is a large-scale toppling landslide, with a height drop of 450m and a volume of 14 million m3. The movement of the landslide started at the middle part of the slope in 2013, where cracks were developed in the terrain surface and in the buildings. In September 2014, the front and middle part of the landslide started to collapse and move into the Minjiang river, causing blockage of the river. Meanwhile, deformation also started to develop at the backside of the landslide. In August 2015, the deformation became extensive, and by July 2017 the front and rear part of the landslide had slid down for more than 10 m. Rock falls and collapse continues to occur from the front part of the landslide, covering the toe of the sliding surface.

Day 2 (May 16, 2018)

Qipan debris flow gully→Niumian debris flow→Xuankou middle school→ Zipingpu hydropower station

During the second day, you will observe large coseismic landslides and debris flows along the Minjiang River, such as the Qipan and Niumian debris-flow gullies, the Xuankou middle school earthquake relic, and the Dujiangyan-Wenchuan highway. On the way back to Chengdu, we will stop in Dujiangyan to see the Zipingpu hydropower station.

The remote-sensing imagery of Qipan Gully

Destroyed houses near the outlet

Reconstruction site was affected

Xuankou middle school memorial square

Ruins of the Xuankou Middle School

Zipingpu hydropower station: the concrete-faced, rock-fill, 125 m high embankment dam of the Zipingpu river management project is located in Maxi along the Minjiang River, about 60 km northwest of Chengdu. The project is 9 km from Dujiangyan City and downstream of it is located the world-famous Dujiangyan Diversion Canal Project. The Zipingpu project is a water management project, with the functions of power generation, flood control, environmental protection, and tourism. It is also one of the Key projects of infrastructure construction during the "fifteenth" national development period and a landmark project of the development of Western China. In 2001, the construction was formally approved by the government, and in September 2005, water storage was started. In May 2006, all 4 power generation units were producing electricity. It has been running now safely for 12 years, which is the first high concrete faced rock-fill dam, to withstand an Intensity IX (Wenchuan 2008) earthquake in the world.

Zipingpu dam and hydro-power station

Introduction of group two

- **Group two：Chengdu --- Beichuan---- Mianzhu ---- Chengdu (It is organized by Society for Rock Mechanics and Engineering of Sichuan Province)**

Day 1 (May 15, 2018): The fault rupture with the largest vertical displacement → Beichuan earthquake ruins → 5·12 Wenchuan Earthquake Memorial Museum→New Beichuan city，live in the New Beichuan hotel

The detail route map of group two Day 1（① The fault rupture with the largest vertical displacement; ② Beichuan earthquake ruins and landslides; ③5·12 Wenchuan Earthquake Memorial Museum; ④ new Beichuan city）

1. The fault rupture with the largest vertical displacement

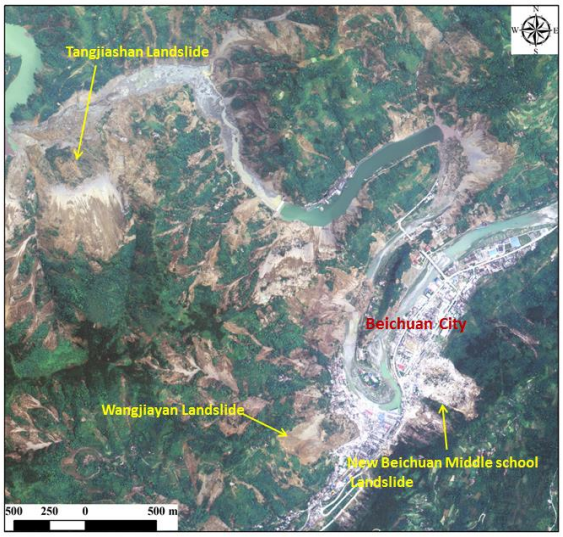
The Wenchuan Earthquake ruptured two large thrust faults along the Longmen Mountain thrust and generated 240 km long surface rupture zone along the Yingxiu-Beichuan fault and 72 km long surface rupture zone along the Pengzhou-Guanxian fault. The largest surface slip with ~11.0 m vertical and 4.5 m right-lateral displacement was found near old Beichuan.

Photos showing fault rupture with the largest vertical displacement, a few kilometers northeast of old Beichuan (Liu-Zeng et al.,2009)

2. Beichuan earthquake ruins and 5 • 12 Wenchuan Earthquake Memorial Museum

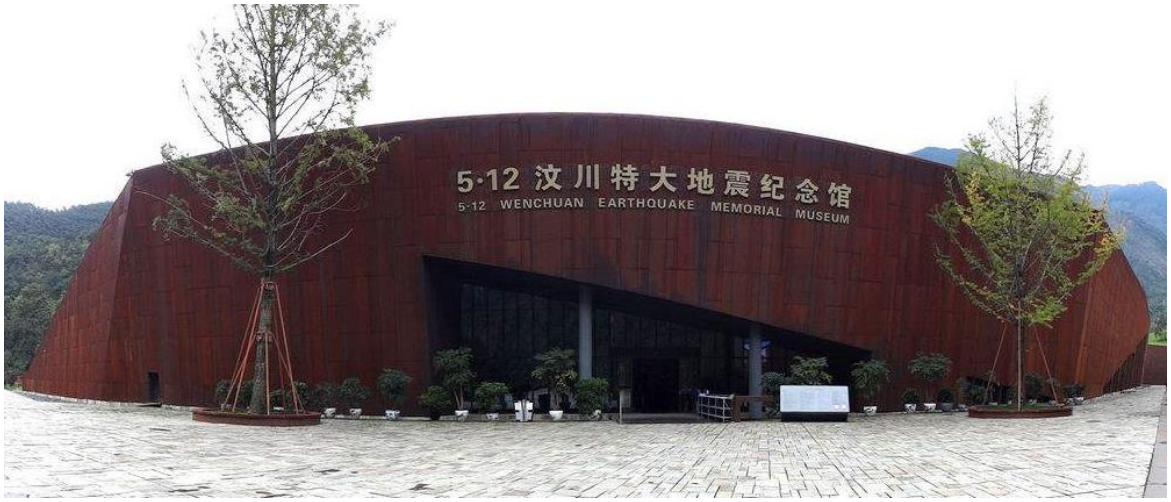
Old Beichuan is located in the middle part of the Yingxiu-Beichuan fault, where the fault mechanism changes from thrusting to strike-slip. It was at the center of one of two zones where seismic intensity was the highest (at XI) during the Wenchuan Earthquake. The earthquake caused devastating damage, where 80% of the buildings in the town collapsed and almost all of the remaining buildings were severely damaged. Approximately 15,645 people in the county lost their lives (9.8% of the county population) and 4,412 people were reported missing. Inside Beichuan town, the death toll was 8,600 (40% of the town population). The ruins in Beichuan have been conserved, as they have significant scientific value from a seismological and structural engineering point of view. The 5·12 Wenchuan Earthquake Memorial Museum was built in Renjiaping near old Beichuan,

Three large landslides caused severe damage in old Beichuan: the Wangjiayan landslide, the new Beichuan middle school landslide and the Tangjiashan landslide. A large part of the old town of Beichuan was destroyed by the Wangjiayan landslide which killed over 1,600 people and had an estimated volume of 10 million m^3. The New Beichuan Middle School landslide buried at least 700 students and teachers. The Tangjiashan landslide dam impounded the largest lake in the earthquake affected area. A heavy rainstorm occurred in the early morning on 24 September 2008 with a daily rainfall of 370 mm at the rainstorm center. This rainstorm triggered numerous debris flows in the central part of Beichuan. A large debris flow almost completely buried the remains of the old town with a thickness between 5 and 8 m.



Aerial photo of the Beichuan town taken on May 23rd, 2008

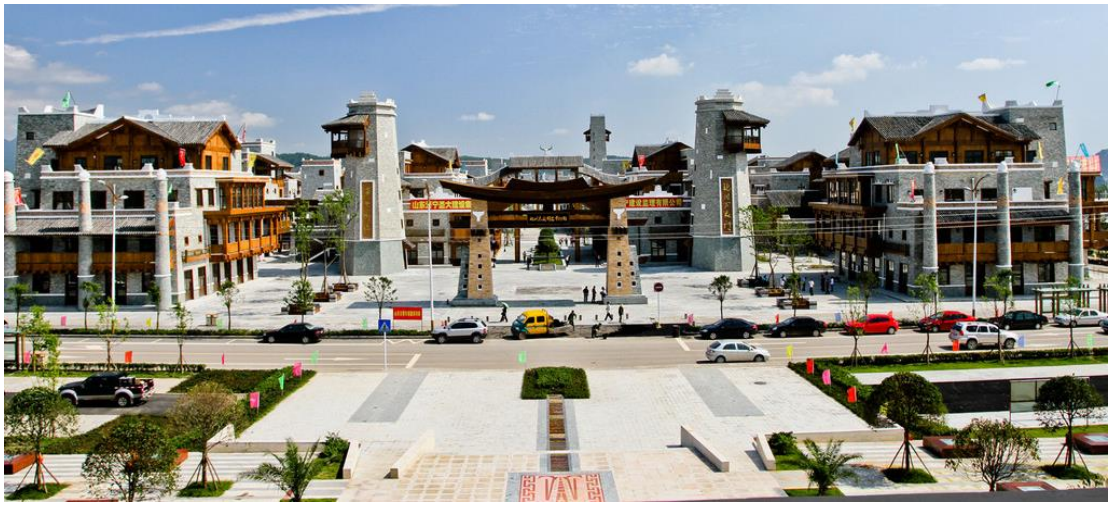
Beichuan town after the debris flows that occurred in September 2008



The 5·12 Wenchuan Earthquake Memorial Museum

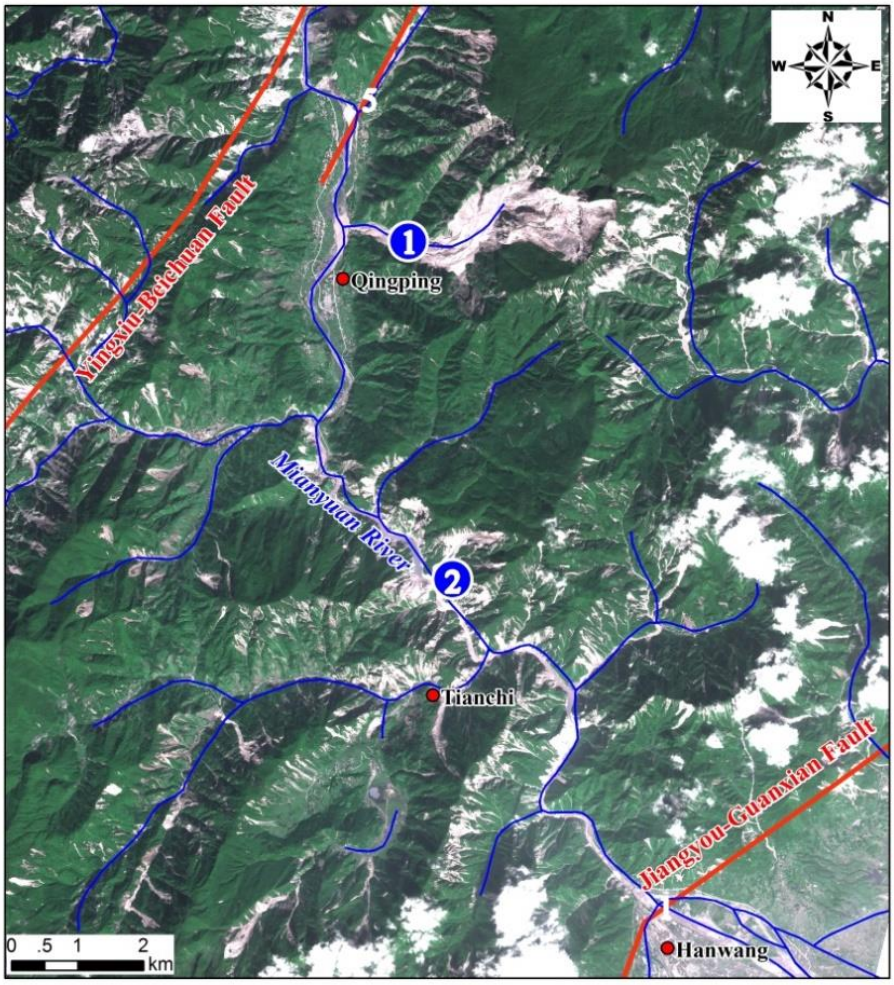
3. New Beichuan City

Because the geological environment is very fragile and prone to geo-hazards, and a fault goes though the old city, it was evaluated to have very high risk for people to live there. Therefore, a new town was constructed 23 km away from the old town. New Beichuan City comprises a central district, an industrial park in the south, a leisure district in the hilly north and an area reserved for future development in the west. Reconstruction projects are clustered in the east bank of the Anchang River, encompassing five square kilometers of construction land for short-term resettlement of 35,000 people (including survivors from the old county town) with a long-term plan of settling 50,000 people.



New Beichuan City

Day 2 (May 16, 2018): Wenjiagou debris flow→Xiaogangjian debris flow



The detail route map of Group two Day 2（① Wenjiagou debris flow; ② Xiaogangjian debris flow）

4. Wenjiagou Debris Flow Remediation and the Town Reconstruction in Qingping Town- the Biggest Debris Flow Disaster Point after the Wenchuan earthquake

Wenjiagou is located in the north of Qingpingchang Town in the northwestern part of Mianzhu City, Sichuan Province. After the devastating 5·12 Wenchuan Earthquake in 2008, many debris flows took place in the earthquake-affected areas, and the debris flow in Wenjiagou, Qingping town, was the most significant. Wenjiagou was not originally a debris flow gully, but the huge landslide-debris accumulation caused by the Wenchuan earthquake has changed Wenjiagou into a debris flow gully. In the following three rainy seasons, Wenjiagou produced five large debris-flow disasters (2008.9.24, 2010.7.31, 2010.8.13, 2010.8.19, and 2010.9.18), of which, the "8·13" debris flow in Wenjia Gully was the largest and most harmful.

Wenjia gully debris flow

After the "8·13" debris flow comprehensive remediation work was carried out and completed in 2011. In flood seasons, it has stood the test. Now, a debris-flow management and training base and a national geological park have been set up in Wenjiagou.

Xiaogangjian debris flow

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