

Research Group of Mountain Hazards and Mitigation
Institute of Mountain Hazards and Environment, Chinese Academy of Sciences



团队在川藏铁路沿线野外考察
Field study of mountain hazards along the Sichuan-Tibet Railway



泥石流防治工程
Engineering mitigation for debris flow hazard (check dam)

The research group is geared towards addressing significant strategic needs related to national disaster mitigation, engineering safety, and the “Belt and Road” initiative. They have proposed theories on the spatial-temporal evolution of mountain hazards and developed systematic solutions for disaster chains through theoretical innovation, technology development, and by proposing relevant mitigation strategies. Their study results have significantly and systematically contributed to disaster mitigation in essential cities and towns, world Natural Heritage sites, cascade hydropower projects along the upper reaches of the Yangtze River, major transportation arteries, and oil and gas pipelines in the Western mountain areas. They also provided scientific support for the Sichuan-Tibet Railway route alignment and critical node risk management. The research group is also actively involved in the hazard mitigation and emergency response of more than 30 catastrophic events at home and abroad, including colossal earthquakes, devastating debris flows, giant landslides and dangerous dammed lakes. They also strongly support the “Three Changes” National Strategy on disaster prevention, reduction and relief. Their tremendous and continuous dedication to global disaster risk reduction and mitigation endeavors have received outstanding international scientific recognition.

Outstanding contributors of this research group

Cui Peng

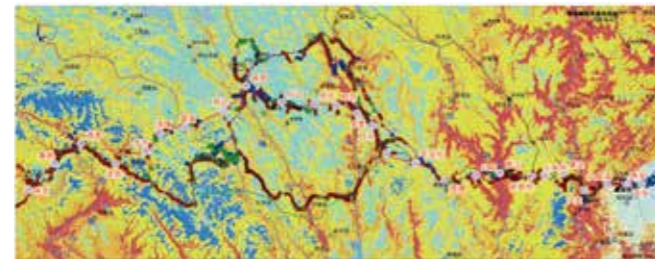
He studied the triggering and formation mechanism of debris flow, proposed methods for quantitative risk assessment, developed a technical system of mountain disaster prevention and control, and is leading the scientific research on mountain disasters.

He Siming

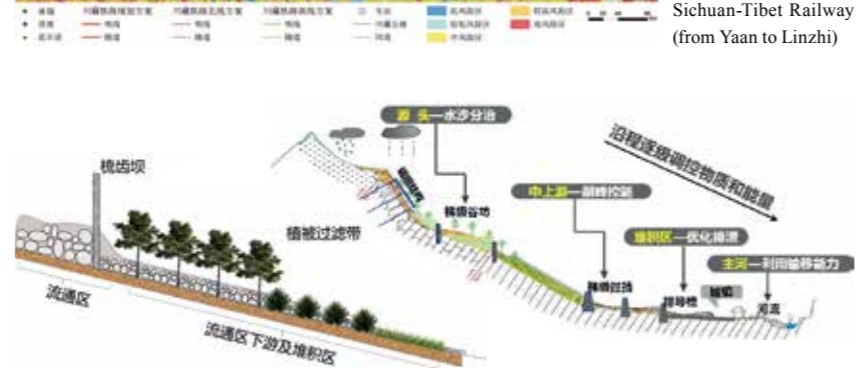
He studied the dynamics of mountain hazard and disaster chains, and an efficient numerical simulation method which is physical law based is proposed to simulate the evolution process of mountain disaster chains.

Chen Ningsheng

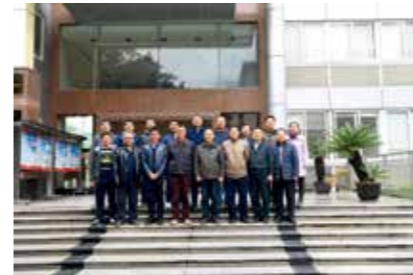
He investigated the initiation of debris flows due to the combination effects of earthquake and drought, developed technologies for monitoring and prediction of debris flows in complex mountainous areas.



川藏铁路“雅安—林芝”段山地灾害分布与风险评估图
Distribution and risk assessment of mountain hazards along the Sichuan-Tibet Railway (from Yaan to Linzhi)



山地灾害全过程调控技术体系
Technology of systematic regulation of mountain hazards whole process



研究集体
Group photo

山地灾害形成机理与防治研究集体

推荐单位：中国科学院、水利部成都山地灾害与环境研究所

研究集体主要科技贡献：

该研究集体面向国家防灾减灾、工程安全和“一带一路”等重大战略需求，通过理论创新—技术研发—减灾应用全链条、贯通式研究，揭示特大山地灾害形成演化规律，构建了特大山地灾害综合防治理论与技术体系，形成系统解决方案。研究成果系统服务重要城镇、世界自然遗产地、长江上游梯级水电工程、西部山区重要交通干线和油气管线防灾减灾，科学支撑川藏铁路规划选线和关键控制性节点风险防控，参与国内外 30 余次重特大地震、泥石流、滑坡、堰塞湖等灾害应急抢险，在国内、国际重大减灾实践中发挥了重要作用，有力支撑了防灾减灾救灾“三个转变”国家方略，成果得到国际学术界广泛认同，形成了一支引领国际减灾发展方向的创新团队。

研究集体突出贡献者



崔鹏 Cui Peng

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主要科技贡献：揭示泥石流形成和致灾机理，提出灾害风险定量评估方法，构建山地灾害防治技术体系，引领山地灾害科学研究。



何思明 He Siming

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主要科技贡献：揭示大规模山地灾害高速运动机理与灾害链效应，建立山地灾害运动演进物理模型，实现高效数值模拟。



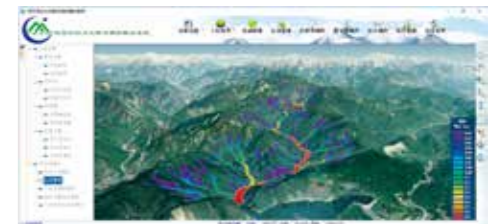
陈宁生 Chen Ningsheng

陈宁生 中国科学院、水利部成都山地灾害与环境研究所

主要科技贡献：揭示早期干旱和地震驱动泥石流发育机制，发展了山地灾害预测预警原理方法。

研究集体主要完成者

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激发因子实时驱动的山地灾害高精度模拟平台
High-precision and real-time numerical simulation platform for mountain hazards



“一带一路”自然灾害分区
Zoning of natural disasters along the Belt and Road