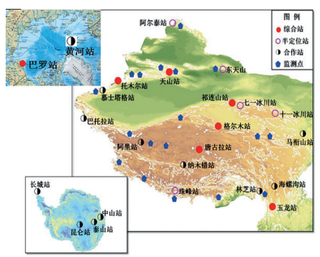
## Research Group of Cryospheric Science
## Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences

冰冻圈野外科学考察

Field scientific expedition and observation in the cryopsheric regions




冰冻圈综合观测网络站点及监测示范区分布图

中国西部及南、北极冰冻圈监测网

Monitoring network of cryosphere covering the regions of western China, Antarctic, and Arctic

### Major contributors

Xiao Cunde
Ren Jiawen
Wang Ninglian
Liu Shiyin
Zhao Lin
Chen Rensheng
Che Tao
Yang Meixue
Yi Shuhua
Wang Xiaoming
Yang Jianping
He Yuanqing
Liu Xiaohong
Chen Tuo
Shangguan Donghui
Qin Xiang
Wang Shijin

Research Group of Cryospheric Science has accomplished many innovative researches in Cryospheric Science in the high-altitude regions in western China, which promoted international influence, and also advanced theoretical development and innovation. Its main scientific and technological contributions include: Establishing the cryospheric science framework, which systematized cryospheric research and facilitated national wide knowledge dissemination by publishing a series of monographs and textbooks built on it, in turn, greatly advanced Cryospheric Science, meanwhile providing a new level of knowledge to nurture a new generation of scholars. Developing and building a comprehensive cryospheric monitoring network in high-altitude regions in western China, by which a complete survey was implemented to quantify the cryospheric resources within China, more with uncovered details of processes and mechanism of cryospheric changes; thus considerably advanced the current understanding of the cryospheric change and provided scientific and technological supports for regional sustainable development. Systematically evaluating both benefits and adverse effects of the cryosphere, not only considering the cryospheric services provided, but also the impacts of cryospheric changes on water resources, ecosystem and disasters. These achievements have been widely applied to develop mitigation and adaption to the impacts of cryospheric changes, including the support to ensure the quality and safety of facility construction for the 2022 Winter Olympic Games in Beijing.

### Outstanding contributors of this research group

#### Qin Dahe

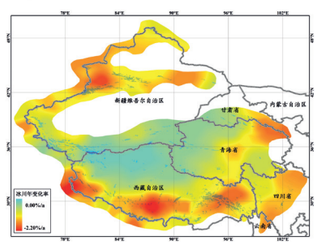
As the leader of the research group, he is steering to establish the framework and disciplinary system of Cryospheric Science especially in advocation and promotion the integration of physical science and socio-economic development, which leaded international research of Cryospheric Science.

#### Ding Yongjian

As a core member for establishing the discipline system of Cryospheric Science, he enriched and expanded the theory of cryospheric hydrology, and contributed to the assessment of climate and the ecological environment change in China.

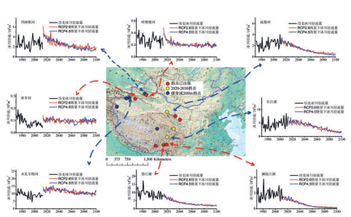
#### Kang Shichang

He established a long-term coordinated monitoring network of atmospheric pollution and cryospheric changes over the Third Pole region. He has generated globally significant results in cryospheric chemistry and its climatic and environmental implications.



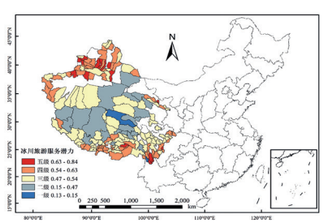

近 50 年中国西部冰川面积年变化率

Annual change rate of glacier area in western China during the last 50 years



中国西部冰川水资源变化预估

Projection of changes in glacier melt water resources in western China

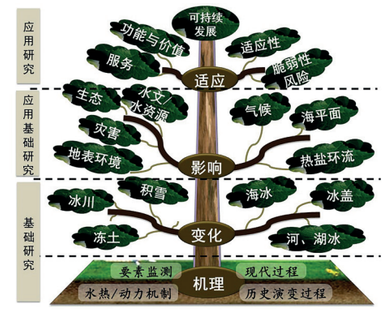



中国冰川旅游服务潜力评价

Evaluation of glacier tourism services potential in China

2016 年中国冰冻圈科学学会（筹）成立大会

The inaugural meeting of China Society of Cryospheric Science in 2016




冰冻圈科学树

Schematic diagram of Cryospheric Science

## 冰冻圈科学研究集体

推荐单位：中国科学院西北生态环境资源研究院

### 研究集体主要科技贡献：

该研究集体立足我国西部高海拔地区，在冰冻圈科学领域开展了大量的原创性工作，为提升我国在冰冻圈科学研究领域的国际影响力、推动学科理论发展与创新等方面作出了重要贡献。创新性地构建了冰冻圈科学体系，在理论系统化、知识教材化方面迈出实质性步伐，有力推动了冰冻圈科学发展和人才培养。构建了中国西部冰冻圈综合监测网络，查清了中国冰冻圈资源家底，并揭示其变化过程与机理，在宏观尺度上提升了对冰冻圈变化的整体认知水平，产生了广泛的国际影响，为区域可持续发展提供了坚实的科技支撑。评估了冰冻圈的致灾致利效应，综合分析了冰冻圈变化对水资源、生态系统和灾害的影响，成果在水资源利用、生态环境保护、防灾减灾规划和冬奥会雪冰安全保障建设等方面得到广泛应用。

首届全国教材建设特等奖证书

Certificate of the National Textbook Construction Award (Top grade Award)

秦大河 Qin Dahe

### 研究集体突出贡献者

**秦大河** 中国科学院西北生态环境资源研究院

领衔研究集体，创立了冰冻圈科学理论框架，构建了学科体系；推动了自然与人文社会融合，起到国际引领作用。

丁永建 Ding Yongjian

**丁永建** 中国科学院西北生态环境资源研究院

冰冻圈科学学科体系的主要创建者；丰富和拓展了冰冻圈水文学理论；对中国气候和生态环境变化评估做出了贡献。

康世昌 Kang Shichang

**康世昌** 中国科学院西北生态环境资源研究院

构建了第三极大气污染物与冰冻圈变化协同观测网，在冰冻圈化学及其气候和环境效应研究上产出了具有国际影响的成果。

### 研究集体主要完成者

效存德　任贾文　王宁练　刘时银　赵　林　陈仁升
车　涛　杨梅学　宜树华　王晓明　杨建平　何元庆
刘晓宏　陈　拓　上官冬辉　秦　翔　王世金

冰冻圈科学系列论著

A series of monographs on Cryospheric Science