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**Research Center on Flood & Drought Disaster Reduction of Ministry of Water Resources**



**Université Côte d'Azur**  
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## **Flash Flood Program**

### **Concept Note**

The following concept note describes the scope for the Flash Flood Program

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# 1. Background

In recent decades, the flash flood has become one of the major natural disasters in the world. The proportion of casualties and social and economic losses caused by flash flood disaster is relatively high and shows a continuously increasing trend. Both developed and developing countries which are affected by flash floods have carried out relevant researches on theories and technologies of flash floods prevention and control at the national level. At the same time, the World Meteorological Organization (WMO), the Global Water Partnership (GWP), the International Association of Hydrological Sciences (IAHS), the International Association for Hydro-Environment Engineering and Research (IAHR), the National Oceanic and Atmospheric Administration (NOAA) and the Asian Water Council (AWC) are also paying more attention to flash floods management.

Regarding the severe situation of flash flood disasters in China, since 2006, according to the “National flash flood disaster prevention and control plan” and the “National master plan of management of small and medium-sized catchments, danger elimination and reinforcement of potential-risked reservoirs, and prevention and treatment of flash flood and other geological disasters”, the Ministry of Water Resources of PRC together with the Ministry of Finance and other ministries, departments, and bureaus, has organized and implemented a national program dedicated to flash flood prevention and control. The program includes investigation, assessment, and evaluation of flash flood risk, development of non-engineering measures, and implementation of engineering measures at the key mountain torrents and gullies. The program has covered 29 provinces, 305 cities, and 2,076 counties in China.

2020 is the 10<sup>th</sup> anniversary since the official implementation of the national flash flood program. After 10 years, China has obtained experience in many technical aspects such as the construction of monitoring and early warning systems of flash flood prevention and control. However, the implementation of the flash flood protection measures is very complex and requires an integrated approach covering many aspects such as technical, economic and social.

## 2. Rationale

Flash Flood Program (FFP) is jointly initiated by China Institute of water resources and hydropower research (IWHR) and Université Côte d'Azur (UCA). Based on more than ten years' achievements of flash flood disaster prevention and control work in China, this program aims to optimize the strategy of flash flood risk management, improving the system of flash flood disaster prevention, expanding the measures of flash flood disaster prevention, enhancing the flash flood prevention ability, and further promoting relevant scientific research project at different levels (from the state to the community). The main purpose of this project is to establish a global partnership in monitoring, forecasting and prevention of flash floods, strengthen the disaster preparedness and relief capabilities of countries and regions, reduce the disaster loss, and provide theoretical and technical support for the global response to flash floods.

## 3. Mission and Objectives

**To answer the questions faced in the implementation process of the flash flood prevention and management and share the successful experience from 10 years flash flood prevention and control practices and research in China,** the flash flood program aims to focus on the following seven directions closely related to the prevention and control of mountain torrents:

- Research on prevention and control strategy and risk management theory of flash floods
- Research on disaster pregnant mode and mechanism of flash floods under the influence of climate change
- Research on monitoring, forecasting, early warning and emergency disposal technology of flash floods
- Research on the application of big data and artificial intelligence technology in flash flood disaster

- Research on prevention and control measures and equipment development of flash floods
- Research on the construction and management of flash flood disaster resilience community
- Research on monitoring simulation and control measures of soil and water loss in flash flood prone areas

The main objectives of FFP are:

- Share experience and knowledge of flash flood prevention and management in different countries and environments and disseminate the experience from 10 years flash flood prevention and control in China;
- Identify the needs and gaps in flash flood monitoring, assessment, evaluation, modelling and forecast;
- Set up a national strategy for flash flood prevention and control based on a road map updated every 5 years;
- Produce the guidelines and detailed road map for the implementation of flash flood prevention control measures;
- Provide procedures and protocols dedicated to strengthen the prevention capacity of local municipalities.
- Promote the construction of flash flood resilience community in China, and providing corresponding guidance;
- Support the establishment of an international flash flood research program and other projects in the future

## 4. Outputs

The following lists key outputs of the International Flash Flood Working Group:

- **Catalyzing a community of practice on flash flood prevention and control and spreading the successful achievements obtained from 10 years flash flood prevention and control project in China**
  - Establishment of a digital community of practice to complement Expert Committee to the flash flood prevention and control.
- **Based on China's flash flood strategy, guiding and supporting the development of national strategy for the flash flood affected countries:**
  - Development of a report series to feature through journals, magazines and online channels.
  - Development of technology outlooks with summaries on flash flood management technologies.
  - Using curated case studies as the basis of a generalization study in which principles and characteristics for a successful flash flood prevention and control project are collected.
- **Providing opportunities and mechanisms for knowledge exchange and outreach**
  - Integration into events including:
    - Workshop or forums with relevant experts on topics of flash flood prevention and control;
    - Regular peer-to-peer dialogue series between technical experts and local managers;
    - Engage wider community through SimHydro, Singapore International Water Week and other relevant international and regional events.

- Products for dissemination and learning
  - Training on relevant staffs of local mountain flood disaster and emergency management department.
  - Production of documentaries and knowledge books on the prevention and control of mountain torrents.

## 5. Governance

Flash Flood Program (FFP) is jointly initiated by China Institute of water resources and hydropower research (IWHR) and Université Côte d'Azur (UCA), led by the Vice President of IWHR, Prof. Jing Peng and the former president of Polytech Nice Sophia Antipolis Prof. Philippe Gourbesville and will invite relevant experts all over the world. The invitation will take in to account the experts' background and institutes.

The FFP will close cooperated with relevant international organizations to organize conferences and workshops of flash flood disaster defense.

## 6. Timeline

The FFP will take 5 years as the first stage. The timeline will be largely driven by the activities proposed by the Steering Committee. A detailed timeline will be developed following the appointment of the Steering Committee.