**State Key Laboratory of Hydrology-Water Resources and Hydraulic Engineering**

**Application Guidelines of the Open Research Fund in 2017**

In order to promote the fundamental and application research as well as academic exchange in the fields of hydrology-water resources and hydraulic engineering, an Open Research Fund has been set up by the State Key Laboratory of Hydrology-Water Resources and Hydraulic Engineering (hereinafter referred to as the Hydro-Lab, belonging to both Hohai University and Nanjing Hydraulic Research Institute). It is expected that the Open Research Fund will help to create a great scientific research environment, attract both domestic and foreign excellent scholars, and accelerate the development of interdisciplinary studies. Scholars and scientific researchers in the related fields, either domestic or abroad, are warmly welcomed to conduct visiting research in the Hydro-Lab, so as to boost the research and development of hydrology-water resources and hydraulic engineering together.

Relying on the Xin'anjiang Hydrologic Experimental Station and Chuzhou Experiment Station, the Open Research Fund will offer financial support to the fundamental and applied fundamental research projects of high scientific values and application prospects around the five research themes of the Hydro-Lab.

**1. Base Introduction**

(1) Xin'anjiang Hydrologic Experimental Station

The Xin'anjiang Hydrologic Experimental Station includes the Hydrological Factor Observation Field of Small Watershed and Sloping Land, Basin-nested Intensified Observation Field, Hydrological Comprehensive Experimental and Analytical Center, and Remote Data Receiving Center.

The Hydrological Factor Observation Field of Small Watershed and Sloping Land consists of the Small Watershed Observation Field, Slope Runoff Experimental Field and Meteorological Observation Station. Besides, there are Natural Runoff Plots, Artificial Rainfall Field, Meteorological Observation Station, Array Rainfall Station, Rainfall-Soil Moisture-Groundwater Monitoring Stations and Measurement Weirs. Through the parallel and contrast observations of the physical processes like slope water quantity and quality, heat and so on, the field mainly supports research on the watershed runoff producing mechanism, pollutant and sediment producing, as well as water ecology, so as to promote the application research on preventing watershed non-point pollution, monitoring and controlling secondary geological disasters, developing and utilizing water resources, etc.

The Basin-nested Intensified Observation Field has many automatic observation station, such as the Rainfall Station and Rainfall-Soil Moisture-Groundwater Station, Stream Gauging Station, Meteorological Observation Station, etc., for studying water cycle and material coupling mechanisms at different scales in the changing environment, and developing novel watershed hydrological models.

The Hydrological Comprehensive Experimental and Analytical Center consists of the Soil Analysis Room, Sample Pretreatment Room, Water Quality Testing Laboratory and Watershed Ecology Laboratory. First, the Soil Analysis Room is equipped with soil analysis and isotope analysis equipment, for the research on changing laws of stable isotopes as well as analysis of TOC in soil. Second, for the Sample Pretreatment Room, the main instruments are the table acidity meter, electronic balance, ultrasonic cleaner, etc., which are mainly used for storage and pretreatment of water, soil, sediment and other test samples. Third, for the Water Quality Testing Laboratory, there are many instruments for analysis and determination of physicochemical indexes of water, soil and sediment samples (TN, TP, COD, ammonia nitrogen, PAHs, PCBs, etc.). Moreover, the Watershed Ecology Laboratory has the research-grade inverted fluorescence microscope, fluorescence quantitative PCR instrument, ultramicro nucleic acid protein analyzer, etc., mainly for studying the structure succession and changing laws of the biological community including the invasive organisms, carbon cycle microorganisms, organic pollutant degrading bacteria, etc. in water and soil samples, as well as analyzing the environment response mechanism of the watershed ecosystem.

The Remote Data Receiving Center mainly serves as an important data resource environment and application support platform for the entire Xin'anjiang Hydrologic Experimental Station. Based on the database server, application server, communication server, data exchange and sharing software, application support platform, business application system, portals and so on, the center can receive comprehensive monitoring data in the Xin'anjiang River Basin, such as the water level, rainfall, soil moisture, flow, groundwater, meteorology, water quality, etc. Therefore, the modern storage, management, sharing, exchange and application of information and data can be achieved, which also help realize the data exchange and sharing among Hohai University, Hydrographic Office of the Taihu Basin Authority and Hydrographic Office of Anhui Province.

The Xin'anjiang Hydrologic Experimental Station has helped improved the overall level of watershed hydrological experimental infrastructure, as well as the water security level and quick-reaction capability when faced with sudden water events in the economically developed regions of China, which has also provided the real-time, effective information service and scientific-technological support for the watershed management and ecological protection of the Yangtze River Delta. (Website: http://114.104.203.20:88/SLSD.WEB.Portals/index.html)

(2) Chuzhou Experiment Station

The Chuzhou Experiment Station is the state-level flood control and drought relief experiment base, with the total area of over 53000 m2. It consists of the Hydrological Mount Experiment Field, Comprehensive Hydrological and Meteorological Observation Field, South Dawa Experiment Field, Solid Dam Rescue Test Field, etc.

First, for the Hydrological Mount Experiment Field, the main instruments include the mobile artificial rainfall facilities, stratified flow measurement experimental equipment, groundwater and soil moisture monitoring facilities, and so on, for doing scientific research like the hydrological cycle process, runoff generation and confluence mechanisms, under different rainfall conditions.

Besides, the Comprehensive Hydrological and Meteorological Observation Field includes the Meteorological Observation Station, Evaporation Observation Field, Weighing Lysimeter, etc. For the South Dawa Experiment Field, there are many instruments for canopy rainfall monitoring, stratified flow measurement, groundwater and soil water monitoring and so on, for studying the natural watershed hydrological cycle process, pollutant transport process, water and soil conservation, water environment and ecology restoration, etc.

The Solid Dam Rescue Test Field is located in Chuzhou City, Anhui Province, with the controlled basin area of 2.7 km2, which possesses the functions of combat exercises of the flood rescue command system and technology, research on the dam danger, etc. It can not only improve the scientificity and operability of flood fighting and emergency rescue, but also can strengthen the emergency response and handling capacity of flood disasters for China.

Based on the principles of stereoscopic information observation, automatic data acquisition, sophisticated analytical simulation and all-day operation, the Chuzhou Experiment Station has carried out plenty of experiment research on basic theories of hydrology and water resources, and has gained abundant achievements. By systematically summarizing the experience of hydrological experiments both domestic and abroad, it has made important contributions to developing the isotope hydrology and experimental hydrology, and has become a significant teaching and cultivation base. (Website: http://czjd.nhri.cn/index.html)

**2. Research Themes**

(1) Evolution mechanisms and high-efficiency utilization of water resources

1) Evolution mechanisms and rational allocations of water resources

2) Utilization of watershed rainwater and flood resources

3) Water-saving irrigation theories and high-efficiency utilization of water resources

4) Systematic management of water resources and emergency management of sudden water-related disasters

(2) Hydrologic processes and disaster defense and mitigation in river basins

1) Impacts of climate and land cover changes on watershed hydrologic processes

2) Parameterization of the watershed hydrological processes and uncertainty analysis at different scales

3) Impact analysis of changes of the climate and underlying surfaces on the hydrological extreme

4) Assessments of drought and flood disasters in river basins under the background of climate change

(3) Water-sediment dynamics of rivers and ecological protection

1) Dynamics of the micro-interface between sediment particles and pollutants

2) Water-sediment dynamics of rivers and impacts of water-sediment movements on the pollutant transport

3) Water-sediment and pollutant environmental regulation through the combined utilization of sluices, dams and pumps

4) Physical and biochemical processes as well as environmental and ecological effects of the land-water interface

(4) Integrated management and protection of estuarine and coastal regions

1) Characteristics of water-sediment movement and mechanisms of sediment transport in estuarine and coastal regions

2) Processes of the dynamic geomorphology and its response to engineering constructions in estuarine and coastal regions

3) Formation mechanisms and pre-warning, forecasting technologies of water-related disasters in estuarine and coastal regions

4) New technologies and methods of management and protection of estuarine and coastal regions

(5) Hydraulic construction safety and disaster control

1) Safety monitoring, pre-warning and forecasting theories and methods of large-scale hydraulic works

2) Mechanisms of dam failure and risk analysis

3) New and high-performance materials for hydraulic works

4) Danger removal and reinforcement of hydraulic constructions

**3. Project Type**

The Open Research Fund in 2017 is to offer financial support to key projects (about 5) and general projects (about 10), preliminarily.

(1) Key Fund Project

The top-level talents in the field are encouraged to work together with researchers in the Hydro-Lab to apply for the Open Research Fund, corresponding to the research themes and key contents. Publishing high-quality research results is required and the funding amount is about RMB 100000~150000.

(2) General Fund Project

The youth talents are encouraged to apply for the Open Research Fund freely, and the funding amount is about RMB 50000~80000.

**4. Application Requirements**

(1) The applicants should have already earned a PhD degree and are scientific researchers with a middle-level professional tittle or above. For the applicants without the proper professional tittle, two recommendation letters from the experts who have possessed a senior professional tittle in the similar fields are required for the application.

(2) Projects relying on the experimental platform and research bases of the Hydro-Lab will be given priority.

(3) Projects which are conducted in collaboration with fixed researchers of the Hydro-Lab will be given priority.

(4) Visiting scholars either at home or abroad will be given priority.

(5) Research or construction projects based on the Xin'anjiang Hydrologic Experimental Station and Chuzhou Experiment Station will be given priority.

(6) Key fund projects must be applied in cooperation with the team members of the Hydro-Lab. And high-level SCI papers with the first affiliation of the State Key Laboratory of Hydrology-Water Resources and Hydraulic Engineering are required.

(7) Application forms (see Annex 1) are expected to be printed out in duplicate and submitted within the required deadline (accepted by postmark), and be submitted via email as well.

**5. Application Deadline**

Application will be accepted as of the date of guideline promulgation. And the deadline is October 31, 2017.

**6. Fund Management**

The application will be reviewed by the organized expert group firstly, and then submitted to the Academic Committee to do the final review. According to the reviews, the applicants will be informed after the Director General of the Hydro-Lab issues the project assignments. Besides, the specific methods of the fund management are on the basis of the “Management Regulations of the Open Research Fund of the State Key Laboratory of Hydrology-Water Resources and Hydraulic Engineering” (see Annex 2).

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Annex：

1. Application form of the Open Research Fund (2017).doc

2. Management Regulations of the Open Research Fund (revised in 2010).doc