Dear Department of Civil and Environmental Engineering,

I am writing to express my interest in the research fellow position of Hydrological modeling & Flood Risk Assessment at NUS. I have recently completed my Ph.D. in environmental science at Wuhan University, China, under the supervision of Prof. Wanshun Zhang. My previous research focuses on solving water environment issues by developing and applying hydrodynamic and water quality models. I believe that my previous research experience and skills could benefit your research group while expanding my knowledge and expertise.

I have been interested in using models to study environmental issues since my undergraduate studies. My undergraduate graduation project was “Research on the Water Quality Model in Danjiangkou Reservoir”. I gained the honor of Excellent bachelor's degree thesis in Hubei province, China. Since I entered my graduate studies, I have been engaged in the development and application of environmental models. The first project in which I participated was “Risk assessment and early warning technology for water environment in three gorges reservoir area and upstream watershed”. It belongs to the Major Science and Technology Program for water pollution control and treatment of China. I participated in the model integration of watershed model and 3D hydrodynamic-water ecology model. During my doctoral studies, I have participated in the development and construction of watershed model, hydrodynamic and water quality model in Hanjiang River Basin, Taihu Lake Basin, Nanhu Lake Basin, Jinshanhu Lake Basin, Wudongde Reservoir Basin, Pengxi River Basin, Xiangxi River Basin. My participation in these projects has enriched my experience in model development and integration.

My doctoral thesis is “Research on the driving mechanism of algal bloom outbreaks in the middle and lower reaches of the Hanjiang River under the operation of cascade reservoirs”. I constructed a coupled watershed hydrodynamic-water quality-water ecology model in the middle and lower reaches of the Hanjiang River basin to study the driving mechanism of hydrological and meteorological factors on the algal bloom and the impact of inter-basin water diversion on the risk of algal bloom outbreaks. During my Ph.D., I received a fund for project “The impact mechanism of land surface processes on water eutrophication”, from the Open Research Foundation of Key Laboratory of the Pearl River Estuarine Dynamics and Associated Process Regulation, Ministry of Water Resources, China. I led this project which was related to my doctoral thesis. As a part of my doctoral program, I was sponsored by the China Scholarship Council to conduct a one-year joint-training at Eawag, Switzerland, under the guidance of Prof. Hong Yang (Retired in Nov. 2021) and Dr. Fabrizio Fenicia. We collaborated to complete a project and published a paper on Journal of Hydrology: Regional Studies. This work was included as a chapter in my dissertation.

I have great interest in the hydrological and hydrodynamic modelling. I believe there is an urgent need for more in-depth research and application of these tools on surface water for Sustainable Development Goals. Through the training during my Ph.D., I learned and mastered powerful tool so that I could contribute myself to a scientific career in water research. The research fellow position of Hydrological modeling & Flood Risk Assessment is consistent with my future research interests and career goal.

During my Ph.D. period, I am proficient with interdisciplinary research in environment, hydrology, water resources, GIS. I have extensive experience of the development and application of hydrological models, hydrodynamic models. I learned and mastered Fortran and high-performance programming with MPI/OpenMP. I am proficient with data processing with MATLAB, Python and R. I am familiar with weather research model WRF and earth system model CESM. As a key member of previous project research, I am able to work independently and collaborate effectively. I was responsible for guiding several undergraduate and master's graduate students in their graduation projects. I believe that my previous research experience and skills are well suited to the needs of this position and can contribute additional strengths to further research.

I am very interested in working at NUS because of its excellent reputation in research and education. I am very enthusiastic about joining the Department of Civil and Environmental Engineering as a postdoctoral researcher. I am confident that I can make a valuable contribution with my strong motivation, passion and skills.

Thank you for considering my application. I would love to discuss this with you further when you have the opportunity. You can contact me at xiaozhang\_sdh@whu.edu.cn. I look forward to hearing from you soon.

Sincerely,

Xiao Zhang