

CURRICULUM VITAE

Personal Details

Name: **Mengzhen Xu**

Position: Associate Professor

Director of River Research Institute

Associate Head of Department of Hydraulic Engineering

Tsinghua University

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Education

2012 Ph.D. Hydraulic Engineering, Tsinghua University

Dissertation: *Experimental Study of Macroinvertebrate Limnoperna fortunei Invasion and Prevention in Water Transfer Tunnels* (Advisor: Zhaoyin Wang)

Excellent Ph.D. Thesis of Tsinghua University in 2012

2007 B.Sc. Harbor, Coastal and Offshore Engineering, Tianjin University

Academic and Professional Experience

since 2020 Associate Head, Department of Hydraulic Engineering, Tsinghua University, China

since 2017 Director, River Research Institute; Associate Professor, Department of Hydraulic Engineering, Tsinghua University, China

2014-2017 Assistant Professor, Department of Hydraulic Engineering, Tsinghua University, China

2012-2014 Scientific Researcher, Section of Sediment and Erosion, Norwegian Water Resources and Energy Directorate (NVE), Norway

2007-2012 Graduate Research Assistant, Department of Hydraulic Engineering, Tsinghua University, China

Honors and Awards

- 2021 Invited Lecturer, Online Training Workshop on Sediment Transport Measurement and Monitoring, UNESCO-ISI
- 2021 Invited Speaker, the 100-year Association Ceremony, China Association for Science and Technology (CAST)
- 2021 Secretary-general of a delegation, the 10th National Congress of China Association for Science and Technology (CAST)
- 2021 Invited participant, the 8th China-EU High Level Dialogue on Water Resources, the Ministry of Water Resources of China (MWRC)
- 2020 National Outstanding Young Talent Award
- 2020 Invited Speaker, the IAHR 85th Anniversary Summit, International Association for Hydro-environment and Research (IAHR)
- 2020 Invited Speaker, the National Association Congress, China Association for Science and Technology (CAST)
- 2020 Award for Teaching Excellence, Tsinghua University
- 2019 English Medium Instruction Certificate, Oxford EMI Training Held at St Antony's College, Oxford, UK
- 2019 Award for Top-quality Course of Tsinghua University
- 2019 Excellent Advisor of Challenge Cup for Undergraduate Students, Tsinghua University
- 2018 Excellent Instructor of Social Practice for Undergraduate Students, Tsinghua University
- 2018 Invited Lecturer, International Training Workshop on Integrated Sediment Management in River Basin, UNESCO
- 2018 Panelist, the 1st UNESCO-IAHR International Youth Forum on Water Engineering Management. Penang, Malaysia
- 2017 Silver Prize of the 11th Beijing Invention and Innovation Competition
- 2017 Excellent Advisor of the Study and Research Training Program (SRT) of Tsinghua University
- 2016 Second Prize of the 7th Youth Teaching Competition of Tsinghua University
- 2015 Young Elite Scientists Sponsorship Program of China Association for Science and Technology (CAST)
- 2014 First Prize of Excellent Academic Publication, Hubei Hydropower Engineering Society
- 2013 John F. Kennedy Award, International Association for Hydro-environment and Research (IAHR)
- 2012 Excellent Doctoral Thesis, Tsinghua University

- 2010 Outstanding Contribution to Sedimentation Studies through Publication of Effect of Streambed on Benthic Ecology in the International Journal of Sediment Research, World Association for Sedimentation and Erosion Research (WASER)
- 2010 First Prize for Excellent Graduate in Overall Quality of Tsinghua University
- 2008 First Prize for Excellent Graduate in Overall Quality of Tsinghua University
- 2007 Outstanding Winner of the 9th Challenge Cup for Undergraduate Students in Tianjin City
- 2006 Excellent Student Scholar of Soong Ching Ling Foundation
- 2006 First Prize for Excellent Undergraduate in Overall Quality of Tianjin University
- 2005 First Prize for Excellent Undergraduate in Overall Quality of Tianjin University
- 2004 Outstanding Student Award of School of Civil Engineering, Tianjin University

Research Interests

Interfaces between hydraulics, structures, sediment, and aquatic organisms, and their application in river uses and ecological restoration. These topics broadly encompass her research in eco-hydraulics, eco-sedimentation, and eco-geomorphology, such as:

- Impacts of natural hazards on channel stability, and habitat stability, diversity, and suitability;
- Adaptation of organisms to hydrodynamics and environmental conditions of river habitat;
- Responses of benthic community composition to river morphological evolutions;
- Naked carp migration and Chinese cavefish conservation;
- Golden mussel invasion and its prevention in water transfer/diversion projects, etc.

Research Funding

Dr. Mengzhen Xu has been PI or Co-PI over 20 research projects supported by the National Natural Science Foundation of China (NSFC), the Ministry of Science and Technology of China (MSTC), the Ministry of Water Resources (MWRC), and industrial institutions, etc.

(Total funding: 47,861,200 RMB; Total Xu Portion: 33,031,200 RMB)

- 2022-2025 *Geomorphological heterogeneity and restoration mechanism of key fish habitats in the upper Yellow River*
The National Natural Science Foundation of China (Grant No. U2243222)
Role: Principal Investigator
- 2021-2025 *Integration and demonstration of intelligent decision support platform for whole-process control of risk pollutants*
Ministry of Science and Technology of China
Role: Principal Investigator
- 2021-2023 *Limnoperna fortunei biofouling monitoring and mechanism in the South-to-North Water Division Middle Route Project*

- Construction and Administration Bureau of South-to-North Water Division Middle Route Project
Role: Principal Investigator
- 2020-2023 *Interfaces between hydraulics, structures, sediment, and aquatic organisms*
Ministry of Science and Technology of China
Role: Principal Investigator
- 2021-2022 *Limnoperna fortunei biofouling risk in the East River Water Source Project*
Administration Department of the East River Water Source Project
Role: Principal Investigator
- 2020-2021 *Research on theoretical framework and key indicators of river sustainable development*
Environmental Engineering Evaluation Center, Ministry of Ecology and Environment (Grant No.20202001006)
Role: Principal Investigator
- 2020-2021 *Research on refined real-time flood forecasting and regulation technology based on multi-source data and assemble model*
Department of Water Resources of Guangdong Province (Grant No.2020-12)
Role: Principal Investigator
- 2020-2021 *Laboratory instrument and equipment research and development*
The State Key Laboratory of Hydroscience and Engineering Funding
Role: Principal Investigator
- 2020-2021 *Study on flood control and waterlogging control in karst area of Guangxi Province*
General Institute of Water Conservancy and Hydropower Planning and Design, Ministry of Water Resources
Role: Principal Investigator
- 2019-2023 *Principle of integrated disaster reduction with coordination of ecological measures and geotechnical measures*
Chinese Academy of Sciences (Grant No. XDA23090401)
Role: Principal Investigator
- 2019-2020 *Hydrodynamic modelling of the Xinghua Bay for mangrove restoration*
General Institute of Water Conservancy and Hydropower Planning and Design, Ministry of Water Resources
Role: Principal Investigator
- 2018-2022 *Risk assessment and comprehensive control principles of large scale geological hazards*
National Natural Science Foundation of China (Grant No. 41790434)
Role: Co-Principal Investigator
PI: Zhaoyin Wang, Department of Hydraulic Engineering, Tsinghua University
- 2018-2021 *Study on suitability of ecological fishpass for naked carp of Qinghai Lake (Gymnocypris przewalskii)*

- National Natural Science Foundation of China (Grant No. 51779120)
Role: Principal Investigator
- 2017-2018 *Risk assessment of Limnoperna fortunei invasion in the South-to-North Water Division Middle Route Project*
Construction and Administration Bureau of South-to-North Water Division Middle Route Project
Role: Principal Investigator
- 2017-2018 *The sedimentary characteristics and the influence mechanism of river bed evolution on the upstream of Yalutsangpo River*
Chinese Academy of Sciences
Role: Principal Investigator
- 2016-2020 *Study on the integrated assessment technology of the changing trend of runoff and sediment load in the Yellow River basin*
The National Key Research and Development Program of China (Grant No. 2016YFC0402407)
Role: Co-Principal Investigator
PI: Xiaoming Zhang, China Institute of Water Resources and Hydropower Research
- 2016-2019 *Study on dynamics of sky rivers*
The National Natural Science Foundation of China (Grant No. 91547204)
Role: Co-Principal Investigator
PI: Deyu Zhong, Qinghai University
- 2016-2018 *Study on hydrogeological environment and aquatic habitat characteristics of karst caves*
The State Key Laboratory of Hydrosience and Engineering Funding (Grant No. 2016-KY-04)
Role: Principal Investigator
- 2016-2018 *Sampling and identification of benthos and river ecological evaluation for the source area of Yellow River*
The Yellow River Institute of Hydraulic Research Funding (Grant No. HKY-JBYW-2016-03)
Role: Principal Investigator
- 2015-2018 *Study on habitat characteristics of Chinese cave fish*
Independent research project of Tsinghua University (Grant No. 2015THZ02-1)
Role: Principal Investigator
- 2015-2018 *Study on hydro-ecosystem evolution in the Yellow River Headwaters Region*
The Ministry of Water Resources of China (Grant No. 201501028)
Role: Co-Principal Investigator
PI: Guangqian Wang, Tsinghua University
- 2015-2017 *Feedback of river ecosystem to hydraulic engineering*
China Association for Science and Technology

Role: Principal Investigator

2015-2017 *Experimental study of eco-hydraulics prevention of Limnoperna fortunei bio-fouling in hydraulic engineering*

National Natural Science Foundation of China (Grant No. 51409146)

Role: Principal Investigator

2013-2014 *Experimental study of eco-hydraulics prevention of Limnoperna fortunei invasion in water diversion tunnels*

Special Financial Grant from the China Postdoctoral Science Foundation (Grant No. 2013T60122)

Role: Principal Investigator

Publications

Peer-reviewed journal publications in English (& denotes advisee author, students, and post-docs; * denotes corresponding author)

1. **Xu Mengzhen***, Guanghui Wang&, Zijing Wang&, Hongchang Hu, Durgesh Kumar Singh&, Shiming Tian. Temporal and spatial hydrological variations of the Yellow River in the past 60 years. *Journal of Hydrology* 609(2022), 127750
2. Wang Zijing, **Xu Mengzhen***, Xing Liu&, Durgesh Kumar Singh&, Xudong Fu. Quantifying the impact of climate change and anthropogenic activities on runoff and sediment load reduction in a typical Loess Plateau watershed. *Journal of Hydrology: Regional Studies* 39 (2022) 100992
3. Lyv Liqun&*, **Xu Mengzhen***, Wang Zhaoyin, Cui Yifei, Koen Blanckaert. Submitted. A field investigation on debris flows in the incised Tongde sedimentary basin on the northeastern edge of the Tibetan Plateau. *Catena* 2022, 105727.
4. Singh Kumar Durgesh &, **Xu Mengzhen***, Singh Nandita, Lei Fakai&. Submitted. Perspectives on emerging pressures and their integrated impact on large river systems: an insight from the Yellow River basin. *Journal of Environmental Management* 2021 298: 113423
5. Zhang Chendi&, **Xu Mengzhen***, Lei Fakai&, Zhang Jiahao&, Kattel Giri Raj, Duan Yongjie&. 2021. Spatio-temporal distribution of *Gymnocypris przewalskii* during migration with UAV-based photogrammetry and deep neural network. *Journal of Ecohydraulics* 2021, DOI: 10.1080/24705357.2021.1892547.
6. Lyv Liqun&*, **Xu Mengzhen***, Wang Zhaoyin, Qi Lijian, Li Xin&. 2020. Impact of densely distributed debris flow dams on river morphology of the Grand Canyon of the Nu River (upper Salween River) at the east margin of the Tibetan Plateau. *Landslides* 2021, 18: 979-991.
7. Zhao Na&, **Xu Mengzhen***, Koen Blanckaert, Qiao Chunhua, Zhou Hanmi, Niu Xiaoli. 2021. Study of factors influencing the invasion of golden mussels (*Limnoperna fortunei*) in water transfer projects. *Aquatic Ecosystem Health & Management* 22: 385-395.

8. Zhang Chendi[&], **Xu Mengzhen***, Hassan Marwan, Chartrand Shawn, Wang Zhaoyin, Ma Zewei[&]. 2020. Experiment on morphological and hydraulic adjustments of step-pool unit to flow increase. *Earth Surface Processes and Landforms* 45(2): 280-294.
9. Pavisorn Chuenchum[&], **Xu Mengzhen**, Tang Wenzhe*. 2020. Predicted trends of soil erosion and sediment yield from future land use and climate change scenarios in the Lancang-Mekong River by using the modified RUSLE model. *International Soil and Water Conservation Research* 8: 213-227.
10. Liu Wei[&], **Xu Mengzhen***, Zhang Jiahao[&], Zhang Tongyu[&]. 2020. Tolerance of the invasive freshwater mussel (*Limnoperna fortunei*) to environmental conditions and its potential implication in the biofouling control. *Limnology* 21:245-255
11. Zhou Xiongdong[&], **Xu Mengzhen***, Wang Zhaoyin, Yu Bofu, Shao Xuejun. 2019. Responses of macroinvertebrate assemblages to environmental variations in the river-oxbow lake system of the Zoige wetland (Bai River, Qinghai-Tibet Plateau). *Science of the Total Environment* 659: 150-160.
12. Zhou Xiongdong[&], Bisset Mike, **Xu Mengzhen***, Wang Zhaoyin. 2019. A new species of *Behningia Lestage*, 1929 (Ephemeroptera: Behningiidae) from China. *Zootaxa* 4671(3):420-426
13. Zhou Xiongdong[&], **Xu Mengzhen***, Wang Zhaoyin, Yu Bofu, Fu Xudong, Liu Wei[&], Sun Luo[&], Shao Xuejun. 2019. Debris-flow deposits on a major river influence aquatic habitats and benthic macroinvertebrate assemblages. *Freshwater Science* 38(4):713-724.
14. Liu Wei[&], **Xu Mengzhen***, Zhao Na[&], Zhou Xiongdong[&], Pan Baozhu, Tian Shimin, Lei Fakai[&]. 2019. River health assessment of the Yellow River source region, Qinghai-Tibetan Plateau, China, based on tolerance values of macroinvertebrates. *Environmental Science and Pollution Research* 26(10): 10251-10262.
15. Tian Shiming, **Xu Mengzhen***, Wang Guanghui[&], Hu Hongchang*, Liu Xing[&]. 2019. Temporal variations of runoff and sediment load in the upper Yellow River, China. *Journal of Hydrology* 568: 46-56.
16. **Xu Mengzhen***, Zhao Na[&], Zhou Xiongdong[&], Pan Baozhu, Liu Wei[&], Tian Shimin*, Wang Zhaoyin. 2018. Macroinvertebrate Biodiversity Trends and Habitat Relationships within Headwater Rivers of the Qinghai-Tibet Plateau. *Water* 10(1214) doi:10.3390/w10091214. (Invited by the guest editor)
17. Zhang Chendi[&], **Xu Mengzhen***, Zhaoyin Wang, Hassan A. Marwan, Chartrand M. Shawn. 2018. Experimental study on the stability and failure of individual step-pool. *Geomorphology* 311: 51-62.
18. Yang Yufeng[&], Zhou Xiongdong[&], Yi Yujun*, **Xu Mengzhen***, Zhifeng Yang. 2018. Influence of debris flows on macroinvertebrate diversity and assemblage structure. *Ecological Indicators* 85: 781-790.
19. Zhang Chendi[&], **Xu Mengzhen***, Wang Zhaoyin, Liu Wei[&], Yu Dandan[&]. 2017. Experimental study on the effect of turbulence in pipelines on the mortality of

- Limnoperna fortunei* veligers. *Ecological Engineering* 109(Part A): 101-118.
20. Yao Guoyou[&], **Xu Mengzhen***, An Xuehui. 2017. Concrete deterioration caused by freshwater mussel *Limnoperna fortunei* fouling. *International Biodeterioration & Biodegradation* 121: 55-65.
 21. Zhou Xiongdong[&], Wang Zhaoyin, **Xu Mengzhen***, Yu Bofu, Liu Wei[&], Pan Baozhu, Zhao Na[&], Shao Xuejun. 2017. The stream power parameter as a predictive indicator of aquatic macroinvertebrate assemblages in the Yarlung Tsangpo River Basin (Tibetan Plateau). *Hydrobiologia* 797: 215-230.
 22. Lyu Liqun[&], Wang Zhaoyin, Cui Peng, **Xu Mengzhen***. 2017. The role of bank erosion on the initiation and motion of gully debris flows. *Geomorphology* 285: 137-151.
 23. Zhao Na^{&*}, **Xu Mengzhen**, Li Zhiwei*, Wang Zhaoyin, Zhou Hanmi. 2017. Macroinvertebrate distribution and aquatic ecology in the Ruorgai (Zoige) Wetland, the Yellow River source region. *Frontiers of Earth Science* 11: 554-564
 24. Pan Baozhu, Yuan Jianping, Zhang Xinhua*, Wang Zhaoyin, Lu Jinyou, Yang Wenjun, Chen Jiao, Li Zhiwei, Zhao Na[&], **Xu Mengzhen**. 2016. A review of ecological restoration techniques in fluvial rivers. *International Journal of Sediment Research* 31(2): 110-119.
 25. **Xu Mengzhen***, Wang Zhaoyin, Zhao Na[&], Pan Baozhu. 2015. Growth, reproduction, and attachment of the golden mussel (*Limnoperna fortunei*) in water diversion projects. *Acta Ecologica Sinica* 35: 70-75.
 26. **Xu Mengzhen***, Bogen Jim, Wang Zhaoyin, Bønsnes Truls E., Gytri Stine. 2015. Proglacial lake sedimentation from jökulhlaups (GLOF), Blåmannsisen, northern Norway. *Earth Surface Processes and Landforms* 40(5): 654-665.
 27. **Xu Mengzhen**, Bogen Jim*, Ragulina Galina, Read Adrian. 2015. Early and late Holocene sediment yield of Austdalsbreen glacier, southwest Norway. *Geomorphology* 246: 277-289.
 28. **Xu Mengzhen**, Darrigran Gustavo, Wang Zhaoyin*, Zhao Na[&], Lin Cheng Chieh. 2015. Experimental study on control of *Limnoperna fortunei* biofouling in water transfer tunnels. *Journal of Hydro-environment Research* 9: 248-258.
 29. Bogen Jim, **Xu Mengzhen***, Kennie Patricia. 2015. The impact of pro-glacial lakes on downstream sediment delivery in Norway. *Earth Surface Processes and Landforms* 40(7): 942-952.
 30. Zhao Na[&], Wang Zhaoyin*, Pan Baozhu, **Xu Mengzhen**, Li Zhiwei. 2015. Macroinvertebrate assemblages in mountain streams with different streambed stability. *River Research and Application* 31:825-833.
 31. **Xu Mengzhen***, Wang Zhaoyin, Duan Xuehua, Pan Baozhu. 2014. Effects of pollution on macroinvertebrates and water quality bio-assessment. *Hydrobiologia* 729:247-259.
 32. **Xu Mengzhen***, Wang Zhaoyin*, Pan Baozhu, Yu Guo-an. 2014. The assemblage

- characteristics of benthic macroinvertebrates in the Yalutsangpo River, the highest major river in the world. *Frontiers of Earth Science* 8(3): 351-361.
33. Wang Zhaoyin*, Lee Joseph H.W., **Xu Mengzhen**. 2013. Eco-hydraulics and eco-sedimentation studies in China. *Journal of Hydraulic Research* 51(1): 19-32.
 34. Pan Baozhu, Wang Zhaoyin*, Ying Chao, **Xu Mengzhen**, Huang Guobing. 2013. Meiofaunal assemblages in relation to properties of fluid mud in river estuaries. *Fresenius Environmental Bulletin* 22(1): 67-73.
 35. Pan Baozhu, Wang Zhaoyin*, Li Zhiwei, Yu Guo-An, **Xu Mengzhen**, Zhao Na, Gary Brierley. 2013. An exploratory analysis of benthic macroinvertebrates as indicators of the ecological status of the Upper Yellow and Yangtze Rivers. *Journal of Geographical Sciences* 23(5): 871-882.
 36. **Xu Mengzhen***, Wang Zhaoyin*, Pan Baozhu, Na Zhao. 2012. Distribution and species composition of macroinvertebrates in the hyporheic zone of bed sediment. *International Journal of Sediment Research* 7: 129-140.
 37. **Xu Mengzhen***, Wang Zhaoyin, Qi Lijian, Liu Le. 2012. Disaster chains initiated by the Wenchuan Earthquake. *Environment Earth Sciences* 65(4): 975-985.
 38. Pan Baozhu, Wang Zhaoyin*, **Xu Mengzhen**. 2012. Macroinvertebrates in abandoned channels: assemblage characteristics and their indications for channel management. *River Research and Applications* 28(8): 1149-1160. (**Second Prize of the 15th Natural Science Excellent Academic Paper of Hubei Province**)
 39. Pan Baozhu, Wang Zhaoyin*, **Xu Mengzhen**, Xing Linghang. 2012. Relation between stream habitat conditions and macroinvertebrate assemblages in three Chinese rivers. *Quaternary International* 282: 178-183. (**First Prize of Excellent Academic Publication, Hubei Hydropower Engineering Society**)
 40. Duan Xuehua, Wang Zhaoyin*, **Xu Mengzhen**. 2011. Effects of fluvial processes and human activities on stream macroinvertebrates. *International Journal of Sediment Research* 26(4): 416-430.
 41. Zhang Kang*, **Xu Mengzhen**, Wang Zhaoyin. 2009. Study on Reforestation with Seabuckthorn in the Pisha Sandstone Area. *Journal of Hydro-environment research* 3(2): 77-84.
 42. Duan Xuehua, Wang Zhaoyin*, **Xu Mengzhen**, Zhang Kang. 2009. Effect of streambed sediment on benthic ecology. *International Journal of Sediment Research* 24 (3): 325-338. (**Outstanding Contribution to Sedimentation Studies, World Association for Sedimentation and Erosion Research**)

Selected peer-reviewed journal publications in Chinese (& denotes advisee author, students, and post-docs; * denotes corresponding author)

1. **Xu Mengzhen***, Fu Xudong, Jin Feng. 2020. Exploration of the Belt and Road Initiative for talent cultivation. *Education Modernization* 46: 16-19.

2. Huang Kehan[&], Zhang Chendi[&], **Xu Mengzhen***, Lin Yongpeng[&]. 2020. Application study on the automated grain sizing based on BASEGRAIN software. *Journal of Sediment Research* 45(2): 44-51.
3. Liang Xinyue[&], **Xu Mengzhen**, Lyu Liqun[&], Cui Yifei, Zhang Fengbao*. 2020. Geomorphological characteristics of debris flow gullies on the edge of the Qinghai-Tibet Plateau. *Acta Geographica Sinica* 75(7): 1389-1401.
4. Tian Yong, Zhang Aijing, Wang Shulei, **Xu Mengzhen***. 2020. Impact and control measures for *Limnoperna fortunei* (golden mussel). *Journal of Hydroecology* 41(1): 110-116.
5. Zhang Chendi[&], Lin Yongpeng[&], **Xu Mengzhen***, Huang Kehan[&], Wang Zhaoyin. 2019. Morphological characteristics and mechanism for riverbed stabilization of the barrier dams in Nujiang River. *Shuili Xuebao* 50(10): 1165-1176.
6. Zhao Na[&], **Xu Mengzhen**, Li Zhiwei, Zhou Hanmi, Yin Dongxue. 2019. Macroinvertebrate ecology in a meandering river of the Yellow River Headwaters. *Journal of Hydroecology* 05: 40-47.
7. Lyv Liqun[&], Wang Zhaoyin, Cui Peng, **Xu Mengzhen**. 2018. Role of bank erosion on the unsteady dynamics of debris flow motion. *Advances in Water Science* 29 (2): 213-220.
8. Liu An[&], Liu Cheng, Ji Ziqing[&], **Xu Mengzhen**, Li Zhiwei. 2018. Relationship between riparian vegetation and migration of a meandering river in the Yellow River Source Region. *Advances in Science and Technology of Water Resources* 38(2): 57-61, 76.
9. Yao Guoyou[&], **Xu Mengzhen**, An Xuehui, Yan Zhenrui, Qin Xiaochuan. 2017. Experimental study on concrete deterioration caused by *Limnoperna fortunei* fouling. *Shuili Xuebao* 48(12): 1447-1455.
10. **Xu Mengzhen**, Li Yanfu, Wang Zhaoyin, Li Zhiwei, Han Lujie. 2017. Relationship between the desertification risk index and blowing sand content of typical aeolian erosion areas in Sanjiangyuan. *Journal of Tsinghua University (Science and Technology)* 57(4): 337-344.
11. Lyv Liqun[&], Wang Zhaoyin, Cui Peng, **Xu Mengzhen**. 2017. Role of bank erosion on the gully debris flow initiation and motion. *Advances in Water Science* 04:1-12.
12. Liu Wei[&], **Xu Mengzhen**, Wang Zhaoyin, Yu Dandan[&], Zhou Xiongdong[&]. 2017. Experimental study of attachment characteristics of golden mussel larvae. *Acta Ecologica Sinica* 37(8): 2779-2787.
13. Zhang Chendi[&], **Xu Mengzhen***, Wang Zhaoyin, Wang Yin, Yu Kun. 2016. Experimental study on the effect of pipeline turbulence on killing *Limnoperna fortunei* larvae I. Hydraulic characteristics. *Shuili Xuebao* 47(11): 1405-1417.
14. Zhang Chendi[&], **Xu Mengzhen***, Wang Zhaoyin, Liu Wei[&], Yu Dandan[&], Wang Daqiang. 2016. Experimental study on the effect of pipeline turbulence on killing *Limnoperna fortunei* larvae II. Efficiency comparison. *Shuili Xuebao* 47(12): 1510-1518.

15. **Xu Mengzhen**, Liu Wei[&], Yu Dandan[&], Qiang Jie, Hu Zhiping, Yao Guoyou[&]. 2016. Golden mussel biofouling and its prevention in pumped storage power plants. *Journal of Hydroelectric Engineering* 35(7): 75-83.
16. Yao Guoyou[&], **Xu Mengzhen**, An Xuehui, Zhou Jianwei, Hua Pilong. 2016. Performance test of anti-fouling and anti-corrosion for coatings. *Journal of Hydroelectric Engineering* 35(5): 31-39.
17. Yu Dandan[&], Tang Hongwu, **Xu Mengzhen**, Liu Wei[&], Wang Zhaoyin, Min Congjun. 2016. Influence of daily operation of pumped-storage power plant on density of *Limnoperna fortunei* veligers. *Journal of Hydroelectric Engineering* 35(6): 74-79.
18. Lyv Liqun[&], Wang Zhaoyin, **Xu Mengzhen**, Qi Lijian, Zhang Chendi[&]. 2016. Geomorphic characters of debris flow fans along Nu River and the river blocking mechanisms. *Shuili Xuebao* 47(10): 1245-1252.
19. Li Zhiwei*, Yu Guoan, **Xu Mengzhen**, Hu Xuyue, Yang Hongming, Hu Shixiong. 2016. Progress in studies on river morphodynamics in Qinghai-Tibet Plateau. *Advances in Water Science* 617-628.
20. Yao Guoyou[&], **Xu Mengzhen**, An Xuehui*, Wang Zhaoyin. 2015. Rapid evaluation of anti-fouling coating materials for *Limnoperna fortunei*. *Journal of Tsinghua University (Science and Technology)* 55(9): 957-963.
21. Zhao Na[&], Wang Zhaoyin, **Xu Mengzhen**, Zhou Xiongdong[&], Zhang Chendi[&]. 2015. Influence of rubber cultivation on the aquatic ecology of the Naban River. *Journal of Tsinghua University (Science and Technology)* 55(12):1296-1302.
22. **Xu Mengzhen**, Wang Zhaoyin, Pan Baozhu, Zhao Na. 2014. Parameters influencing the vertical distribution of macroinvertebrates in a gravel bed river. *Journal of Tsinghua University (Science and Technology)* 54(8): 1038-1043.
23. **Xu Mengzhen**, Wang Zhaoyin, Wang Xuzhao, Liu Wei, Zhao Na. 2013. Golden mussel invasion in water transfer tunnels and hydraulic prevention. *Shuili Xuebao* 44(7): 856-872.
24. **Xu Mengzhen**, Cao Xiaowu, Wang Zhaoyin, Wang Xuzhao. 2012. Attachment character of golden mussels (*Limnoperna fortunei*) invaded in water transport project. *Journal of Tsinghua University (Science and Technology)* 52 (2): 170-176.
25. Ye Baomin, Cao Xiaowu, **Xu Mengzhen**, Wang Zhaoyin, Lin Cheng Chieh. 2011. Study of *Limnoperna fortunei* invasion in long distance water transmission project. *Water and Wastewater Engineering* 37(7): 99-102.
26. **Xu Mengzhen**, Wang Zhaoyin, Shi Wen Jing, Wang Xuzhao. 2010. Mountain disaster chain induced by the Wenchuan earthquake in the Huoshiguo Gorge. *Journal of Tsinghua University (Science & Technology)* 50(9): 1338-1341.
27. Tian Shimin, Wang Zhaoyin, **Xu Mengzhen**, Zhang Kang. 2010. Study on coupling mechanism of benthonic animal and area of aquatic habitat. *Yellow River* 32(11): 19-23.

28. **Xu Mengzhen**, Wang Zhaoyin, Duan Xuehua. 2009. Summary of the control and prevention of *Limnoperna fortunei* (Bivalvia Mytilidae) invasion in water supply system. *Water and Wastewater Engineering* 35(5): 205-208.

Monographs and book chapters

1. **Xu Mengzhen**, Wang Zhaoyin, Zhou Xiongdong, Fu Xudong. 2021. Fluvial processes and river ecology of the Nujiang River (upper Salween) (in Chinese). Science Press of China, Beijing. (in press)
2. **Xu Mengzhen**, Zhao Na, Wang Zhaoyin, An Xuehui, Fu Xudong, Yao Guoyou. 2021. *Limnoperna fortunei* invasion, biofouling, and prevention in water transfer projects (in Chinese). Science Press of China, Beijing. (in press)
3. Wang Zhaoyin, Li Zhiwei, **Xu Mengzhen**, Yu Guoan. 2016. River Morphodynamics and Stream Ecology of the Qinghai-Tibet Plateau. Taylor & Francis Press, Oxon.
4. **Xu Mengzhen**. 2015. Chapters “Distribution and spread in China: history, present situation and future prospects” and “Impacts on man-made structures and biofouling control”. In Boltovskoy D. (eds) *Limnoperna fortunei: the biology, ecology, impact and control of a swiftly spreading invasive fouling mussel*. Springer, Berlin.
5. Wang Zhaoyin, Li Zhiwei, **Xu Mengzhen**. 2014. Fluvial processes and ecology of rivers on the Qinghai-Tibetan Plateau (in Chinese). Science Press of China, Beijing.
6. Duan Xuehua, Wang Zhaoyin, **Xu Mengzhen**. 2010. Benthic Macroinvertebrate and Application in the Assessment of stream ecology (in Chinese). Tsinghua University Press, Beijing.

Standards in Chinese

1. **Xu Mengzhen**, Wang Zhaoyin, Cao Xiaowu, Li Tiejian, Wang Guangqian, Zhao Na, Fu Xudong, Liu Wei, Wang Xuzhao. 2021. Guideline of prevention pool for *Limnoperna fortunei* biofouling in water transfer project. Chinese Hydraulic Engineering Society. (in press)
2. **Xu Mengzhen**, Wang Zhaoyin, Cao Xiaowu, Fu Xudong, Zhao Na, Zhang Chendi, Hu Hongchang, Liu Wei. 2021. Guideline of prevention and control facility for *Limnoperna fortunei* biofouling in technical water supply pipeline. Chinese Hydraulic Engineering Society. (in press)

Patents and Software Copyright in Chinese

1. **Xu Mengzhen**, Lei fakai, Zhang Ga. 2020. Fish trajectory tracking method and system based on artificial neural network. China National Intellectual Property Administration, Patent for Invention (Application No. 202010478461.5).
2. Zhang Chendi, **Xu Mengzhen**, Wang Zhaoyin. 2020. A design method for multiple step-pool energy dissipation system composed of natural stones. China National Intellectual Property Administration, Patent for Invention (Application No. 202011119174.1).

3. **Xu Mengzhen**, Liu Xing, Fu Xudong, Zhang Xiaoming, Wang Zijing, Zhao Yang. 2019. An intelligent ensemble evaluation method and system for watershed runoff and sediment research. China National Intellectual Property Administration, Patent for Invention (Application No. 201910953930.1).
4. **Xu Mengzhen**, Wang Zijing, Hu Hongchang. 2019. A method for analysis of watershed vegetation change based on remote sensing data. China National Intellectual Property Administration, Patent for Invention (Application No. 201910962541.5).
5. **Xu Mengzhen**, Wang Zijing, Liu Xing, Hu Hongchang. 2019. An ensemble evaluation software (V1.0) for watershed runoff and sediment transport models using machine learning methods. National Copyright Administration of the People's Republic of China, Computer Software Copyright Registration Certificate (No. 4620292).
6. Wang Zhaoyin, **Xu Mengzhen**, Zhao Na, Yu Dandan, Zhang Chendi, Liu Wei, Xing Jihong, Yuan Bo, Wang Weiping, Xiong Xuping, Wang Daqiang, Li Wei, Wang Xuzhao. 2015. A facility and method for killing *Limnoperna fortunei*. China National Intellectual Property Administration, Patent for Invention (No. ZL2015 1 0586644.8).
7. Wang Zhaoyin, **Xu Mengzhen**, Yu Dandan, Zhang Chendi, Liu Wei, Li Jianguang, Qiang Jie, Li Wei, Wang Ying, Min Congjun, Yu Kun, Wu Peizhi, Wang Xuzhao. 2015. An attachment-silting pool and facility for killing *Limnoperna fortunei*. China National Intellectual Property Administration, Utility Model Patent (No. ZL2015 2 0714723.8).
8. Wang Zhaoyin, **Xu Mengzhen**, Wang Xuzhao, Cao Xiaowu, Chen Xiaodan, Liu Le. 2013. A water purification facility and a water transmission engineering comprising the facility. China National Intellectual Property Administration, Patent for Invention (No. ZL2011 1 0256378.4).
9. Wang Zhaoyin, Zhao Na, Wang Xuzhao, Pan Baozhu, **Xu Mengzhen**. 2013. A device for shallow water silt stratification sampling. China National Intellectual Property Administration, Utility Model Patent (No. ZL2013 2 0115793.2).
10. Wang Zhaoyin, **Xu Mengzhen**, Ye Baomin, Wang Xuzhao, Yuan Baozhao, Zhao Na. 2013. A facility for treatment of biofouling organisms and a water transmission engineering comprising the facility. China National Intellectual Property Administration, Patent for Invention (No. ZL2011 1 0317506.1).
11. Wang Zhaoyin, **Xu Mengzhen**, Wang Xuzhao, Zhu Hailong, Su Xuemin, Li Wenzhen. 2013. A facility, method and water transmission engineering comprising the facility for killing harmful aquatic organisms. China National Intellectual Property Administration, Patent for Invention (No. ZL2011 1 2055939.9).
12. Wang Zhaoyin, **Xu Mengzhen**, Wang Xuzhao, Zhang Kang. 2011. An attachment facility, system, and water transmission engineering comprising the facility and aquaculture facility for plankton. China National Intellectual Property Administration, Patent for Invention (No. ZL 2011 2 0325605.X).

Invited Talks

1. “Natural hazard mitigation and ecological restoration using step-pools/cascades in Southwest China.” IAHR 85th Anniversary Summit, Webinar, December 14, 2020.
2. “Seeking and platform support in the inter-discipline research of eco-hydraulics.” The National Association Congress, China Association for Science and Technology (CAST), Beijing, China, November 30, 2020. (in Chinese)
3. “Study of macroinvertebrate invasion and control in inter-basin water diversion.” The 11th National Symposium on Fundamental Sediment Research, Guangzhou, China, November 28-29, 2020. (in Chinese)
4. “Debris flow prevention and river restoration.” The Training Seminar for Management Personnel of Liangshan Autonomous Prefecture, Xide County, China, October 24, 2020. (in Chinese)
5. “Macroinvertebrate invasion and control in inter-basin water diversion projects.” The 6th Qian Ning (Ning Chien) Youth Forum of Sediment Research, Beijing, China, August 21-22, 2020. (in Chinese)
6. “River evolution and ecological response in Qinghai-Tibet Plateau.” CYWater 2020, webinar, August 11 -14, 2020. (in Chinese)
7. “River dynamics and its ecological responses.” High-level Academic Forum on Hydrology, Sedimentology, and Ecology Changes, webinar, July 4, 2020. (in Chinese)
8. “Effects and prevention measures of golden mussel *Limnoperna fortunei* biofouling in water transfer projects.” The 3rd Forum on Ecological and Economic Impacts of Invasive Species, Ouro Preto, Brazil, November 12, 2019.
9. “Impact of changing runoff on river dynamics and ecology.” The 2nd International Workshop on Global Water Cycle and Sky River Research, Beijing, China, July 2-5, 2019.
10. “River dynamics and ecological responses.” Workshop on Watershed Management, East China Normal University, Shanghai, May 17, 2019. (in Chinese)
11. “Research progresses in river eco-hydraulics and eco-sedimentation.” Memorial Conference of Qian Ning (Ning Chien), Beijing, China, November 23-25, 2018. (in Chinese)
12. “Sediment-related ecological problems and their control.” UNESCO International Training Workshop on Integrated Sediment Management in River Basin, Beijing, China, November 4-9, 2018.
13. “Ecological hydraulic engineering and river restoration.” The High-level Training Seminar for Management Personnel of Xiangxi Autonomous Prefecture, Beijing, China, October 24, 2018. (in Chinese)

14. “The hydrodynamic characteristics and sensory ability of Chinese cavefish.” Annual conference of Chinese Hydraulic Engineering Society. Nanchang, China, October 20-21, 2018.
15. “Flood hazard and management.” Beijing Forest University International Program, Beijing, October 12, 2018.
16. “Effects and prevention measures of the golden mussel biofouling.” Marine and Freshwater Invasive Species: Solutions for water security, Beijing, China, August 27-29, 2018.
17. “Ecological hydraulic engineering and healthy watershed.” The High-level Training Seminar for Management Personnel of Survey and Design of Water Resources and Hydropower in Hunan Province, Beijing, China, August 25, 2018. (in Chinese)
18. “Overview of river management issues in China.” ESPOL-Tsinghua Day, Guayaquil, Ecuador, August 2, 2018.
19. “Overview of water disasters and river management issues in China.” The 1st UNESCO-IAHR International Youth Forum on Water Engineering Management: Water: Connecting Youth to the World, Penang, Malaysia, July 5- 6, 2018.
20. “Innovation in the inter-discipline research of eco-hydraulics and eco-geomorphology.” The 514st Ph.D. Student Forum of Tsinghua University, Beijing, China, April 21-22, 2018. (in Chinese)
21. “Biological invasion and biofouling in water diversion projects.” The 1st Youth Forum of the Water Diversion Committee of Chinese Hydraulic Engineering Society, Hangzhou, China, April 20-21, 2018. (in Chinese)
22. “Aquatic ecology in the Upper Yellow River Basin.” American Geophysical Union – Hydrology Days Conference: the CICSU Water and Environmental Sustainability Symposium, Fort Collins, USA, March 18-24, 2018.
23. “Golden mussel (*Limnoperna fortunei*) biofouling and its prevention strategies.” Academic Exchange Meeting and 2017 Working Meeting of Youth Science and Technology Committee of Chinese Hydraulic Engineering Society, Gongqing, China, September 23-24, 2017. (in Chinese)
24. “Effects of stream power on macroinvertebrate.” The 2th Qian Ning (Ning Chien) Youth Forum of Sediment Research, Beijing, China, August 19-21, 2016. (in Chinese)
25. “River ecology and restoration.” The High-level Professional and Technical Talents Training Seminar for Yichang Water Conservancy, Beijing, China, April 19, 2016. (in Chinese)

Technical Reports

1. **Xu Mengzhen**, Zhou Xiongdong. 2021. “Framework and key indicators of river sustainable development in Tibet.” Environmental Engineering Evaluation Center Fund, Ministry of Ecology and Environment. Beijing. (in Chinese)
2. **Xu Mengzhen**, Liu Wei, Niu Xiaojing. 2020. “Plan for mangrove restoration of the Xinghua Bay.” General Institute of Water Conservancy and Hydropower Planning and Design Fund, Ministry of Water Resources. Beijing. (in Chinese)
3. **Xu Mengzhen**, Liu Wei, Zhang Jiahao. 2020. “Risk of *Limnoperna fortunei* invasion in the South-to-North Water Division Middle Route Project.” Construction and Administration Bureau of South-to-North Water Division Middle Route Project Fund. Beijing. (in Chinese)
4. **Xu Mengzhen**, Lei Fakai. 2019. “Hydrogeological environment and aquatic habitat characteristics of karst caves.” The State Key Laboratory of Hydrosience and Engineering Fund. Beijing. (in Chinese)

Other Publications

Conference Proceedings, Presentations and Posters (& denotes advisee author, students, and post-docs)

1. Guo Xingyan &, **Xu Mengzhen**, Wang Ruiyu, Li Zhi, Chen Dong, Garcia H Marcelo, Best Jim, Parker Gary. 2020. Triangle shaped bends associated with peat in the Zoige Basin, Northeast Qinghai - Tibet Plateau. The 2020 AGU Fall Meeting, December 1-17, 2020, Webinar.
2. Zhang Chendi&, **Xu Mengzhen**, Lei Fakai&, Zhang Jiahao&, Kattel Giri Raj, Duan Yongjie&. 2020. Investigating spatio-temporal distribution of the naked carp (*Gymnocypris przewalskii*) during migration by combining UAV-based photogrammetry and deep neural network. The 13th International Symposium on Ecohydraulics, November 23-24, 2020, Webinar. (**Invited speech**)
3. **Xu Mengzhen**, Lei Fakai&, Zhou Xiongdong&. 2019. Effects of meander cutting on macroinvertebrates in the high plateau peat-substrate meandering rivers. The 11th Symposium on River, Coastal and Estuarine Morphodynamics (RCEM2019), November 17-23, 2019, Auckland, New Zealand.
4. Huang Kehan&, **Xu Mengzhen**, Zhang Chendi&, Lyu Liqun&. 2019. Experimental study on effect of bed structures in preventing river incision and slope failure. The 14th International Symposium on River Sedimentation (ISRS2019), September 16-19, 2019, Chengdu, China.
5. Zhang Chendi&, Liu Yingjun&, **Xu Mengzhen**, Wang Zhaoyin. 2019. The 3D Numerical Study on Flow Properties of individual step-pool. The 14th International Symposium on River Sedimentation, September 16-19, 2019, Chengdu, China.
6. Zhang Chendi&, Sun Ao’ran&, Liu Sujia&, Ju Jingwei&, **Xu Mengzhen**, Wang

- Chenyang[&], Huang Qinglin[&], Han Lujie[&]. 2019. Laboratory application of bathymetric Structure-from-Motion (SfM) photogrammetry in topographic survey for gravel bed. The 14th International Symposium on River Sedimentation, September 16-19, 2019, Chengdu, China.
7. Zhang Chendi[&], **Xu Mengzhen**, Feng Yuqiao[&], Hassan Marwan, Wang Zhaoyin. 2019. The energy budget and design framework for step-pool system. EGU General Assembly 2019. April 7-12, 2019, Vienna, Austria.
 8. **Xu Mengzhen**, Zhang Chendi[&], Giri Kattel, Zhongjing Wang. 2018. Developing a theoretical model to help design ecologically-friendly fishway of the endangered fish species, scale-less carp (*Gymnocypris przewalskii*) in the Qinghai Lake watershed, western China. The 2018 International Conference on River Connectivity (Fish Passage 2018) & the First International Symposium on Hydropower and Fish Management, December 10-14, 2018, Albury, NSW, Australia.
 9. Zhang Chendi[&], **Xu Mengzhen**, Ma Zewei, Huang Kehan, Wang Zhaoyin. 2018. Experimental study on the morphological and hydraulic responses of step-pool to extreme flood events. The AGU 2018 fall meeting, December 10-14, 2018, Washington, USA.
 10. Zhou Xiongdong[&], **Xu Mengzhen**. 2018. Macroinvertebrates as indicators for the ecological significance of cutoff in high plateau meandering rivers in the Zoige Wetland, China. The 12th International Symposium of Ecohydraulics, August 18-28, 2018, Tokyo, Japan.
 11. Liu Wei[&], **Xu Mengzhen**, Han Lujie[&], Ji Ziqing[&], Zhou Xiongdong[&]. 2018. Ecological significance of suspended load based on macroinvertebrate communities traits. The 12th International Symposium of Ecohydraulics, August 18-28, 2018, Tokyo, Japan.
 12. Zhang Jiahao[&], **Xu Mengzhen**, Liu Wei[&], Zhang Tongyu[&]. 2018. Experimental study on the effect of golden mussel attachment on the roughness of water transfer pipeline. The 12th International Symposium of Ecohydraulics, August 18-28, 2018, Tokyo, Japan.
 13. Zhao Na[&], **Xu Mengzhen**, Zhou Hanmi, Jiang Yunpeng. 2018. Ecological pattern of macroinvertebrates in the floodplain of typical meandering river in the Yellow River Source Region. The 12th International Symposium of Ecohydraulics, August 18-28, 2018, Tokyo, Japan.
 14. Huang Kehan[&], Zhang Chendi[&], **Xu Mengzhen**. 2018 Sensitivity and precision analysis of an automated grain sizing method for gravel bed. The 2nd International Symposium on Hydraulic Modelling and Measuring Technology Congress, May 30 - June 1, 2018, Nanjing, China.
 15. **Xu Mengzhen**, Liu Xing[&]. 2017. Comparison of the various methodologies used in studying runoff and sediment load in the Yellow River Basin. The 2017 AGU Fall Meeting, December 11-15, 2017, New Orleans, USA.
 16. Lyu Liquan[&], **Xu Mengzhen**, Wang Zhaoyin, Cui Peng. 2017. The role of fine sediment content on soil consolidation and debris flows development after earthquake. The 2017

- AGU Fall Meeting, December 11-15, 2017, New Orleans, USA.
17. Zhang Chendi[&], Li Zhiwei, **Xu Mengzhen**, Wang Zhaoyin. 2017. Experimental study on individual step-pool stability. The 10th Symposium on River, Coastal and Estuarine Morphodynamics (RCM2017). September 15-22, 2017, Trento and Padova, Italy.
 18. Lei Fakai[&], **Xu Mengzhen**, Ji Ziqing, WangZhaoyin, Bisset Michael Andrew, Zakirov Vadim. 2017. The Head-horn structure of cavefish (*Sinocyclocheilus Tileihornes*) may strengthen their sense efficiency in water flow. The 37th IAHR World Congress, August 13 - 18, 2017, Kuala Lumpur, Malaysia.
 19. Zhang Chendi[&], **Xu Mengzhen**, Wang Zhaoyin. 2017. Experimental study of turbulence on killing *Limnoperna fortunei* larvae in pipelines. The 37th IAHR World Congress, August 13 - 18, 2017, Kuala Lumpur, Malaysia.
 20. Ji Ziqing[&], Wang Zhaoyin, **Xu Mengzhen**, Liu An. 2017. Bank erosion aggravated by meander cut-off at the alpine meadow in the source region of Yellow River. The 1st World Conference on Soil and Water Conservation under Global Change (CONSOWA), June 10-19, 2017, Lleida, Spain.
 21. **Xu Mengzhen**. 2017. The aquatic ecological characteristics of the Zoige Marsh in Qinghai-Tibet Plateau. The 2017 International Perspective on Water Resources and the Environment Conference. January 4-6, 2017, Wuhan, China.
 22. **Xu Mengzhen**. 2016. The aquatic ecological characteristics of highland rivers in Qinghai-Tibet Plateau. CYWater 2016 Summer Meeting - Frontiers in Water Sciences, August 5-6, 2016, Beijing, China.
 23. **Xu Mengzhen**, Zhaon Na[&], Wang Zhaoyin, Zhou Xiongdong, Li Zhiwei. 2016. Impact of marsh degradation on aquatic ecosystem in the Zoige Marsh, Qinghai-Tibetan Plateau. The 11th International Symposium on Ecohydraulics, February 07-12, 2016, Melbourne, Australia.
 24. **Xu Mengzhen**. 2015. Highland river ecology. Headwater Regions Symposium 2015: the Global Social, Ecological, and Hydrological Importance. October 19-21, 2015, Beijing, China.
 25. **Xu Mengzhen**, Li Yanfu, Wang Zhaoyin, Han Lujie, Pan Baozhu. 2015. Study of the relationship between desertification and blowing sand in the Sanjiangyuan Region in Qinghai-Tibetan Plateau. The 36th IAHR World Congress, June 30-July 05, 2015, the Hague, the Netherlands.
 26. Yu Dandan[&], **Xu Mengzhen**, Tang Hongwu, Wang Zhaoying. 2015. Influence of pumped-storage power plant's daily operation on the density of veligers of *Limnoperna fortunei*. The 36th IAHR World Congress, June 30-July 05, 2015, the Hague, the Netherlands.
 27. Zhou Xiongdong[&], Wang Zhaoyin, **Xu Mengzhen**, Pan Baozhu, Zhao Na. 2015. Biodiversity and bio-community of macroinvertebrate in different stream powers in the Yarlung Tsangpo River. The 36th IAHR World Congress, June 30-July 05, 2015, the

Hague, the Netherlands.

28. Zhao Na[&], Wang Zhaoyin, **Xu Mengzhen**, Han Lujie, Zhou Xiongdong. 2014. Research on aquatic ecology in the Naban River and restoration suggestions. The 7th International Conference on Fluvial Hydraulics (River Flow 2014), September 3-5, 2014, Lausanne, Switzerland.
29. **Xu Mengzhen**, Wang Zhaoyin. 2014. The aquatic ecological characteristics of the Yalutsangpo, the highest-altitude major river in the world. The 10th International Symposium on Ecohydraulics, June 28- July 03, 2014, Trondheim, Norway.
30. **Xu Mengzhen**, Wang Zhaoyin, Lin Cheng Chieh, Pan Baozhu, Zhao Na. 2013. Experimental study of invasion and biofouling of freshwater mussel *Limnoperna fortunei*. The 2013 Hydrology, Ocean and Atmosphere Conference (HOAC 2013). September 18-21, 2013, Beijing, China.
31. **Xu Mengzhen**. 2013. Experimental study of bio-fouling control of *Limnoperna fortunei* in water transfer tunnels. The 35th IAHR World Congress, September 02-07, 2013, Chengdu, China. (**Third Prize in the John F. Kennedy Student Paper Competition**)
32. Zhao Na[&], Wang Zhaoyin, **Xu Mengzhen**. 2013. Investigation of aquatic ecology in the middle and lower reaches of the Yalu Tsangpo River. The 35th IAHR World Congress, September 02-07, 2013, Chengdu, China.
33. **Xu Mengzhen**. 2013. Macroinvertebrates and water quality assessment. Joint Assembly IAHS-IASPEI, July 22-26, 2013, Gothenburg, Sweden.
34. Wang Zhaoyin, **Xu Mengzhen**. 2012. Problems and researches on eco-hydraulics and eco-sedimentation. The 6th International Conference on Fluvial Hydraulics (River Flow 2012), 05-07 September, 2012, San Jose, Costa Rica. (**Keynote speech**)
35. Duan Xuehua, Wang Zhaoyin, **Xu Mengzhen**. 2011. Assessment of effects of fluvial processes and human activities on river ecology using macroinvertebrates as indicator. The 7th Symposium on River, Coastal and Estuarine Morphodynamics (RCM2011), September 6-8, 2011, Beijing, China.
36. **Xu Mengzhen**. 2011. Experimental study of colonization of *Limnoperna fortunei* (Dunker 1857) in the Xizhijiang River. Blueprint for Sustainable, Ecologically-based Watershed Management in China: A Workshop on Lessons Learned Globally. August 1-4, 2011, Beijing, China.
37. **Xu Mengzhen**, Wang Zhaoyin, Pan Baozhu, Jin Xin. 2010. Thickness of hyporheic zone and distribution of benthic macroinvertebrates in mountain streams. The 8th International Symposium on Ecohydraulics (ISE 2010), September 12-16, 2010, Seoul, Korea.
38. Wang Zhaoyin, **Xu Mengzhen**. 2010. Habitat diversity of rivers and its relation with biodiversity. The 8th International Symposium on Ecohydraulics (ISE 2010), September 12-16, 2010, Seoul, Korea. (**Invited speech**)
39. Wang Zhaoyin, Pan Baozhu, **Xu Mengzhen**, Yu Guo-an. 2010. Community characteristics of benthic macroinvertebrates in the source region of the Yellow River.

The 8th International Symposium on Ecohydraulics (ISE 2010), September 12-16, 2010, Seoul, Korea.

40. Chang Tung-Chiung, Wang Zhaoyin, Yu Guo-an, **Xu Mengzhen**. 2010. Particle size characteristics of step pool of mountain river and the quantitative study. The 11th International Symposium on River Sedimentation (ISRS2010), September 6-9, 2010, Stellenbosch, South Africa.
41. **Xu Mengzhen**, Wang Zhaoyin, Duan Xuehua, Zhuang Meiqi, de Souza Fabio Teodoro. 2009. Ecological measures of controlling invasion of golden mussel (*Limnoperna fortunei*) in water transfer systems. The 33rd IAHR Congress: Water Engineering for a Sustainable Environment, August 09 - 14, 2009, Vancouver, BC, Canada.
42. Zhang Kang, **Xu Mengzhen**, Wang Zhaoyin, Duan Xuehua, Bi Cifen. 2018. Ecological impacts of seabuckthorn in the Pisha sandstone area. The 16th IAHR-APD & 3rd IAHR-ISHS, October 20-23, 2008, Nanjing, China.

Teaching

Dr. Mengzhen Xu has been in charge of three English Medium Instruction (EMI) courses and several short courses in Tsinghua University. The course “Integrated river management” has been elected as the Top-quality Course of Tsinghua University since 2019. She was selected and sent to Oxford for the EMI professional development training, and awarded the Oxford EMI Certificate. She was awarded for Excellent Instructor of Social Practice for Undergraduate Students in 2018, and Teaching Excellence of Tsinghua University in 2020.

2015-2021 Instructor, *Integrated river management* (80040103), 48 class hours per year

The Top-quality Course of Tsinghua University (1%)

Lecture-project course for upper-level undergraduates and graduate students in Hydraulic, Civil, and Environmental Engineering as well as international students from relevant fields; Class includes lectures, invited talks, discussions, field trips, and group analytical projects and presentations

2014-2020 Instructor, *Professional English for Hydraulic Engineering* (70040291), 16 class hours per year

Lecture-discussion course for upper-level undergraduates and graduate students in Hydraulic, Civil, and Environmental Engineering as well as international students from relevant fields; Class includes lectures, in-class discussions, scientific writing

2019-2020 Instructor, *Development and Management of the Yellow River Basin* (60040011), 16 class hours per year

Chinese culture course for international students from about 20 departments in Tsinghua University; Class content is an overview of the history of development and management of the Yellow River Basin, which is the cradle of Chinese culture, in the past thousands of years; Class includes lectures, and group presentations sharing the different nations and rivers over the world

- 2015-2020 Instructor, *Undergraduate Cognition Practice & SRT*, 1- or 2-day short courses per year
- Short courses for freshmen of undergraduates' cognition practice on river dynamics and watershed management, Department of Hydraulic Engineering, and Weiyang Colleague, Tsinghua University
- Short courses for undergraduates' Study and Research Training program (SRT) for over 10 departments or schools, including Hydraulic Engineering, Civil Engineering, Environmental Engineering, etc., Tsinghua University
- 2018 Instructor, *Undergraduate Oversea Social Practice Program*, 3-week oversea training
- Short courses for undergraduate students from Department of Hydraulic Engineering, Tsinghua University
- One-week training in Malaysia includes lectures; international workshop with students from Malaysia, India, Indonesia, etc.; group project and presentations sharing water issues from different countries; field trip along the urban rivers in Penang and Kuala Lumpur
- Two-week training in Ecuador includes visiting different hydropower stations, water conservancy engineering; interviewing people from government agencies and NGOs for water resource management and environment protection; field trip to national geology park; and culture experiencing in Guayaquil, Quito, and Cuenca, etc. Oversea social practice report is required for each students every day, and a comprehensive final report is required
- This oversea training was very successful and was reported by over 10 newspaper and media; The team was awarded the **Gold Prize Team in Global Competence of Tsinghua University Students' Social Practice**, and the **Excellent Team of Summer Social Practice for Undergraduate Students in Beijing (0.1%)**; Dr. Xu was awarded as the **Excellent Instructor of Social Practice for Undergraduate Students, Tsinghua University (1%)**
- 2017 Instructor, *Integrated river management (80040103)* (in Chinese), 48 class hours
- Lecture-project course for GCT- Master of Engineering, China Gezhouba (Group) No. 5 Engineering CO. Ltd. Class includes lectures, invited talks, discussions, and experience sharing in hydraulic engineering construction and management

Research Advising

Dr. Mengzhen Xu leads an active inter-disciplinary research group, working on interfaces between river geomorphology, structures, hydraulics, sediment, and aquatic organisms, and their application in hydraulic engineering. They have achieved novel results based on field observation, model development and flume experiment.

Current Ph.D. students

Chenyang Wang; anticipated graduation: July 2025

Yaqi Luo; anticipated graduation: July 2025

Kehan Huang; anticipated graduation: July 2024

Zijing Wang; anticipated graduation: July 2024

Nantawoot Inseepong; anticipated graduation: December 2023

Jiahao Zhang; anticipated graduation: July 2023

Durgesh K. Singh; anticipated graduation: July 2022

Fakai Lei; anticipated graduation: December 2021

Current M.S. student

Xiguo Zhang; anticipated graduation: July 2022

Current undergraduate research students

Guangmiao Li; anticipated graduation: July 2022

Xiaoli Li; anticipated graduation: July 2022

Chubin Weng; anticipated graduation: July 2021

Former Ph.D. students

Xiongdong Zhou (Ph.D. Hydraulic Engineering, 2019; dissertation: “Study on the Responses of Macroinvertebrate Assemblages to River Geomorphology in the Qinghai-Tibet Plateau”; the **Excellent Ph.D. Thesis of Tsinghua University in 2019, top 1%**)

Current position: **Shuimu Tsinghua Scholar Research Fellow (top 1%)**,
Department of Hydraulic Engineering, Tsinghua University, Beijing

Chendi Zhang (Ph.D. Hydraulic Engineering, 2018; dissertation: “Study on the Stability of Step-pool System”)

Current position: **Excellent Post-doc Fellow of Tsinghua University (top 5%)**,
Department of Hydraulic Engineering, Tsinghua University, Beijing

Liqun Lyv (Ph.D. Hydraulic Engineering, 2017; dissertation: “Research on the initiation and motion of gully debris flows in Tibetan Plateau”)

Current position: Assistant Professor, School of Soil and Water Conservation,
Beijing Forestry University, Beijing

Former M.S. students

Xinyue Liang (M.S. Agriculture, 2020; thesis: “Hazard Assessment of Debris Flows and Evaluation Effects of Mitigation Measures on the Edge of the Qinghai-Tibet Plateau”)

Current position: Ph.D. student, Institute of Mountain Hazards and Environment, CAS

Xing Liu (M.S. Hydraulic Engineering, 2019; thesis: “Study on the Ensemble Assessment Techniques of Runoff and Sediment Changes in the Yellow River Basin”)

Current position: Algorithm Engineer, Mininglamp Technology

Xin Li (M.S. Hydraulic Engineering, 2019; thesis: “Debris Flow Risk Assessment with Consideration of Barrier Dams and Excess Energy”)

Current position: Engineer, Lancang-Mekong Water Resources Cooperation Information Sharing Platform

Former undergraduate research students

Aoran Sun (B.S. Hydraulic Engineering, 2020)

Current position: Ph.D. student, Tsinghua University, Department of Hydraulic Engineering

Yaqi Luo (B.S. Hydraulic Engineering, 2020)

Current position: Ph.D. student, Tsinghua University, Department of Hydraulic Engineering

Xiguo Zhang (B.S. Hydraulic Engineering, 2020)

Current position: M.S. student, Tsinghua University, Department of Hydraulic Engineering

Ziqi Qin (B.S. Hydraulic Engineering, 2019)

Current position: Ph.D. student, University of Illinois at Urbana-Champaign, Department of Natural Resources and Environmental Sciences (NRES)

Zewei Ma (B.S. Hydraulic Engineering, 2019)

Current position: Ph.D. student, University of Illinois at Urbana-Champaign, Department of Natural Resources and Environmental Sciences (NRES)

Kehan Huang (B.S. Hydraulic Engineering, 2019)

Current position: Ph.D. student, Tsinghua University, Department of Hydraulic Engineering

Jiahao Zhang (B.S. Hydraulic Engineering, 2018)

Current position: Ph.D. student, Tsinghua University, Department of Hydraulic Engineering

Mengna Wang (B.S. Hydraulic Engineering, 2018)

Current position: Engineer, Changde Military Automobile Harness Co., Ltd

Tiankai Yang (B.S. Hydraulic Engineering, 2017)

Current position: Engineer, Power China Kunming Engineering Corp. Ltd., Kunming, Yunnan

Hongyuan Li (B.S. Hydraulic Engineering, 2017)

Current position: Engineer, China Resources Land Limited-West China Region

Hanmo Chen (B.S. Hydraulic Engineering, 2016)
Current position: Engineer, Power China Kunming Engineering Corp. Ltd.,
Kunming, Yunnan

Yufeng Yang (B.S. Hydraulic Engineering, 2016)
Current position: Ph.D. student, University of Minnesota-Twin Cities, Department
of Bioproducts and Biosystems Engineering

Service on Ph.D. committees

Yao Wang (Ph.D., Civil Engineering, 2020, The Hong Kong Polytechnic University,
Hongkong)

Dissertation: “Ecological restoration of lowland Flood channel: A holistic
evaluation of habitat Suitability integrated with sediment Regime concepts”

Xingyan Guo (Ph.D., Physical Geography, 2020, University of Chinese Academy of
Sciences, Beijing)

Dissertation: “Feature Analysis of Meander Planforms”

Ping Ni (Ph.D., Environmental Science, 2019, University of Chinese Academy of Sciences,
Beijing)

Dissertation: “Epigenetic mechanisms of local environmental adaptation in
invasive *Ciona ascidians*”

Yiyong Chen (Ph.D., Environmental Science, 2019, University of Chinese Academy of
Sciences, Beijing)

Dissertation: “Genetic mechanisms of local adaptation to varied environments in a
marine invader, *Molgula manhattensis*”

Ran Gao (Ph.D., Hydraulic Engineering, 2018, Tsinghua University, Beijing)

Dissertation: “Analytical study on point-source solute dispersion in typical
wetland flows”

Chenge An (Ph.D., Hydraulic Engineering, 2018, Tsinghua University, Beijing)

Dissertation: “Analytical study on point-source solute dispersion in typical
wetland flows”

Qingfeng Feng (Ph.D., Hydraulic Engineering, 2018, Tsinghua University, Beijing)

Dissertation: “Mountain river morphodynamics subject to varying water and
sediment supply”

Guoyou Yao (Ph.D., Hydraulic Engineering, 2016, Tsinghua University, Beijing)

Dissertation: “Study of mussel erosion on hydraulic concrete structures and
control technique”

Na Zhao (Ph.D., Hydraulic Engineering, 2015, Tsinghua University, Beijing)

Dissertation: “Research on the influence of fluvial processes on macroinvertebrate
assemblages”

Research experiences for undergraduate program supervision

- 2019-2020 Mengjiao Zhang, Xiaoli Li, Qisong Zheng, Yiruo Wang, Jiayao Li, Lijun Meng, Zeyu Fan, Bohan Luo
Study and Research Training Program (SRT) of Tsinghua University: “River protection and sustainable management of Tibetan rivers”
- 2019-2020 Pukang He, Linfei Wei, Chubing Weng, Yongjie Duan, Baoning Xu, Houran Zhao
Study and Research Training Program (SRT) of Tsinghua University: “Eco-geomorphological processes of the rivers along the eastern boundary of the Tibetan Plateau”
- 2018-2019 Guangmiao Li, Yaqi Luo, Ruiyang Zhou, Qihan Chen, Qihua Jiang
Study and Research Training Program (SRT) of Tsinghua University: “Early warning of bio-invasion in aquatic ecosystem using eDNA techniques”
- 2017-2018 Huijie Wang, Diran Yan, Yuqiao Feng, Jiarui Hai, Yongpeng Lin, Qinglin Huang, Xiguo Zhang, Junting Zhao, Sujia Liu, Yingjun Liu, Chao Ma, Aoran Sun, Chenyang Wang
Study and Research Training Program (SRT) of Tsinghua University: “Suitability of ecological fishpass for the naked carp of the Qinghai Lake”
- 2017-2018 Yuan Yang, Yuyan Luo, Senchang Hu, Boyang Liu, Zhigang Ou, Fangzheng Yuan, Zhen Wu, Song Xu
Study and Research Training Program (SRT) of Tsinghua University: “Hydrological and ecological processes of the source region of the Yellow River”
- 2016-2017 Qizhen Dong, Zhaoyi Li, Zhiqian Xiang, Xiao Wei
Study and Research Training Program (SRT) of Tsinghua University: “Ensemble assessment techniques for runoff and sediment changes in the Yellow River Basin”
- 2016-2017 Baohua Gu, Wenxin Liu, Zhiqian Xiang, Kehan Huang, Zongxu Xie, Peiyu Cai, Rongjin Zhu, Yu Du, Yilong Liu, Jingsu Zhang
Study and Research Training Program (SRT) of Tsinghua University: “Hydrological, geological, and ecological features of the karst region of Southwest China”
- 2016-2017 Xingyu Hu, Ziqi Qin, Wanqin Jiao, Ping Luo, Qi Zhong, Zhan He, Wei Zhao, Yu Zheng, Xiang Zhang, Jianfeng Liu
Study and Research Training Program (SRT) of Tsinghua University: “Impact of climate change and anthropologic activities on the hydrological and ecological processes of the source region of the Yellow River”

Mentoring service for undergraduate students

- 2020-2021 Advisor of five undergraduate students from Weiyang College, Tsinghua University
Guiding the undergraduate students of the newly established Weiyang College of Tsinghua University in study and research in multi-disciplinary fields
- 2015-2020 Advisor for 3-5 freshmen of Department of Hydraulic Engineering, Tsinghua University every year
Guiding the undergraduate students in study, research and campus life
- 2015-2019 Head Teacher of Class 53 with 29 undergraduate students, Department of Hydraulic Engineering, Tsinghua University
Guiding the 29 students in study, research, and campus life; at least 5 hours per week for student communication; the students achieved remarkable progresses in different fields of academic, practical, cultural, etc., and won over 20 awards of Tsinghua University

Advisee Fellowships and Awards

- 2020 Sujia Liu; Special Scholarship for Undergraduate Students of Tsinghua University (**top 0.1%**)
- 2020 Aoran Sun; Excellent Undergraduate Student Award of Tsinghua University (top 5%)
- 2020 Ruiyang Zhou, Yu Zhang; Third Prize of the Tsinghua University Challenge Cup for Undergraduate Students: “Solid - liquid refractive index matching technique”
- 2020 Kehan Huang; Scholarship for Excellent Graduate in Overall Quality of Tsinghua University (top 5%)
- 2019 Class 53; The Outstanding Undergraduate Class Award in Beijing (**top 0.1%**)
- 2019 Ziqi Qin; Excellent Undergraduate Student Award in Beijing (**top 0.1%**)
- 2019 Yaqi Luo, Guangmiao Li, Dingyu Peng; National-level Innovation Training Program for Undergraduate Students: “Organic carbon flux in the river ecosystem of Huairou, Beijing”
- 2019 Aoran Sun; Liangjin Zhong; Ruiyang Zhou; Beijing-level Innovation Training Program for Undergraduate Students: “Innovative measurement for channel bed morphology of gravel bed rivers”
- 2019 Tongyu Zhang; Innovation Training Program of Tsinghua University for Undergraduate Students: “Investigation of golden mussel biofouling in water transfer projects”
- 2019 Aoran Sun; First Prize of the Hydraulic Innovation Competition of Tsinghua University for Undergraduate Students: “Innovative measurement for channel bed morphology of gravel bed rivers”

- 2019 Xiongdong Zhou; the Excellent Ph.D. Thesis of Tsinghua University (top 1%)
- 2019 Xin Li; Scholarship for Excellent Graduate in Overall Quality of Tsinghua University (top 5%)
- 2018 Diran Yan; Best Experiment Award in the 10th Hydraulic Innovation Competition of Tsinghua University for Undergraduate Students: “Fish behavior recognition using machine learning”
- 2018 Aoran Sun, Chenyang Wang; Undergraduate Academic Research Promotion Program of Tsinghua University: “Vision-based 3D topographic survey of rivers”
- 2018 Jiahao Zhang; Excellent Undergraduate Student Award of Tsinghua University (top 5%)
- 2018 Xing Liu; Scholarship for Excellent Graduate in Overall Quality of Tsinghua University (top 5%)
- 2017 Xingyu Hu, Ziqi Qin; Second Prize of Excellent Project of Study and Research Training Program (SRT) of Tsinghua University: “Impact of climate change and anthropologic activities on the hydrological and ecological processes of the source region of the Yellow River”

Service to the Profession

Department and Institute Leadership

- since 2020 Associate Head of Department of Hydraulic Engineering, Tsinghua University
Faculty search and recruitment, international exchange and cooperation, international student administration, and research and development organization
- since 2017 Director of River Research Institute, Department of Hydraulic Engineering, Tsinghua University, China
In charge of laboratory facility updating and management, smart laboratory platform construction, curriculum system improvement, graduate student administration, and academic activity organization

Professional Society Service

- since 2012 International Association for Hydro-Environment Engineering and Research (IAHR)
Leadership Member (since 2020), Ecohydraulics Committee
Committee Member (2018-2020), Ecohydraulics Committee
Board Member (since 2017), Board of International River, Coastal, and Estuarine Morphodynamics Symposia (RCEM)
Executive Committee Member (since 2017), IAHR China (Mainland) Chapter
Member (since 2012), IAHR

- since 2013 International Association of Hydrological Sciences (IAHS)
 Board Member (since 2020), IAHS China Committee
 Chair (since 2019), International Commission on Continental Erosion China Youth Committee
 Member (since 2013), IAHS
- since 2016 Chinese Hydraulic Engineering Society (CHES)
 Vice chair (since 2021), CHES Youth Science and Technology Working Committee
 Board Member (since 2019), CHES Eco-hydraulic Engineering Committee
 Board Member (since 2018), CHES Sediment Committee
 Board Member (since 2016), CHES Youth Science and Technology Working Committee
- since 2021 China Association for Science and Technology (CAST)
 Board Member, CAST Academic Exchange and Journal Publishing Committee
- since 2013 European Geosciences Association (EGU)
 Member
- since 2017 American Geophysical Union (AGU)
 Member

Symposium Organization Service

- 2021 Session Chair, the American Geophysical Union Fall Meeting (AGU2021), New Orleans, LA & Online
- since 2020 Executive Secretary-general, the 14th International Symposium of Ecohydraulics, Nanjing, China
- 2020 Secretary, the 261th Shuangqing Summit, National Natural Science Foundation of China (NSFC), Beijing, China
- 2019 Session Chair, the 11th Symposium on River, Coastal and Estuarine Morphodynamics (RCEM2019), Auckland, New Zealand
- 2019 Session Chair, the 14th International Symposium on River Sedimentation, Chengdu, China
- 2018 Session Chair, the 12th International Symposium of Ecohydraulics, Tokyo, Japan
- 2018 Session Chair, Marine and Freshwater Invasive Species: Solutions for Water security, Beijing, China
- 2017 Session Chair, IAHR World Congress 2017, Kuala Lumpur, Malaysia
- 2015 Session Chair, IAHR World Congress 2015, the Hague, the Netherlands

Editorship of Journal and Publication Review

since 2021 Associate Editor, Journal of Ecohydraulics

Select reviewers, summarize reviews, and recommend decision regarding publication

since 2019 Executive Associate Editor, Environmental Science & Ecotechnology

Select reviewers, summarize reviews, and recommend decision regarding publication

since 2012 Reviewer of over 80 manuscripts submitted to international and Chinese journals, including *Journal of Hydrology*, *Ecological Engineering*, *Ecological Indicators*, *Geomorphology*, *Hydrobiologia*, *Earth Surface Processes and Landforms*, *Environmental Sciences & Technology*, *Journal of Hydro-environment Research*, *International Journal of Sediment Research*, *Journal of Environmental Management*, *Science of the Total Environment*, etc.

Thesis Review

since 2015 Reviewer and thesis defense committee member of over 50 Ph.D. and M.Sc. theses from Tsinghua University, the Hongkong Polytechnic University, Beijing Normal University, Chinese Academy of Sciences, etc.

Grant Review Panelist

since 2015 National Natural Science Foundation of China (NSFC)