

Moffatt & Nichol's Weixia Jin, PhD, PE: By Land and by Sea



Dr. Weixia Jin PhD, P.E, Photos © John Livzey, 2018

When transportation systems and water meet, it calls for a very special set of skills. Specializing in hydraulics, hydrology, and coastal engineering, Dr. Weixia Jin has those skills. As a supervisory engineer for Moffatt & Nichol, she tackles the design challenges of these diverse environments each day.

“My work happens where the land meets the water, and I deal with the water side. I provide coastal and water resources expertise, as I have education and practical experience in both civil and coastal engineering. I lead hydrology, hydraulic, and drainage studies for transportation projects, such as bridge hydraulics and scour analysis. I also perform wave, hydrodynamic, sediment transport, and water quality modeling studies for wetland restoration, riverine and coastal shore protection design, and flood mapping studies for the Federal Emergency Management Agency (FEMA).

“I deal with water, all different kinds of water—from headwater in the watershed to the ocean, including coastal water, like waves, tides, sea level rise, and tsunamis, etc. I also do quite a lot of work concerning climate change, coastal resilience, and transportation infrastructure resilience as it relates to water and coasts. So, today, much of my job is about where sustainability meets resiliency.”

With Moffatt & Nichol for more than 20 years, Dr. Jin has made a career of water, although it was not her first passion. In fact, in her native China, she didn't grow up near a coast or major river. But at that time, she was sure of one thing—her love of science.

“When I was in high school, I discovered that I excelled at math and science-related subjects. I loved them. So, when it came time to pick colleges, I only chose engineering-related majors. I got into harbor and navigation engineering, which I didn't know much about at the start. I only knew it was engineering.

“The university I attended is near a large port and the Yangtze River—the third longest river in the world, which was where I was introduced to hydrology and hydrodynamics and coastal engineering. Through the study of water, I found that I was actually good at it. And when you're good at something, you start



to like it. And you have fun and gain recognition because you're good at it and you enjoy it. If you don't have fun, you quit. So, I discovered that I loved water and engineering together.

“Currently, I'm leading the hydraulics and drainage studies for a grade separation project in Los Angeles County and for the I-405 improvement project in Orange County. All transportation projects have storm water—and sometimes natural water—that must be addressed. Also, most grade separation projects are in urban, developed areas. What many people don't realize is that there is a lot of water involved in many transportation projects in many different modes. I'm also working on a few wetland restoration projects, managing the hydraulics, water quality, sedimentation, and coastal resilience studies and designs. In fact, I've been involved in many large wetland restoration projects in Southern California for a full project life cycle from the feasibility planning study, to engineering design through construction support, and through post-construction monitoring.”

Eight of the projects Dr. Jin refers to are fully or partially funded by the San Diego Association of Governments' (SANDAG) TransNet Program. These projects include two I-5 bridge hydraulic studies and two bridge optimization studies for Caltrans as part of the I-5 North Coast Corridor Project in northern San Diego County. Two railroad bridge hydraulic studies and two lagoon restoration projects are part of a large-scale transportation project along the Los Angeles to San Diego rail corridor in northern San Diego County. The two lagoon restoration projects are mitigation efforts for SANDAG transportation projects. All eight consider the impacts of riverine flood, waves, sea level rise, and tsunamis, and are designed to be resilient in the 21st century. Though vastly different projects, Dr. Jin cites that fact as one of the reasons she most likes working at Moffatt & Nichol.

“We're a multidisciplinary consulting firm. I like working here because we have a large variety of projects, so it's always different and exciting. It's a big challenge, but I love that. It's the perfect place for me because I get to use the whole of my knowledge on many different types of projects.”

Moffatt & Nichol is also a good environment for Dr. Jin for another compelling reason.

“I learned about WTS through my co-workers. They are members, as are many women and men at Moffatt & Nichol. Then, I attended some programs and workshops at WTS-LA, which I really liked a lot. The programs are particularly great for me, as I get to meet people who are leaders of the industry and learn more about transportation, where it meets my specialties. But when I first heard about WTS, I didn't think it was for me. I thought, 'I work on coastal water resources; I don't work in transportation.' But more and more of my projects became and support transportation projects, and I realized that I do work in transportation now, on the water end of things. So, WTS started making much more sense to me.”

Dr. Jin earned her doctorate in hydraulics and water resources and is an American Society of Civil Engineers Academy of Coastal, Ocean, Port, & Navigation Engineers (ASCE-ACOPNE) diplomate in coastal engineering. She's also a registered California professional engineer and a member of FEMA's Scientific Resolution Panel. Without question, Dr. Jin possesses very special skills. And she uses those skills wherever transportation systems meet water to help Moffatt & Nichol create resilient and sustainable infrastructure solutions for their clients.