Since 2001, Dr. Xiangdong Zhang has worked extensively at IARC on climate and the atmosphere, including Arctic sea ice, water and energy cycles, extreme weather, and climate models and simulations. Dr. Zhang has been recognized widely for his recent work, by individual awards and ongoing funding from the National Science Foundation, the Office of Naval Research, and the Bureau of Ocean Energy Management, among others.

Dr. Zhang met with the IARC Publications team recently to discuss his research, background, and other interests.

**What might people find interesting about your current projects?**

Right now I’m tracking storms and atmospheric circulation shifts, and how they affect the Arctic climate. Typically, because of unique Arctic conditions—including extensive sea ice cover over open water—heat exchange under normal conditions is suppressed. Water near the ocean surface is shielded from the sun by ice, maintaining its very cold temperatures.

Now however, warmer air and water is being circulated from regions to the south, caused by variable atmospheric circulation conditions and storms. When this occurs, the water deeper below the surface rises in temperature. As the warmed air and water flow into the Arctic, they prevent the sea ice increase that normally happens during colder seasons, as well as accelerating sea ice melt during warm seasons. As a result, atmospheric circulation and storms, as well as the southern warm air and water they introduce, represent a major driving force and heat energy source for the recently rising air and water temperatures and decreasing ice cover.

Moreover, this difficult to model circulation and storm behavior can introduce complications into numerical predictions about longer and more general Arctic and global warming trends. By tracking, observing, and measuring circulation and storms in the Arctic, we can more clearly identify the changes in temperature and climate conditions that happen here, which can also lead to more complex and accurate views of climate change.

**Have you always been interested in weather and meteorology?**

I was always intrigued by the natural environment. I was very interested in studying physics and untangling physical processes behind observed phenomena. I became fascinated with the heavy rainfall and monsoon season in Nanjing, China, where I was attending graduate school. These events have such extreme impacts on ecosystems and communities, and yet they are so difficult to assess and predict.

But I’ve always thought climatology has been one of the most interesting things to study. I’m drawn to the study of weather for its reliance on real-world observation that leads to sophisticated modeling. I appreciate this combination of practice and theory that distinguishes this work.

**How is your personality reflected in your work and other interests?**

It’s important to me to seek out challenges, and science is a good place to find challenges. In particular, there are many assumptions in science fields like mine, and finding ways to either support or challenge these ideas is very satisfying. I’m also very interested in observation, an essential part of my work and my personal pastimes. I like reading history books and hiking and traveling, especially around areas close to the ocean and the beach. This type of personal exploration gives me the chance to examine maps and weather charts for new locations, which is fun for me as well.