Above right, comparisons are shown between real satellite observations and model predictions for two factors: Arctic Ocean ice melt and phytoplankton blooming, averaged from 1998-2007. Timing of ice-melt: satellite-derived (a) and model-computed (b); Timing of phytoplankton peak: satellite-derived (c) and model-computed (d).


Dr. Meibing Jin was interviewed recently by IARC's Publications team regarding his recent research and interests.

How would you explain your research to a general audience?

Much of my recent work is in modeling, which is central to scientific efforts to understand and predict climate processes. Modeling involves the marriage of observational data on wide-ranging variables—including temperature, salinity, humidity, precipitation, pressure, and radiation, among many others—to determine how the oceans and the atmosphere have changed in the past, and how they will continue to change moving forward. By limiting or expanding the data used, we can observe a more specific (e.g., sea ice cover of the Beaufort Sea) or more complex (e.g., the Arctic Ocean, or the whole earth) system. Because these models need to run for a period of decades or longer to demonstrate their predictive capabilities, we must often start with historical data and run models forward from there.

The earth's oceans are very large and diverse. Even at its most basic, ocean study incorporates biology, chemistry, and physics. So my role as a physical oceanographer prompts a strong sense of collaboration, among both research projects and individual researchers. Even purely physical studies encourage a great deal of collaboration, often comprising the work of several researchers in a single modeling study.

What are some of the larger implications of your recent work?

One of the most important functions of these complex models is that they can predict carbon production, which has wide-ranging effects. In the past, through my work on biogeochemical models (which were the first to model organic variables such as ice algae and phytoplankton in the pan-Arctic Ocean), we’ve seen a much clearer picture of the primary production present in the ocean and sea ice, with resources and production at lower trophic levels showing direct and sometimes surprising reactions to changes in climate.

These types of changes have the potential to impact humans and our food sources greatly, as phytoplankton and zooplankton relate directly to fish (salmon) and other consumers. If primary producers such as algae and plankton face danger as a result of disruptions in the ecosystem, so will fish and humans further up the food chain. Through modeling, we have the chance to predict and study these impacts more accurately and precisely.

How did you decide to focus on these modeling projects?

Much of my professional career has been determined by practical concerns; generally, one of my projects has led to the next, even across differing fields and interests. As I mentioned, the ocean is very large and involves many different sources of study, so there has always been a variety of potential questions to ask. It is also necessary for scientists to consider which projects have the best chance to receive continued funding and achieve completion. But when I have had the choice, I have looked for projects that are new and different.

What other interests do you have, outside of your field of study?

As in my profession, I enjoy working with other people. I’ve always enjoyed collaborative games like tennis, badminton, and table tennis. I prefer my recreation with a healthy dose of socializing mixed in.