Biography:

Dr. Stephen Shaw received a PhD from the Department of Biological and Environmental Engineering at Cornell University in 2009. He is currently a researcher in the New York State Water Resources Institute in the Department of Earth and Atmospheric Sciences at Cornell. He was the lead author for the Water Resources Chapter in the NYSERDA Climaid Report on climate change adaptation in New York State. His interests range from assessing floods, low flows, precipitation intensities, and evapotranspiration in a changing climate.

Talk Summary:

When presented with the topic of climate change and agriculture, one often hears the general statement that the potential for both flooding and drought will increase. While there is evidence that rainfall intensities may increase (a possible reason to suspect increased flooding) and that the arrival time between storms may become longer (a possible reason to suspect increased drought), these changes themselves do not necessarily translate into phenomenon that will have an impact on agriculture. Namely, this is because many more factors than the average high intensity rainfall or the average time between large rainfall events go into determining drought or flood. In this talk I will argue that our ability predict future drought or flood occurrence still remains lacking due to difficulty in understanding the interactions between the numerous variables that influence drought and flood. Consequently, I will argue that possible changes in extreme hydrometeorological events should still be approached as something of an unknown.

To make this case, I will explore the historic record of drought and flood in New York. In looking at drought, we will assess the relationship among crop yields, hydrologic drought, and the typical metrics used to measure drought intensity (both in the past and into the future). I will show that decreased crop yields do not typically correlate with periods of hydrologic drought or the metrics used to predict future drought, calling into question some analyses that attempt to predict impacts to future crop yields. In looking at flooding, we will assess the typical flood causative mechanisms in New York. I will show that floods are often not directly related to rainfall intensities alone and that decreased snowfall and enhanced early season drying may actually reduce some flood risks. Additionally, we will analyze the largest 2-day rainfall event in central NY (the July 8, 1935 event) and consider whether our current understanding of climate change can even inform our ability to predict whether such an event is more or less likely to occur in the future.