Abstract: Air quality and climate change are among the most urgent issues faced by the human societies. According to WHO, millions of mortality are attributable to ambient air pollution each year. The changing climate will continuously interact with energy use, urbanization, and water resource management. This presentation will highlight several major approaches to understand the Earth’s atmosphere and address the challenges of air pollution and climate change, including stationary observation, mobile observation, remote sensing, and atmospheric modeling. These are synergized to identify emission sources, assess human exposures, and predict future atmospheric state. A multi-scale weather research and forecast (WRF) model simulation with chemical tracers over the Tonawanda/Buffalo area is used to demonstrate the synergy of these approaches. Potential impacts of atmospheric observations and modeling on human health, sustainable urban development, water management, and climate change mitigation/adaption will also be discussed.

Biography: Dr. Kang Sun is a postdoctoral research fellow at Harvard-Smithsonian Center for Astrophysics. He holds a B.S. from College of Environmental Sciences and a B.A. from China Center for Economic Research at Peking University. He got his Ph.D. from Department of Civil and Environmental Engineering, Princeton University. Kang’s Ph.D. research focused on developing open-path, quantum cascade laser-based atmospheric sensors and constraining the emissions of atmospheric ammonia using novel in-situ measurements. His current research interests involve ground-based and space-borne remote sensing of atmospheric composition, satellite instrument development, and atmospheric modeling.