Research Seminar

Title: Characterization of temperature and humidity effects on extreme heat stress under global warming and urban growth

Abstract: The risk of heat stress is projected to increase continuously in the future, primarily due to anthropogenic climate change driven by greenhouse gas emissions and rapid urbanization. While temperature increases exhibit a relatively straightforward pattern with a consistent upward trend, change in relative humidity, which plays a crucial role in determining perceived heat stress, are more complex. This complexity arises from the fact that relative humidity does not depend solely on the amount of moisture in the atmosphere. For instance, warming in highly urbanized areas, caused by the suppression of evaporation, can lead to a reduction in relative humidity, which may have contrasting effects on heat stress. As a result, some recent studies conclude that this decrease in relative humidity offsets the effects of urban warming, thereby partially alleviating thermal discomfort. However, these findings are somewhat counterintuitive, highlighting the need for further research into the intricate relationships between temperature and humidity in urban regions. In this context, this presentation explores the complexity of assessing heat stress and underscores the importance of understanding the effects of humidity in the Pearl River Delta and Yangtze River Delta, regions that have experienced rapid urbanization and frequently face dangerous levels of heat stress.

Speaker biography:

Dr. Eun-Soon Im currently holds a joint position as an Associate Professor in the Department of Civil and Environmental Engineering and the Division of Environment and Sustainability at the Hong Kong University of Science Technology. She has dedicated her career to the development and improvement of the Regional Climate Model (RCM) and has conducted extensive research on regional climate changes across various regions worldwide. She has also plenty of credible experience in working with impact assessment teams, fostering interdisciplinary collaborations between climate science and impact sectors through the application of RCM simulations to various impact models (e.g. hydrology, agriculture, energy). The value and novelty of her work are well demonstrated by the relevant publications in leading journals in the field of climate research.