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Department of Marine Sciences
Presents a Seminar by

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Future Changes in Extreme Precipitation over the Northeast U.S.

The northeast United States (NEUS) is a densely-populated region with a number of major cities along the climatological storm track. Despite its economic and social importance, as well as the area's vulnerability to flooding, there is significant uncertainty regarding future trends in extreme precipitation over the region. Here, we undertake a regional study of the projected changes in extreme precipitation over the NEUS, measured with a variety of metrics, through the end of the 21st century in an ensemble of high-resolution, dynamically-downscaled simulations. We find that extreme precipitation increases throughout the region, with the largest changes in coastal regions and smaller increases inland. These increases are seen throughout the year, though the smallest changes in extreme precipitation are seen in the spring. The frequency of heavy precipitation also increases, such that there are relatively fewer days with moderate precipitation and relatively more days with either no or strong precipitation. Averaged over the region, extreme precipitation increases by +3-4%/C of local warming, with the largest fractional increases in southern and inland regions. This is lower than the +7%/C rate expected from thermodynamic considerations alone, and suggests that dynamical changes damp the increases in extreme precipitation. These changes are qualitatively robust across ensemble members, though there is notable intermodel spread associated with models' climate sensitivity and with changes in mean precipitation. Together, the simulations suggest that this densely populated region may require significant adaptation strategies to cope with the increase in extreme precipitation expected at the end of the next century.

Host: James O'Donnell

Time & Date: 11:00 am, Friday, January 28, 2022

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