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Modeling Efforts for PRECIP2020: Prediction of Rainfall Extremes Campaign in the Pacific 2020

High-impact weather events are often accompanied by heavy precipitation over prolonged periods of time; yet, our understanding and ability to predict heavy precipitation remains deficient. This issue is of utmost importance for forecasting and scientific communities alike because heavy precipitation events can impact communities all around the world. Motivated by these issues and implications, an international field campaign will take place in the western North Pacific during the warm season (May–August) of 2020. The U.S. component of the project—Prediction of Rainfall Extremes Campaign in the Pacific (PRECIP)—will seek to identify the basic kinematic, thermodynamic, and microphysical ingredients that differentiate heavy precipitation from ordinary precipitation events with a special focus on the MeiYu front, mesoscale convective systems, and tropical cyclones. **One of the core hypotheses for PRECIP is that forecast improvements of heavy precipitation can only be achieved through the accurate representation of those basic ingredients responsible for heavy precipitation.** We plan to test this hypothesis through a comprehensive modeling effort that will inform observational strategies before the campaign and through extensive process-based analysis that will identify model deficiencies during and after the campaign.

In this presentation, I will discuss our modeling efforts which range from global to mesoscale to large-eddy simulations. I will also discuss opportunities for modeling centers, such as ECMWF, to benefit and contribute to our common goal of improving high-impact, heavy precipitation events.

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