

# OBSERVATIONS DURING THE “PRE”-CIP 2021 AND PRECIP 2022 FIELD CAMPAIGNS

Michael M. Bell<sup>1</sup>

<sup>1</sup> *Colorado State University*

## ABSTRACT

Extreme rainfall is a high impact weather phenomenon that profoundly affects people around the world, but our fundamental understanding and quantitative forecast skill for these events remains limited. To address these important scientific and forecast challenges, the Prediction of Rainfall Extremes Campaign In the Pacific (PRECIP) was funded to make observations of the East Asian monsoon to improve our understanding of the multi-scale dynamic, thermodynamic, and microphysical processes that produce extreme precipitation. The campaign is designed to maximize the chances of observing a variety of heavy rainfall events in the moisture-rich natural laboratory of the western North Pacific in order to find the commonalities across different weather phenomena. Our primary objective is to simplify the complexity of multi-scale interactions by identifying key ingredients and processes in the limiting cases of high intensity and long duration events in a moisture-rich environment.

Due to the ongoing global pandemic, PRECIP has been delayed until 2022 and a Preparatory Rockies Experiment for the Campaign in the Pacific (“PRE”-CIP) was conducted in Colorado from 1 May to 19 August 2021. The goal of “PRE”-CIP 2021 was to test observing strategies in advance of the international deployment and to collect observations of the North American summer monsoon to compare with those to be obtained in East Asia in 2022. With support from the U.S. National Science Foundation, the “PRE”-CIP campaign collected observations with the Colorado State University (CSU) C-band CHIVO and dual S/X-band CHILL radars, radiosondes, disdrometers, and the National Center for Atmospheric Research S-PolKa radar and MicroPulse DIAL (MPD). A comprehensive modeling effort was also conducted to inform observational strategies as well as to identify model deficiencies to improve prediction of rainfall. The S-Pol radar and three MPD radars will be deployed to Taiwan in PRECIP 2022, and the CSU SEA-POL radar will be deployed to Yonaguni, Japan. Observations and preliminary analysis from “PRE”-CIP 2021 and plans for PRECIP 2022 will be presented.

**Keywords:** Heavy rainfall; Field Experiment