Evaluation of High Resolution IMERG Satellite Precipitation over the Global Oceans using OceanRAIN

Paul Kucera (1) and Christian Klepp (2)

(1) University Corporation for Atmospheric Research, COMET, Boulder, United States (pkucera@ucar.edu), (2) University of Hamburg, Hamburg, Germany

Precipitation is a key parameter of the essential climate variables in the Earth System that is a key variable in the global water cycle. Observations of precipitation over oceans is relatively sparse. Satellite observations over oceans is the only viable means of measuring the spatially distribution of precipitation. In an effort to improve global precipitation observations, the research community has developed a state of the art precipitation dataset as part of the NASA/JAXA Global Precipitation Measurement (GPM) program. The satellite gridded product that has been developed is called Integrated Multi-satelliE Retrievals for GPM (IMERG), which has a maximum spatial resolution of 0.1º x 0.1º and temporal 30 minute. Even with the advancements in retrievals, there is a need to quantify uncertainty of IMERG precipitation estimates especially over oceans. To address this need, the OceanRAIN dataset has been used to create a comprehensive database to compare IMERG products. The OceanRAIN dataset was created using observations from the ODM-470 optical disdrometer that has been deployed on 12 research vessels worldwide with 6 long-term installations operating in all climatic regions, seasons and ocean basins. More than 6 million data samples have been collected on the OceanRAIN program. These data were matched to IMERG grids for the study period of 20 March 2014-28 February 2017. This evaluation produced over 5000 matched IMERG-OceanRAIN pairs of precipitation observed at the surface. These matched pairs were used to evaluate the performance of IMERG stratified by different latitudinal bands and precipitation regimes. The presentation will provide an overview of the study and summary of evaluation results.