OceanRAIN Release 2.0
Global Ocean Surface Reference Data for all Water Cycle Components

Christian Klepp [1], Marc Schröder [2], Alain Protat [3], Jörg Burdanowitz
E-mail: mail@christianklepp.com

1 Lightyears – Where Geoscience Meets Art, Hamburg, Germany
2 Deutscher Wetterdienst, Offenbach, Germany
3 Bureau of Meteorology, Melbourne, Australia

OceanRAIN—the Ocean Rainfall And Ice-phase precipitation measurement Network—provides in-situ along-track shipboard data of precipitation, evaporation and the resulting freshwater flux in 1-min resolution over the global oceans in all climatic regions and seasons. Overall 75 routinely measured and calculated atmospheric and oceanographic state variables along with those required to derive the turbulent heat fluxes are included.

The new release of OceanRAIN Version 2.0 contains three data subsets: OceanRAIN-W contains the temporally continuous water cycle data, while OceanRAIN-M contains the temporally discontinuous precipitation microphysical particle size distribution data, and OceanRAIN-R contains all raw data. The time period covers June 2010 to December 2018 and extends the hitherto 6.83 million minutes of data from Release 1.0 to more than 10 million minutes from 9 ships. The research vessels largely avoid the fair-weather bias and thus cover the entire spectrum of weather events.

The precipitation parameter is based on measurements from the optical disdrometer ODM470 that is specifically designed for all-weather shipboard operation. The rain, snow and mixed-phase precipitation occurrence, intensity and accumulation are derived from particle size distributions. Additionally, microphysical parameters and radar-related parameters are computed and provided.

OceanRAIN provides surface reference data for satellite product evaluation, validation and retrieval calibration of the GPM era, helps analyzing the point-to-area representativeness of precipitation and improves our understanding of water cycle processes over the global oceans. Moreover, the data is applicable to evaluate re-analysis and climate model data.

This presentation provides an overview on the new OceanRAIN Release 2 and includes an overview on the instrumentation, data ingest, processing chain, and results.