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OceanRAIN—the shipboard Ocean Rainfall and Ice-phase precipitation measurement Network

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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. All routinely measured atmospheric and oceanographic state variables along with those required to derive the turbulent heat fluxes are included.

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 (PSD). Additionally, microphysical parameters and radar-related parameters are provided.

The products are available as water cycle components (OceanRAIN-W) continuous in time, precipitation microphysical (OceanRAIN-M) and disdrometer raw data (OceanRAIN-R) both discontinuous in time. OceanRAIN Version 1.0 contains 73 parameters plus PSD data in 128 size bins. The time period from 06/2010 to 04/2017 comprises more than 6.83 million minutes of data from eight ships with precipitation observed in about 10% of the time. The research vessels sail the global oceans during all seasons, avoiding the fair-weather bias and thus covering the entire spectrum of weather events.

OceanRAIN provides in-situ water cycle surface reference data for satellite product validation and retrieval calibration of the GPM (Global Precipitation Measurement) era, to analyze the point-to-area representativeness of precipitation and to improve our understanding of water cycle processes over the global oceans. Moreover, the data can be applied to evaluate re-analysis and climate model data.
This presentation provides an overview on the OceanRAIN project, including instrumentation, data ingest and the processing chain and shows results of oceanic precipitation and ancillary meteorological measurements for oceanic basins in all climatic regions and seasons.

More information can be found via www.oceanrain.org