Geophysical Research Abstracts
Vol. 18, EGU2016-5932-1, 2016
EGU General Assembly 2016

Regional Differences of Summer Warm Rain over Tropical and Subtropical Pacific Ocean

Fang Qin and Yunfei Fu

School of Earth and Space Sciences, University of Science and Technology of China, Hefei,China
(qinfang7@mail.ustc.edu.cn)

In this study, using the merged measurements from Tropical Rainfall Measuring Mission (TRMM) Precipitation Radar and Visible and Infrared Scanner, the regional differences of warm rain in boreal summer are investigated over tropical and subtropical Pacific Ocean (120°E-70°W, 40°S-40°N) from 1998 to 2012. Results indicate that there are three warm rain types (phased, mixed and pure type) over these regions. The phased warm rain, which occurs during the developing or declining stage, is located in the mid-west Intertropical Convergence Zone and its flanks. It mostly appears in the midnight and disappears in the daytime with 5.5km maximum echo top. The frequency of this type is about 2.2%, and it contributes 40% to the total rainfall. The pure warm rain is the typical stable precipitation type with echo top height lower than 4km, which is located in the south-east side of Pacific. Although the frequency is less than 1.3%, this type warm rain accounts for 95% to total rainfall. The diurnal variation shows its peak occurrence in the midnight and valley in the afternoon. In addition, for the mixed warm rain, some of them may develop into relatively deeper convective precipitation, while most of them are similar to the pure warm rain. The mixed type which is mainly located over the ocean of east Hawaii. The frequency is 1.2%, but this type precipitation could contribute 80% rainfall to the total amount. The results also reveal that the mixed and pure type are in the locations where SST ranges from 295K to 299K with relatively strong downdraft on 500hPa. Both the mixed and pure warm rain are in more unstable atmosphere comparing with phased warm rain.