



Analysis of rain characteristics based on rain-yields per flash (RPF) calculated from TRMM PR and LIS data

Yukari N. Takayabu (1,2)

1. Center for Climate System Research, the University of Tokyo, Chiba, JAPAN, (2) Japan Agency for Marine-Earth Science and Technology, Yokosuka, JAPAN
(yukari@ccsr.u-tokyo.ac.jp, Fax: +81-4-7136-4375, Phone: +81-4-7136-4402)

Rain-yields per flash (RPF) over the entire tropics were calculated from 6 years of data collected by a Lightning Imaging Sensor (LIS) and a Precipitation Radar (PR) housed onboard the Tropical Rainfall Measuring Mission (TRMM) satellite. The results confirm that RPF is a reliable indicator of precipitation regimes, with a marked land–ocean contrast and intermediate values over monsoonal regions and continental oceans.

Various characteristics of rain are analyzed based on the seasonal RPF values. First of all, a good correlation was found between RPF and the storm height, especially over land. This result indicates that large amounts of tall convective rain are fundamentally associated with intense updrafts that are able to sustain vigorous lightning activity. On the other hand, the correlation is much weaker over ocean. Transition zones were found over the coastal ocean in ~1000 km from the continental coast, where the RPF values attain moderate values. Oceans surrounding the maritime continents are found to be in such ‘coastal transition zones’. Seasonal and regional variations of rain characteristics are described in terms of RPF values. Differences in rain properties associated with RPF variations will also be discussed.