Geophysical Research Abstracts
Vol. 13, EGU2011-6299, 2011
EGU General Assembly 2011

Climatology of storm top in summer Asia observed by TRMM PR and VIRS

Yunfei Fu, Tianyi Li, and Peng Liu
School of Earth and Space Sciences, University of Science and Technology of China,Hefei, China (fyf@ustc.edu.cn)

Climatology of storm top altitude including its diurnal variations for convective and stratiform precipitation and its relationship with surface rain rate in summer Asia are investigated based on measurements of TRMM Precipitation Radar in the latest ten years (from 1998 to 2007). The results indicate that more than 70% of convective storm top ranges from 8 to 12 km and from 5 to 10 km over the Tibetan Plateau and the eastern plain of the mainland, respectively. In other regions, the much more convective storm top is between 5 and 9 km. Generally, the mean altitude of convective storm top is higher over land than that over ocean. For stratiform precipitation, most of its storm top altitude varies from 5 to 8 km no matter over land or over ocean. Furthermore, results also expose a small percentage of shallow convective precipitation occurring in summer Asia but more than 40% of deep convective precipitation appearing in the eastern plain of the mainland, Southwest China, and the area from the western Indian subcontinent to the eastern Iran Plateau. Statistics shows about 7∼8km of mean storm top for weak convective precipitation against less than 7.5km for weak stratiform precipitation over both land and ocean. On the other hand, about 90% of heavy convective precipitation top ove land is higher than 9 km while the most heavy stratiform precipitation top is less than 8.5km. Additionally, the mean altitude of both convective and stratiform storm top in summer Asia increases with the increment of mean surface rain rate, which fits the approached curve of quadratic function. Analysis also shows that the distributions of diurnal peak in local solar time for the frequency, intensity and storm top of both convective and stratiform precipitation suggest a consistent variation trend in summer Asia but quite stronger diurnal fluctuation over land than over ocean.