

Lightning Occurrence Relative to Meteorology

Lightning and convective rain over Indian peninsular and Indo-China Peninsular region

P. S. Buchunde^{*}, Devendraa Siingh^a, (Indian Institute of Tropical Meteorology, Pune, India-411 008) Himanshu Gandhi (Department of Geophysics, Banaras Hindu University, Varanasi 221005), R.P. Singh (Department of Physics, Banaras Hindu University, Varanasi 221005) (*e-mail; pallavi@tropmet.res.in)

Abstract

Two peninsular regions of equal area with different orography lying in the same latitude range are chosen to compare the impact of surface temperature, convective available potential energy, convective cloud cover, outgoing long wave radiation and aerosol concentration on lightning flashes and convective rain fall activity. Lightning flashes and convective rain fall are higher in the Indo-China peninsular region (R_2) than in the Indian peninsular region (R_1). Surface temperature, CAPE, OLR, and AOD are higher in R_1 . This suggests that convective process leading to lightning and rain fall activity may also depend on other factor. Lightning activity shows peak in pre-monsoon period along with a secondary maxima in the withdrawal period of monsoon where as rain fall activity increases with the progress of monsoon. Both lightning and rain fall activity are well correlated ($R > 0.60$) with CAPE in both the regions, however, surface temperature does not show any effect on convective rain in R_1 , but it has a positive effect in R_2 . Convective rain and lightning flash in both the regions increase with cloud cover, sea surface temperature and decrease with OLR. Positive correlation is observed between lightning flashes and rain fall. Positive effect of aerosol concentration on lightning flashes and rain fall is observed in region R_1 . In the region R_2 convective rain decreases with aerosol concentration, where as lightning flashes show statistically insignificant increase with AOD. Results have been explained and compared with the available works.