

Influence of wind field on development of thunderstorms in Sri Lanka

The thunderstorms cause considerable damage to property and injury to humans in many parts of the world.

A study was launched to determine the relation between the development of thunderstorms and the upper wind fields. The information of thunderstorms from a number of stations and the local upper air wind data collected during 1995-1998 were used in the study.

The percentage number of stations reported thunder, p , was computed. A day with p greater than 20 was taken as a thunderstorm day (denoted by $T=1$) and a day with p less than 20 was taken as a day without thunderstorms (denoted by $T=0$).

Wind data was analyzed to find whether the wind shear between several pressure levels has any relation to the thunder activity over Sri Lanka. For each day, with or without thunder activity the wind shear between each pair of levels were computed and then the total number of such events corresponding to different ranges of wind shear were counted.

It was seen that the smaller wind shear in all three layers 850-500, 700-500 and 850-200 hPa lead to development of thunderstorms and shear greater than 15 knots are favorable conditions for weather with no thunderstorms. Correlation of wind shear in layer 850-200 hPa to thunderstorm-activity is high; Correlation of wind shear in layer 850 -200hPa to thunderstorm-activity is high; shear in range 15-20 knots leads to high thunderstorm

activity and that in range 60-70 leads to atmosphere with n or very less thunderstorm activity.