

A Flash Flood Parameter Investigation

Abstract

This study attempts to develop a parameter that can accurately assess and indicate favorable conditions for flash flooding based on ambient moisture and vertical extent of the moisture. The equation developed to obtain the parameter uses mean relative humidity from two levels and the integral of specific humidity throughout the column. This study investigates whether the developed parameter is a viable and reliable indicator of flash flooding conditions. Flash flood cases in the states of New York and Pennsylvania were selected using the National Climatic Data Center's (NCDC) storm report archive and categorized by magnitude and storm type using geographical coordinates and archived radar imaging. The parameter value was then calculated and recorded using archived North American Regional Reanalysis (NARR) data, displayed graphically and numerically using GRADS. Parameter values were recorded for the nearest model run before, nearest model run to the beginning, and nearest model run to the maximum rainfall rate, as indicated by radar, of the event. Statistical analysis of the results tests for significance of the parameter values while a visual analysis tests whether the spatial distribution of significant values is useful for forecasting. Further research is still necessary to test it against a control, specifically how frequently the parameter accurately foretells of a flash flood event.