

Analysis of the October 6-7, 2006 Heavy Rain Event Across Central and Southeast Virginia

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Abstract

On Friday October 6th through Saturday October 7th, 2006, a cut-off low pressure system dropped across the mid-Atlantic and produced heavy rain bands that dumped between 5 and 11 inches of rain across portions of central and southeast Virginia. This rainfall caused significant flash flooding that prompted several road closures across the area, including a portion of U.S. route 460; a main east to west highway which was closed within 8 hours after the heavy rain began. Also, subsequent river flooding occurred along the Blackwater River where the city of Franklin experienced its second highest flood on record as portions of the downtown area were submerged with 3 to 4 feet of water.

Using the office Weather Event Simulator (WES), various synoptic and mesoscale processes were examined to show why heavy rain bands developed across the area and remained nearly stationary for several hours. These bands caused the higher rainfall amounts and subsequent flooding. Model cross sections will depict such parameters as frontogenesis, theta-e advection, and omega which were contributing factors to the formation of heavy rains. Surface moisture convergence combined with 850 millibar theta-e ridging were also found to be important parameters in pinpointing where heavy rain bands were likely to occur. The Flash Flood Monitoring and Prediction (FFMP) system was also proven to be instrumental in issuing timely flash flood warnings and flood advisories for this event.

This poster will give guidance to operational meteorologists of what to look for when forecasting where heavy rain bands may develop in coastal plain areas from a non-tropical system. It is necessary for forecasters to recognize synoptic and mesoscale environments conducive to heavy rain bands in order to heighten their situational awareness and enhance the warning process.

