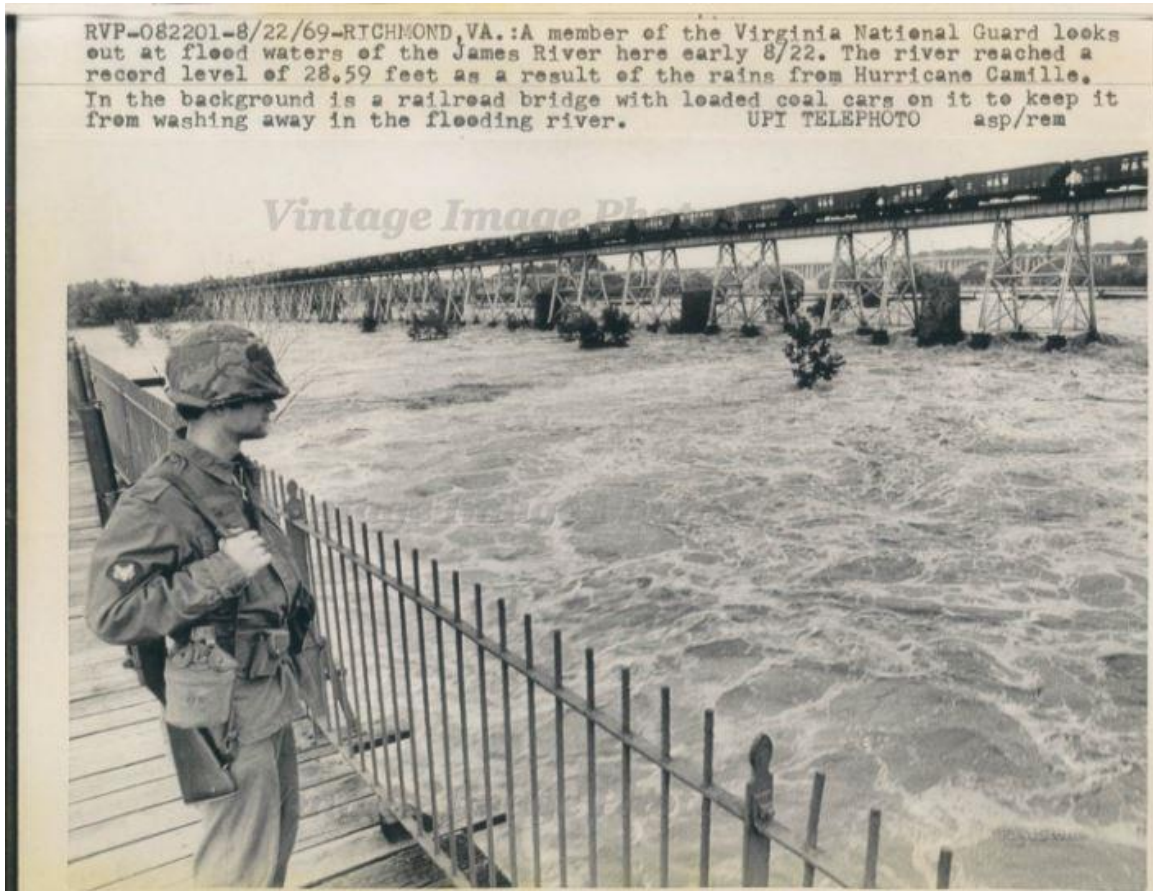


Camille gave Richmond 2.68 inches of rain but this was nothing compared to what the James River Basin received. More than 25 inches of rain fell in a 5 hour period in Nelson County, VA. This is still a 6 hour period record rainfall amount for the United States. The James River crested at 26 feet in Lynchburg which was the highest since 1877. More than 10 inches of rain fell on Scottsville about 15 miles south of Charlottesville where the James River crested at 30.5 feet eclipsing a 17 foot flood stage. The James River crested in Richmond at 28.6 feet with a flood stage of only 9 feet. This was the highest recorded flood stage for the James River in Richmond in nearly 200 years.



### **Nature's perfect rain-making machine**

Such an alignment involved many scales of motion. Let's treat the large processes first.

First, there was the remnant vortex, drawing in low-level moisture, converging the air, creating uplift. Contrary to popular belief, the vortex did *not* stall – it could not have – since it was embedded in the fast-flowing jet stream aloft.

Second, a cold front, oriented west to east, sagged southward through central Virginia. This front, more than any other element, helped to concentrate the rainfall into a long, narrow ribbon cutting across Virginia.

Third, the jet stream's flow focused the uplift further. Embedded within the flow was a pocket of fast wind, termed a jet streak. Airflow undergoes dynamic adjustments as it traverses a jet streak – and this led to a small bullseye of vigorous ascent over central Virginia.

Fourth, low-level moisture was exceptionally abundant. The summer was rainy, and both soil and vegetation liberated large fluxes of water vapor. Humidity accumulated above the surface, raising dew points across southern Virginia and north-central North Carolina into the 76-78 °F range. Thick moisture pooled south of the cold front, and along the lee slopes of the Blue Ridge.

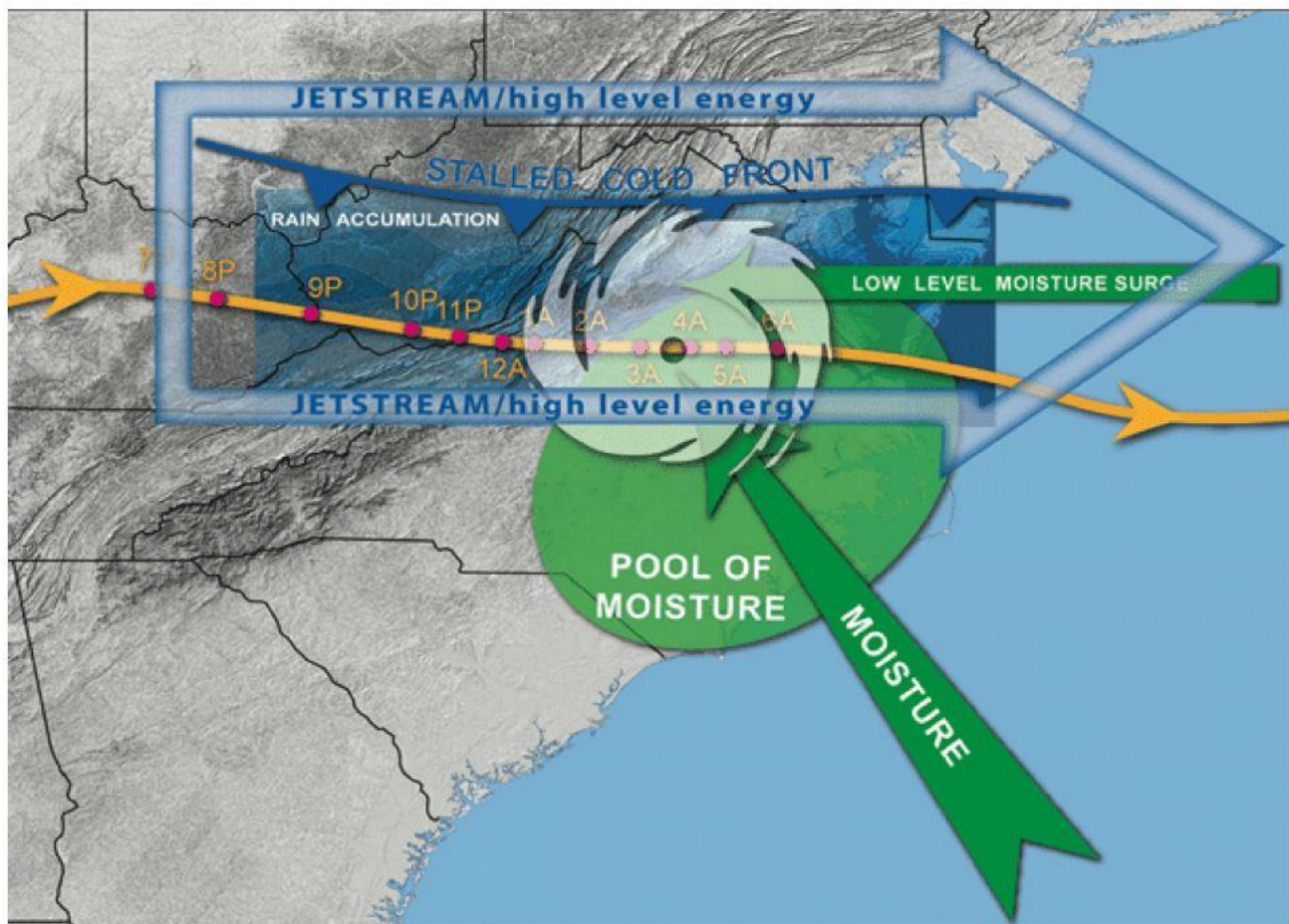


Figure 3: Conspiracy of large-scale atmospheric processes leading to an unprecedented period of heavy rain along the Blue Ridge Mountains. (Tom Rabenhorst, UMBC)

Now, let's examine smaller scales, that of the rain-bearing cloud system itself. The radar suggests that a highly efficient cluster of thunderstorms blossomed rapidly, becoming anchored against the high terrain. This aggregate of thunderstorm cells, embedded *within* the larger Camille system, is the element that remained stationary for many hours.