Why the W.Va. floods were so deadly and destructive

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Steep mountains, narrow valleys and a deadly train of storms came together in West Virginia to cause the horrendous flooding that killed 23 people last week, forced thousands to evacuate and destroyed or damaged thousands of homes and businesses. West Virginia got hit by a phenomenon meteorologists call 'training' because the thunderstorms line up over the same location like the cars of a freight train. More rain is in store for Monday, and the state issued flood watches and warnings as more water pours onto already saturated ground. The vicious line of storms dumped "one-in-1,000-year" amounts on the state last week. This "train track" formed last Thursday along a weather boundary between cooler air to the northeast and moist, warm air to the southeast, said weather service meteorologist Dave Wert of the Blacksburg, Va., office. Some spots picked up more than a foot of rain in only a few hours. That amount of rain in such a short amount of time is something expected once in 1,000 years, the weather service said. "We just can't take that amount of rain in a mountainous area," Wert said. Such conditions in West Virginia caused the flash flooding, said Michael Charnick, a meteorologist with the National Weather Service in Charleston, W.Va. The water drained down the mountains into the valleys, where roads, homes and entire neighborhoods flooded, Charnik said. "Many parts of West Virginia are certainly prone to flooding and much of it has to do with the state's topography," said Kevin Law, the West Virginia state climatologist. The southern part of the state with its steep hillsides and narrow valleys is particularly vulnerable, Law said. "When over eight inches of rain fell over such a short period of time, the water rushed down these hillsides so swiftly it was channeled into those narrow river valleys," he said. He said Nicholas and western Greenbrier Counties (two of the hardest hit counties) are more mountainous and the valleys are very narrow. The valleys are also more heavily populated than other areas of the state . "The valleys are the easiest places to build, so nearly all the roads and many houses are in these vulnerable areas," Law said. "Eight inches of rainfall may not be that deadly in coastal and flat areas: However, in mountainous areas eight inches of rain can be very deadly and devastating." Rain earlier in the day had already soaked the ground, which exacerbated the runoff. This was the third-deadliest flood

in West Virginia history, according to Law. Man-made climate change may have added to the disaster. The part of the USA that includes West Virginia has seen a 71% increase in extreme precipitation since 1958, according to the National Climate Assessment. The cost of the flooding has yet to be determined, according to FEMA, but “it is a pretty safe bet that overall losses will be in the hundreds of millions once final assessments are completed,” said meteorologist Steve Bowen of Aon Benfield, a global reinsurance firm. A federal disaster has been declared in three of the hardest-hit counties, while a state of emergency has been declared in 44 of the state’s 55 counties due to the floods. Hundreds, maybe thousands of homes have been destroyed. An added level of misery for the state is that fewer than 2% of the insured homes there have flood insurance, Bowen said.