WARREN COUNTY’S EXTENSIVE KARST REGION.

SINCE 1985 TO GET AN IDEA OF WHAT LIES UNDERGROUND IN FOR CAVE AND KARST STUDIES, HAS BEEN USING MICROGRAVITY

OGRAPHY AND GEOLOGY AND THE DIRECTOR OF WKU’S CENTER

Dr. Crawford began refining his technique, combining microgravity with other detection methods such as electrical resistivity, which involves injecting an electric current into the ground and measuring the resistivity. Soils trans-

mit a current easily whereas air, found in a cave or other void, is highly resistive.

The techniques have been in demand. Dr. Crawford and others from the Center have used them to investigate a sinkhole collapse under Interstate 65 near Elizabethtown and under a NASA building at Red Stone Arsenal in Huntsville, Alabama, to locate a monitoring well near a factory in Frankfurt, to locate 20,000 gallons of gasoline that had spilled into the karst aquifer in Albany, Georgia, and to in-

vestigate the sinking of a town in Alabama.

They also mapped several miles of the caves under Bowling Green, Dr. Crawford said. And, the Center has used the techniques to investi-

gate numerous sinkhole collapses, particularly ones that have occurred under buildings and highways.

Their technique caught the atten-

tion of NASA and the Federal Emer-

gency Management Administration. After the terrorist attacks on the World Trade Centers on September 11, 2001, Dr. Crawford was con-

 tacted by NASA and FEMA about us-

ing microgravity to locate pockets in

the rubble.

“They wanted us to try to use it at that location to see if there was any chance of us picking up any void spaces where people might still be trapped,” he said. “For approximately a month, my suitcase was packed and my car was loaded up with the instruments and we were ready to take off to go up there to do what we could.”

However, the call didn’t come. The problem was that the terrain was rugged with steel jutting up 300 feet and a huge hole in the middle.

“The New York Fire Department was in charge of the lapsed building and using a laser to measure the depth of the ground surface, or using a remote-controlled car. We’re looking at inventing a robotic system for taking these readings where we could actually take them behind

enemy lines and areas that are too rugged to take the readings using some other technique,” he said.

In the meantime, students working for the Center are gaining experience while helping solve real problems. One such student, Jeremy Richardson, is completing his master’s thesis using the techniques to investigate a flood-prone parking lot on the WKU campus.

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Leigh Ann Croft, a research hydrologist, takes microgravity readings using a LaCost and Romberg Microgravity Meter.

PHOTO BY SHERYL HAGAN-BOOTH

TOP STEVE DANNER / USA TODAY

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THE SURFACE

By Bob Skipper

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