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University of Dayton

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NEWS



Wednesday December 16, 2015

Research in Nepal

Findings from a University of Dayton geologist after the deadly earthquake in Nepal April 25 will be published in a forthcoming article in *Science*, the leading journal on original scientific research.

Umesh Haritashya is one of four lead authors of the research, which details landslides after the magnitude 7.8 earthquake that claimed more than 9,000 lives in Nepal and other areas of South Asia.

The team studied thousands of satellite images from NASA to help emergency responders and subsequently found fewer landslides than expected resulted from the disaster.

“We ended up doing a lot of scientific analysis after the humanitarian crisis was over,” Haritashya said. “The research tells us the number of landslides that happened after the earthquake were small compared to any other earthquake in the world where a similar magnitude of shaking happened.”

Haritashya also studied glacial lakes in the mountains, which contain several million cubic meters of water. Any spillage from the lakes could have destroyed villages and other infrastructures downstream. Alumnus Mark Pleasants, Haritashya’s former student, assisted with the research. The team surveyed 491 glacial lakes and saw only nine affected by landslides. Satellite images did not reveal any flooding from those lakes.

“Our school of thought was any major earthquake of this magnitude is going to let water spill out. Fortunately, it didn’t happen and none of the lakes were damaged,” said Haritashya, who is conducting NASA-funded research on glacial lakes, which he said best indicate how climate change is rapidly changing frozen water resources.

The *Science* article was published online today.

The research was written by Jeffrey Kargel and Gregory Leonard from the University of Arizona and Dan Shugar of the University of Washington Tacoma and Haritashya, along with Eric Fielding of NASA’s Jet Propulsion Laboratory, Dalia Kirschbaum from NASA Goddard Space Flight Center and 59 other coauthors.

The international team studied more than 4,300 landslides occurring within six weeks of the Nepal earthquake using their satellite-based findings plus media reports, eyewitness photography, field assessments from helicopters and computer models of lake “outburst” floods.

The research team is currently investigating why there were fewer landslides than expected and why they are distributed as they are. One possible explanation is that the earthquake caused much less shaking at the surface than other earthquakes of similar magnitude.

Haritashya said the research does not predict future landslides.

“An earthquake is one of those things that no one can predict,” he said. “The science is not there yet. Tomorrow the same magnitude earthquake could happen at the exact same point and a lot of damage could happen.”

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