Researchers model the physics of mudflows

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Mudflows initiated by natural processes at old, inactive volcanoes contributed to the tragic mudslide in Guinsaugon, Philippines, say researchers.

University at Buffalo researchers have developed advanced computer models of mudflows and say that mudflows are the volcanic phenomena posing the greatest danger to populations.

"They really come roaring down, like the speed of these toboggans you see on the Olympics," said Michael F. Sheridan, director of the Center for Geohazards. "The mud looks like liquid chocolate pouring down the valley and the rocks they contain behave like marshmallows in hot cocoa, so big rocks can be brought downhill very fast. The flowing material is much denser than water, so it transports the buoyant rocks very quickly."

Fresh volcanic rock can be quite stable, forming steep cliffs on active volcanoes, but over time, weathering can change the rock to clays or soils that are only stable on gentle slopes, according to Sheridan.

"This material has a tendency to slump in a landslide in order to maintain its equilibrium and this process doesn't occur on a grain-by-grain basis, but rather in one big step," he said.