Scientists release most detailed map of Teton quake fault

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Scientists have completed the most detailed map yet of one of North America's most spectacular geologic faults with the hope of providing a better understanding of the earthquake risk at a popular vacation destination.

Millions of tourists visit Jackson Hole, Wyoming, every year to sightsee, hike or ski the Teton Range, which was formed by the Teton fault.

Upward slippage of the fault's western edge has pushed the mountains to their present height of some 7,000 feet (2,130 meters) above Jackson Hole in Grand Teton National Park.

The fault ranks among the fastest moving in the Rocky Mountain region. Scientists think it could produce an earthquake as powerful as magnitude 7.5, which would cause serious damage.

Research shows the Teton fault last ruptured more than 5,000 years ago. Whether the fault is overdue for a big quake is unknown, geologists said Friday.

"We're always speaking in geologic time, which is thousands of years or hundreds of thousands of years," Wyoming State Geologist Erin Campbell said.

Earthquakes are common in the region. In 1959, a magnitude-7.3 quake in a different fault area west of Yellowstone National Park in Montana

killed 28 people, many of them buried by a landslide that blocked the Madison River.

The Wyoming State Geological Survey released the new map of the Teton fault this week. Copies may be downloaded for free or purchased online for $25.

Researchers created the map with equipment that involves using laser pulses to measure distances precisely.

Aircraft with the equipment flew up and down the Teton fault to create precise images of the terrain, helping geologists pinpoint the fault's location.

Geologists who study the fault often focus on scarps revealing the fault line at the foot of the mountains. There, they've dug trenches to look closely at how the fault has moved since the last glacial period ended 15,000 years ago.

Landslides and lakes cover the fault in places but scarps up to 125 feet (38 meters) high make its exact location obvious in others.

"It almost appears like a wall in the forest in some spots," said the map's lead author, Mark Zellman, of earth sciences consulting firm BGC Engineering Inc.

U.S. Geological Survey research geologist Christopher DuRoss and Idaho State University geology professor Glenn Thackray also helped create the map, which extends the fault about six miles (10 kilometers) farther south than was previously known.

Seth Wittke of the Wyoming State Geological Survey and others reviewed the work and went to the field to check its accuracy.

"This is a good kind of starting point in defining the fault itself, and some work that's been done along it, for future research," Wittke said.