

# Major flooding risk could span decades after Chinese earthquake

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Up to 20 million people, thousands of whom are already displaced from their homes following the devastating Chinese earthquake, are at increased risk from flooding and major power shortages in the massive Sichuan Basin over the next few decades and possibly centuries.

Dr Alex Densmore, a geographer from Durham University, makes the observations on returning from carrying out investigative fieldwork in the China earthquake zone, where nearly 100,000 people were killed in May 2008. He has been studying the active faults in Sichuan for the past eight years.

The biggest risk is posed by the ongoing landslides in Sichuan province, a common occurrence after major earthquakes such as these. Landslides cause rocks and sediment to be dumped in the river valleys, and this material then moves downstream to settle on river beds.

In some areas, river beds are already two to three metres higher due to the increased amounts of sediment after the earthquake. This means that during periods of heavy rains the rivers have greater potential to burst their banks – a risk that will last for decades to centuries.

There is also the potential for build up of sediment in the reservoirs behind the many dams in the area. These reservoirs then become useless for flood control or hydro-electric power generation.

These long term effects of the earthquake should be considered very

carefully by the Chinese authorities, says Dr Densmore, who was "astounded and impressed" by the speed and efficiency of response to the earthquake's short term effects.

Many mountain communities, who took the brunt of the disaster, have been relocated and re-housed into the 500 km-wide Sichuan Basin, which is perceived to be a safer area to live. Up to 20 million people live in the western part of the Basin, where the provincial capital, Chengdu, is also sited.

Dr. Alex Densmore's research in China is funded by The Natural Environment Research Council (NERC).

Dr Densmore, Director of Hazards Research at Durham University's Institute of Hazard and Risk Research, said: "We were amazed at how fast the Chinese had responded to this disaster. Many of the people in the mountain areas have been resettled and there are big temporary housing communities with supplies of clean water, power, and access to food and transportation. It is a very impressive response and is a big contrast with how the US responded after Hurricane Katrina.

"However, while the short term response has been excellent, in the longer term they will need to have a well informed discussion about where to permanently move these communities.

"There is a significant risk of a major flooding disaster. At the moment it is very difficult to predict the exact nature of that risk but in ten years or so we may be in a better position. The enhanced risk due to the earthquake will persist for decades, possibly for up to 100 years.

"In the longer term, the authorities will need to look at issues such as moving people out of the flood plains and re-routing transportation links in areas where there are high risks of floods."

Dr Densmore and his team have been studying the fault lines which caused the earthquake, and found that buildings which were directly on top of the fault line were almost always completely demolished, while others built near the fault were damaged but often remained standing.

He says that when or if it is time to rebuild the devastated towns, planners should consider establishing buffer zones around the fault lines, a practice followed in other places where there is high risk of earthquakes such as North America and Japan. Buildings of flexible materials such as wood and bamboo are preferable to rigid structures of bricks, concrete and mortar.

Source: Durham University

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