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Scientist says Alberta's flood forecasting tools from 'stone age'

By Colette Derworiz, Calgary Herald, February 15, 2014

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CANMORE - The flood that hit Colorado in September was "almost identical" to the one in Alberta three months earlier, but experts suggest the United States has better forecasting tools.

In Colorado, days of rains and floods turned the communities in the southern Rocky Mountain foothills into a disaster area after roads crumbled, bridges collapsed and homes were destroyed.

"It was a tremendous event for us," said Roy Rasmussen, a senior scientist with the National Centre for Atmospheric Research in Boulder, Colo.

In June, a similar event took place in Alberta - the worst natural disaster in the province's history.

Rasmussen, one of the world's leading experts on extreme weather and hydrology, said the two floods were "almost identical" from a scientific perspective - including the fact both came from a slow moving, upper-level low to the west and had a long duration of heavy rainfall.

Colorado differed slightly because it didn't have any snow on the ground and there wasn't much lightning, he said.

His comparison was made at a public presentation Wednesday evening as part of a two-day workshop by the Changing Cold Regions Research Network, a research group made up of more than 50 university and government scientists from around the world.

Rasmussen said the lessons that can be learned from the floods are that Canada needs to use higher resolution forecast models to improve the forecasted precipitation, use a real-time hydrological model and couple radar estimates with rainfall.

John Pomeroy, Canada research chair in water resources and climate change at the University of Saskatchewan, has criticized Alberta's response to the floods and suggested it's time to bring in better tools.

"We need to move to high-resolution weather forecasting," she said Wednesday. "We need to couple that to streamflow forecasting."

Pomeroy said it would require greater co-ordination between the federal and provincial governments.

"We've had a wake-up call and we need to move very quickly to those types of systems," he said. "If we don't, we won't be able to predict floods of this nature with much greater accuracy and it leaves us in danger."

Both governments have said they are trying to close any gaps in the prediction and warning systems.

Kevin Shook, a research scientist with the University of Saskatchewan, suggested the country's infrastructure is also problematic.

“The investment in infrastructure in Canada is woefully lacking - not simply meteorological stations or hydro-meteorological stations, but all of the infrastructure supporting this kind of effort,” he said. “The number of people we have in Canada doing the river forecasting is absolutely minute.”

Shook, who worked as a river forecaster for Alberta Environment from 1995 to 2005, said he’s since visited regional forecast centres in Portland, Oregon and Sacramento, Calif.

“I felt like the poor hillbilly cousin. It was like going from the Stone Age to Star Wars,” he said, adding Alberta’s system is actually one of the better ones compared to some of the other provinces.

In Colorado, Rasmussen said they were able to handle the flood well, but they still weren’t able to keep up with the amount of rain.

As a result, he said they are working toward an improved flood warning system.

“What it consists of is taking meteorological observations like radar and gauges and combining that into a meteorological analysis and then using that to start the forecast,” he said, noting it will help to forecast how a flood might look.

The systems are being tested for six weeks in the summer, said Rasmussen.

“This type of work shows a lot of promise,” he said. “We were starting to work on this before the flood, but the flood has accelerated our progress.

“I think it’s still extremely important for society - not only for Canmore and Alberta and Boulder, but for a variety of locations in the world.”

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