Climate change will increase extreme precipitation levels

By Bettina Boxall, Los Angeles Times

Rainfall or snowfall dumped by the most intense storms could grow significantly heavier in most of the United States by the final decades of the century, according to a climate change study.

The paper, written by a research team led by scientists from the National Oceanic and Atmospheric Administration, examines the effects of rising greenhouse gas emissions on factors that influence maximum precipitation.

The authors concluded that increasing atmospheric moisture will play the dominant role in ramping up rainfall intensity, which they projected using climate models.

As the Earth warms, sea surface temperatures rise, accelerating evaporation and increasing the amount of water vapor in the atmosphere. If greenhouse gas emissions continue at high levels, atmospheric water vapor levels will jump 20 to 30 percent in the final decades of the century, the researchers found.

That will push up maximum precipitation by a corresponding amount, with increases in the Western U.S. falling in the high end of that range, according to the paper, which has been accepted for publication in the journal Geophysical Research Letters.

“We have high confidence that the most extreme rainfalls will become even more intense, as it is virtually certain that the atmosphere will provide more water to fuel these events,” said lead author Kenneth Kunkel of the National Climatic Data Center.

Although the study focused on the U.S., the researchers said their conclusions applied to most areas of the globe.

They warned that the projected increases would raise the risk of damaging floods. “The long lifetimes of dams and similar structures ensures that they will experience the impacts of future climate change,” the authors wrote.

Ignoring the expected effects of climate change, they added, “is likely to lead to a false sense of security.”