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Research: Southwest Is Drier Already Climate Change Said To Shift Storms North

By John Fleck Journal Staff Writer

Human-caused climate change is already drying out the Southwest during late winter and early spring, new research by a team of Arizona scientists suggests.

The work supports one of climate-change science's key predictions for our region — that the jet stream, which brings our winter storms, will slowly shift to the north as the planet warms.

University of Arizona researcher Stephanie McAfee looked at rainfall data for the region and found that the climate shift is already under way. Storms that would in the past have blessed the Four Corners region with rain and snow instead get steered to our north.

Not every year will be dry, McAfee said in a telephone interview. But the shift increases the proportion of years with below-average rain and snow as the jet stream shifts to the north.

Fewer storms from February through April leads to an earlier start of our dry, windy weather, according to Ed Polasko, a hydrologist at the National Weather Service in Albuquerque and one of the state's leading snowpack experts.

In some case, that can lead to earlier snowmelt, Polasko said. But the dry winds can also evaporate the snow directly, keeping it out of the state's rivers entirely.

The change also leads to an early and more dangerous wildfire season, said Tom Swetnam, a fire-science researcher at the University of Arizona.

Scientists say the buildup of greenhouse gases from burning coal, oil and other fossil fuels is changing Earth's climate. The phenomenon often goes by the name global warming because it appears to be contributing to an overall increase in average global temperatures. But many scientists working on the issue prefer the term "climate change" because the results are not evenly distributed around the planet.

In particular, scientists say we should expect the large deserts that circle the globe at low latitudes, like those found in Mexico or the Middle East, to expand toward the poles.

That, they say, can be expected to dry out the Southwest. Federal researcher Martin Hoerling sent shockwaves through the western water community two years ago with a study suggesting that conditions in the worst droughts of the past century could become the norm by the end of the 21st century. Columbia University researcher Richard Seager says we can expect climate change to create permanent "dust bowl" conditions in the region.

The importance of McAfee's study is the evidence it provides that the change is not merely a scenario for the future but may already be under way, said Jonathan Overpeck, a University of Arizona scientist who has worked with McAfee but was not involved in her new study.

"This really confirms that this pattern has been happening already," Overpeck said.

Other researchers had already found evidence of a large-scale shift in the average position of the jet stream, beginning in the 1970s as global warming kicked into high gear. McAfee's work ties that to a detailed study of where rain and snow are actually falling around the West.

She looked at data from 1955 to 1998, looking at the period 1978 to 1998 in greater detail. She also ran computer simulations to rule out the possibility that the precipitation changes she found could simply be happening that way by chance.

