Research in ancient forests show link between climate change and wildfires

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Portland State researchers studying centuries-old trees in South America have found a tight correlation between wildfires and a warm weather fluctuation that has become more frequent in recent decades - and will continue to be more frequent as the climate warms.

PSU geography professor Andrés Holz and his research team first discovered the correlation in 2011. Since then, the team fine-tuned and expanded the geographic scope of their discovery by studying 1,767 fire-scarred trees from 97 South American sites, encompassing multiple ecosystems. It is the largest network of fire-scarred trees outside the United States. Some of the trees dated back to 990 A.D., which gave the researchers a year-by-year, decade-by-decade view of fire activity.

It also provided a living record of how the fires corresponded with the weather fluctuation. The warm, dry weather was triggered by a climate oscillation called the Southern Annular Mode (SAM), a change in westerly wind patterns throughout the Southern Hemisphere.

"We found that wildfire activity over the centuries has been increasingly favored by the warm phases of SAM going back to 1665," Holz said.

He said SAM-related wildfires became more frequent in the 20th Century. Holz said climate modeling studies show the trend will accelerate in the 21st Century due to an increase in greenhouse gasses, setting the stage for more frequent wildfires.

Their newest findings were recently published in *PNAS*, the journal of the National Academy of Sciences.

Provided by Portland State University