





IMAGES



BOTANY


RING CYCLE

Trees tell a tale of changing climate

By Marissa Fessenden

LIKE MANY BIOLOGICAL FORMS, TREE RINGS SPEAK TO THE IMAGINATION of both artists and scientists. To create the image at the left, Connecticut-based artist Bryan Nash Gill took a cross section of a fallen willow tree, sanded it smooth and then charred it to raise the grain. Next, he rolled ink over the wood and laid down a piece of paper to transfer the pattern. Gill's work is a way of "making the wood sing," he says.

For dendrochronologists—scientists who analyze tree rings—each tree's story can add up to a narrative about past climate. This willow's rings have varying widths, which suggests that some years were favorable for growth and others were less so, says Connie Woodhouse, associate professor in the School of Geography and Development at the University of Arizona. The rippled rings on the right are part of a burl—an abnormal growth possibly created by some kind of infection. She also notes that the tree has two centers, which means it may have begun its life as a twin and later the siblings fused.

Also visible in the print are seasonal growth patterns. Gill's charring process burns away the lighter, softer earlywood from spring growth and leaves behind the harder, denser latewood from summer growth. In her work, Woodhouse measures the latewood to track changes in summer monsoon rains that sweep across Arizona and New Mexico. In a study published online in March in *Geophysical Research Letters*, Woodhouse and her colleagues analyzed 470 years of tree ring data. The researchers found that mega droughts used to be more intense and longer-lasting than they have been over the past century, although that is small comfort to farmers enduring the ongoing drought gripping the West. 

Marissa Fessenden is a freelance science writer based in Brooklyn, N.Y.

SCIENTIFIC AMERICAN ONLINE

View a video about dendrochronology at ScientificAmerican.com/jun2013/tree-rings

BRYAN NASH GILL, AUTHOR OF WOODCUT, PRINCETON ARCHITECTURAL PRESS, NEW YORK CITY, 2012