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How an artist and a scientist uncovered hidden landscapes

Blue light moves across a dark screen. There are no trees, no soil — just the unseen forces that sustain forests, made visible. This is “Tree Water,” an installation by artist Ethan Turpin and UC Santa Barbara environmental scientist Naomi Tague, designed to show how moisture flows underground and through tree roots.

The piece, part of “WILDLAND” at the Westmont Ridley-Tree Museum of Art, is based on Tague’s research in eco-hydrology, the study of how trees access water from rainfall, groundwater and upslope movement. Using an experimental watercolor technique, Turpin directed pigments along invisible paths, mimicking how water moves through the landscape. He filmed the process and projected it at a large scale, creating an immersive effect.

“It’s really beautiful,” Tague said. “You’re seeing the structure of water in motion, without the trees themselves.”

But for Tague, a professor in the Bren School of Environmental Science & Management, the piece is more than just visually compelling — it challenges the way scientists think about water movement. “Even scientists get trapped in overly simplistic models,” she said. “We think of trees having a ‘bucket’ of water underground, but it’s far more complex. This piece actually represents that complexity better than some existing models.”

“Tree Water” is one of two works by Tague and Turpin featured in “WILDLAND,” an exhibition that explores fire, water and climate in California’s landscapes. Their second piece, “Future Mountain,” takes a more data-driven approach. An interactive simulation built using real scientific models, the digital landscape allows users to manipulate temperature and precipitation levels to see how forests, rivers and snowpacks respond over time.

“Climate change plays out in subtle ways,” Tague said. “You have wet years and dry years, north-facing slopes and south-facing slopes. This project helps people see those complexities for themselves.”

Tague, who specializes in eco-informatics—using computer models to simulate ecosystem dynamics — has long grappled with how to communicate her research. Scientific papers and data visualizations can be difficult for non-specialists to interpret, and even researchers can struggle to conceptualize the full complexity of environmental systems.

That’s where Turpin’s artistic approach plays a crucial role. “We think about landscapes visually,” he said. “This lets people explore environmental change in a way that’s more intuitive than reading a research paper.”

Tague and Turpin’s partnership reflects a larger history of intersection between art and science. In earlier centuries, naturalists documented discoveries through botanical illustrations and landscape sketches. Today, science relies on data-driven models, and contemporary art has expanded far beyond traditional representation. Their collaboration bridges this divide, moving beyond illustration into a more dynamic exchange.

“If there’s one message I want to communicate, it’s that this isn’t just an illustration,” Tague said. “It’s a dialogue.”

That dialogue, she explained, is not one-way. “It’s not just that science inspires art — art can also inspire science.” Seeing her research interpreted visually has pushed her to reconsider how scientific models represent reality and how visual interpretation can influence research questions.

“What you see affects what you study,” she said. “The way we visualize the environment shapes the way we understand it.”

Tags
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