

## **Evolution of the South Fork Eel River watershed: The known unknowns**

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This talk explores the topographic evolution of the South Fork Eel River (SFER) watershed, Northern California. The SFER is southeast of the Mendocino triple junction, where three tectonic plates meet. The mainstem river and almost all its tributaries have knickzones, or over-steepened river reaches that likely indicate the forces driving the evolution of the watershed have changed through time. Here we explore what the change in past forces may have been, and how the landscape evolved following that change. We use clues from topographic metrics, erosion rate patterns, and outcomes from numerical models to unravel the story. The watershed has a unique tectonic history, but whether tectonic changes driven by the migration of the Mendocino triple junction are evident in the modern SFER topography remains a known unknown.

### **BIOGRAPHY**

Nicole M. Gasparini is an associate professor in the department of Earth and Environmental Sciences at Tulane University. Her research explores how landscapes evolve over different spatial and temporal scales. She is a co-developer of CHILD and Landlab, two widely used numerical tools for modeling surface processes. She and her team use field observation, remote sensing data, and numerical landscape simulation, along with data collected by collaborators and government agencies, to explore questions that intersect hydrologic and geomorphic research.

She is originally from Buffalo, NY, and went to The University at Buffalo to earn bachelor's degrees in applied math and physical geography. She completed her master's and doctorate degrees at the Massachusetts Institute of Engineering from the Ralph M. Parsons laboratory in the Civil and Environmental Engineering department. After completing her PhD, Nicole held two post-doctoral positions, one as the Bateman Postdoctoral Fellow at Yale University in the Department of Geology and Geophysics and one at Arizona State University in the School of Earth and Space Exploration. Nicole also spent a year in Washington D.C. as the Geological Society of America AAAS Congressional Fellow, working as an aide in the office of then Congressman Edward Markey. Her service activities include mentoring scientists at all career stages, co-chairing the Terrestrial working group of CSDMS (Community Surface Dynamics Modeling System), advising the Tulane GeoLatinas Local Team and active involvement with the international GeoLatinas organization, membership of the advisory committees for HydroShare and OpenTopography, developing educational materials and training scientists in the opensource Landlab modeling toolkit, and regularly organizing award nomination packages for underrepresented geoscientists.