

EGU22-2072

<https://doi.org/10.5194/egusphere-egu22-2072>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Connected or disconnected? Spatial and temporal patterns of river-floodplain connectivity

Paola Passalacqua¹, Kyle Wright¹, Nelson Tull¹, Hima Hassenruck-Gudipati², and David Mohrig³

¹The University of Texas at Austin, Department of Civil, Architectural and Environmental Engineering and Center for Water and the Environment, Austin, TX, United States of America

²University of Minnesota, Department of Earth and Environmental Sciences, Minneapolis, MN, United States of America

³The University of Texas at Austin, Department of Geosciences, Jackson School of Geosciences, Austin, TX, United States of America

The boundary between a river and its floodplain is often viewed as a static feature which demarcates where the river ends and where the floodplain begins. This boundary, however, is a geomorphic transition whose spatial and temporal evolution controls the interaction of rivers and their floodplains. The transport of water, solutes, and solids across this geomorphic transition affects the functioning of rivers, floodplain sedimentation, carbon storage, and ecosystem functioning. Using examples from studies that combine remotely sensed observations, modeling, and field observations, I will discuss the exchange of fluxes across geomorphic transitions in the context of connectivity and its variability in space and time. We will analyze the role of various climate forcings as well as topography and vegetation patterns, and their effect on water connectivity and the connectivity of sediment and other materials. These connectivity patterns can be quite different from each other, suggesting that water exchanges are not always accurate proxies for sediment exchanges in river systems and their floodplains.