Hydrological Sciences Seminar

11am-12pm, October 17, 2018, ECCE 1B41

“Morphodynamics of Disturbed Fluvial Systems”

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Talk Summary: Disturbances to watersheds and river systems, such as land use change, wildfire, dam installation and removal, or catastrophic flooding, alter the amount of sediment and water supplied to channels, leading to morphologic changes that can have important ecologic or societal consequences. In this presentation, I will describe some of our efforts to better understand how rivers respond to these types of disturbances through field observation, physical experiments, and numerical modeling. First I will present results from flume experiments and two-dimensional morphodynamic modeling investigating how gravel-bed channels with riffle-pool morphology respond to changes in sediment supply. Second, I will present field and remote sensing data from two watersheds in the north-central Colorado Front Range that burned in the 2012 High Park Fire, and were subsequently affected by the Great Colorado Flood in September 2013.

About Dr. Nelson: Peter Nelson is currently an Associate Professor at Colorado State University in Fort Collins, Colorado. He received his B.S.E. in Civil and Environmental Engineering from Princeton University, and his doctorate from the Department of Earth and Planetary Science at the University of California at Berkeley. At CSU, Dr. Nelson and his students use computational modeling, physical experiments, analytical theory, and field observations to address fundamental questions about geomorphology, sediment transport, hydrology, hydraulics, and morphodynamics, particularly on improving understanding of sediment transport and channel evolution in gravel-bed rivers. Dr. Nelson has authored 35 peer-reviewed scientific articles and book chapters. In 2015, Dr. Nelson received the National Science Foundation Faculty Early Career Development (CAREER) Award. Dr. Nelson serves as the Colorado Water Institute’s representative on the Advisory Committee on Water Information (ACWI) Subcommittee on Sedimentation (SOS).