Gabet, E.J., 2019, Lithological and structural controls on river profiles and networks in the northern Sierra Nevada (California, USA): GSA Bulletin, https://doi.org/10.1130/B35128.1.

Data Repository

Example of Reference Concavity Estimate

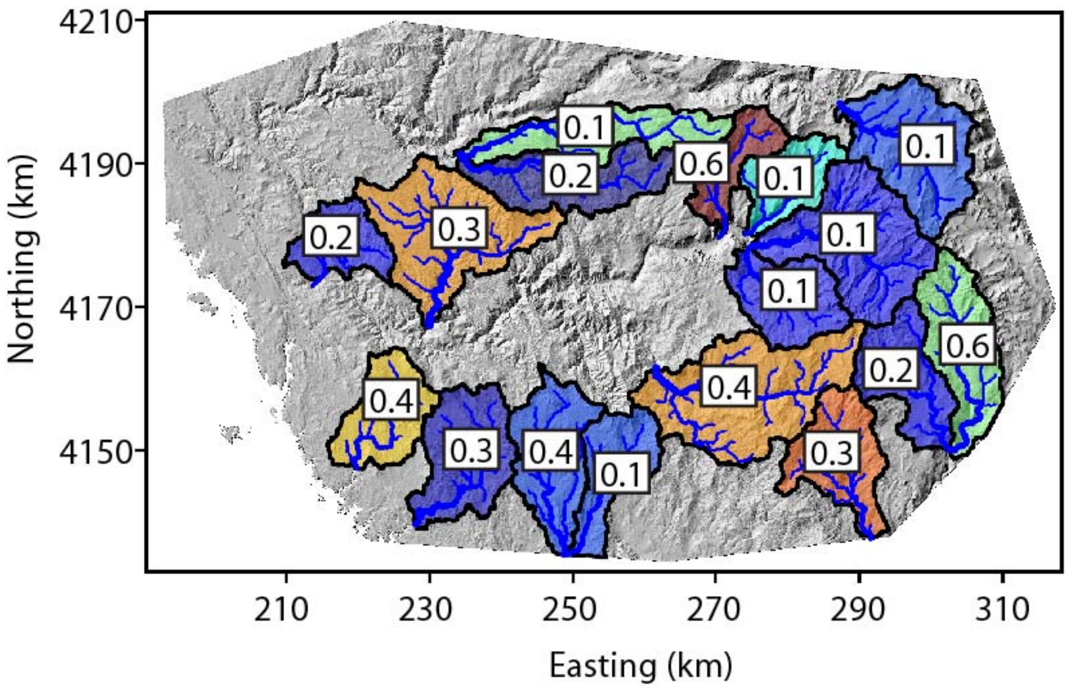

Figure DR1. Concavity index estimates for watersheds adjacent to the Merced River. Concavity index for watersheds on the high-elevation, low-relief surface (i.e., the eastern sites where θ = 0.1) were not considered in determining θ_{ref}.

Determination of Peak Discharge versus Drainage Area Relationship

Few rivers in the northern Sierra Nevada are gauged and fewer still have multiple gauges at different drainage areas. To estimate a relationship between discharge and area, therefore, data from several rivers in the northern Sierra Nevada must be used; this approach, however, assumes a uniform rainfall distribution across all relevant watersheds. Annual peak discharge data for the Yuba, American, Cosumnes, Tuolumne, and Merced rivers were downloaded from the USGS National Water Information System (https://waterdata.usgs.gov/nwis/sw). This data set represents eight gauging stations with drainage areas ranging from 261 – 3255 km^2. For five of the eight stations, the floods on Jan. 2–3, 1997 were the highest flows on record and, for the other three, the discharges on these dates were among the highest. The simultaneity of high flows throughout the region suggests that the storm was sufficiently large to generate a similar hydrological response across watersheds. A regression through the peak discharge (Q; m^3/s) and drainage area (A; km^2) data from each station yields $Q = 3.6A^{0.8}$ (Fig. DR2).

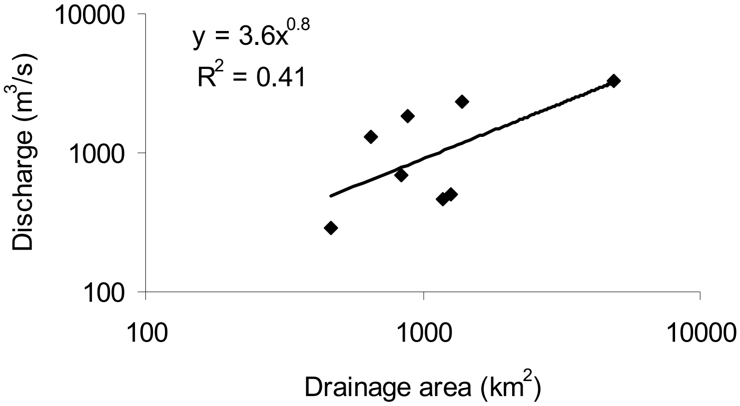

Figure DR2. Peak discharge vs drainage area during the Jan. 2–3, 1997 floods.