

Title: Using Hydrologic Landscape Classification to Evaluate the Hydrologic Effects of Climate in the Southwestern United States

Chas Jones, Scott Leibowitz, Keith Sawicz, Randy Comeleo, Laurel Stratton, and P.J. Wigington 2015. Using Hydrologic Landscape Classification to Evaluate the Hydrologic Effects of Climate in the Southwestern United States. Oral Presentation to the Biennial Conference of Science and Management on the Colorado Plateau & Southwest Region. October 5-8, 2015.

Abstract: Hydrologic landscapes (HLs) have been an active area of research at regional and national scales in the United States. The concept has been used to make spatially distributed assessments of variability in streamflow and climatic response in Oregon, Alaska, and the Pacific Northwest, and is currently being applied to the Southwestern U.S. The HL classification process analyzes the primary drivers (climate, seasonality, aquifer permeability, terrain, and soil permeability) that are associated with large scale hydrologic processes (storage, conveyance, and flow of water into or out of the watershed). Hypotheses regarding the dominant hydrologic pathways derived from the HL classification system are tested to corroborate or falsify these assumptions. Changes in climate are more likely to affect certain hydrogeologic parameters than others. For instance, changes in climate may result in changes in the magnitude, timing, or type of precipitation (snow vs. rain). Air temperature and the seasonality of dominant hydrologic processes may also be impacted. However, the effect of these changes on streamflow will depend on soil and aquifer permeability. In this presentation, we summarize (1) the HL classification methodology and (2) how HL methods are being used to examine regional vulnerability to climate based on climate model outputs for past and future conditions.