Title: An Analysis of Historic and Projected Climate Scenarios in the Western United States using Hydrologic Landscape Classification

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Abstract: Identifying areas of similar hydrology within the United States and its regions (Hydrologic landscapes - HLs) is an active area of research. HLs have been used to make spatially distributed assessments of variability in streamflow and climatic response in Oregon, Alaska, and the Pacific Northwest. They are currently being applied across the Western U.S. to assess historic and projected climatic impacts. 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 analysis, we summarize (1) the HL classification methodology and (2) how historic (1900-present) PRISM climate data and climate projections are being used to assess how changes in climate affect hydrologic processes and their associated impacts (e.g. water resource availability, ecological impacts, etc.) in the Western U.S.