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A Geospatial Model of Soil Temperatures for the Basin and Range

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The Newhall Simulation Model (NSM), Franklin Newhall's model for soil temperature and moisture regime determination (Newhall and Berdanier, 1994), is being implemented on a nationwide basis by the National Cooperative Soil Survey, USDA-NRCS. While there is actual meteorological data available throughout the Basin and Range which can be applied to NSM, there is a notable lack of soil temperature data to develop accurate offsets of soil to air temperature relationships. In 1983 Schmidlin, Peterson and Gifford published a paper in SSSAJ on the Soil Temperature Regimes of Nevada. This was part of an informal Nevada Cooperative Soil Climate Study which began in 1971 and was completed for most stations by 1978. This effort was completed by 1989 and covered most of the Great Basin within Nevada. The authors explore a geospatial method to evaluate soil temperatures based on the current elevational transects and historic point data of Schmidlin, Peterson and Gifford to apply the air-soil temperature difference, as well as information from existing soil profiles for an accurate water holding value combined with climatic data which allows us to run the Newhall soil climate model across the landscapes of the Great Basin.