

Conceptual Soil Moisture Accounting in a Physics-Based Surface Hydrology Model: A Hybrid Approach

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Abstract: A new model, called SMA-2, was constructed as an extension of the TREX model, the most recently released version of the CASC2D hydrologic model. The SMA-2 model is essentially a hybridization of the Sacramento Soil Moisture Accounting (SAC-SMA) model into the TREX surface hydrology model. Each of these models has strengths, derived from their development histories which lead to their selection for this effort. The SAC-SMA routine has been modified to allow somewhat greater flexibility than is available in the NWSRFS implementation.

The hybrid conceptual-physical hydrologic model SMA-2 is demonstrated in an application to improve baseflow modeling for event models in the California Gulch watershed using 10 minute stream gaging records for various points in California Gulch gathered continuously during 2006.

Previously reported capabilities for graphical display of results are re-visited for the 2004 application of CASC2D by Velleux at California Gulch near Leadville, Colorado, modified to include the baseflow component of flow computed by SMA-2.

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