R: Hypsometric analysis improves topography-based subgrid structures for the ACME Model

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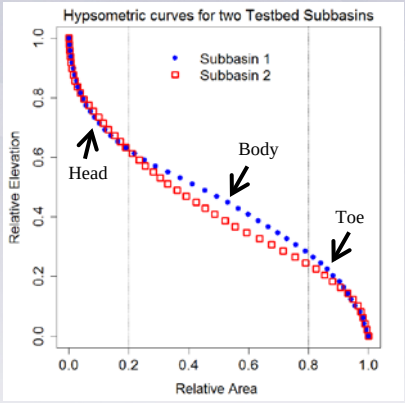
Objective

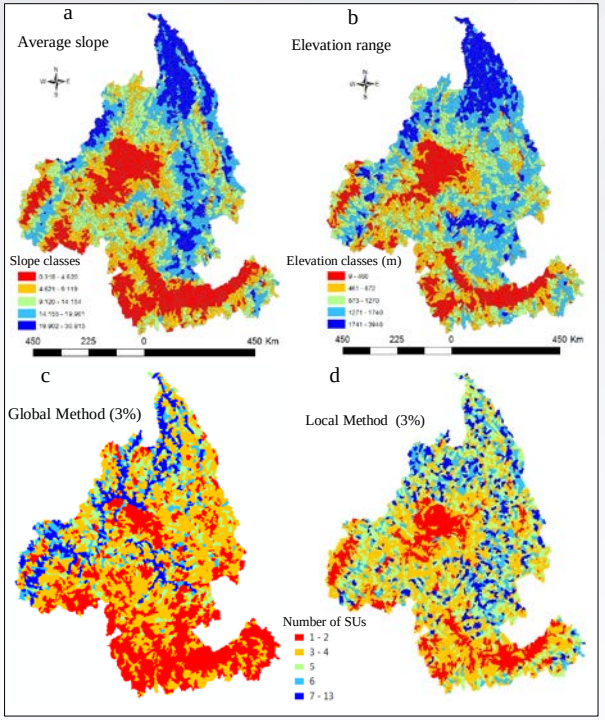
Explore new topography-based subgrid structures for land surface modeling and evaluate the methods with respect to their ability to capture topographic, climate, and land cover heterogeneity

Major Findings

Taking advantage of hypsometric analysis, the Local method can capture slope variability implicitly so it improves representation of topographic, climatic, and vegetation variability with nominal increase in computational cost for improving land surface modeling



Hypsometric curves of two subbasins with extreme contrast of elevation variability discretized into three parts: head, body, and toe, as used in the Local method.



Number of elevation-based geo-located SUs per subbasin derived using the Global (c) and Local (d) methods compared against the spatial pattern of the topographic slope (a) and elevation ranges of the subbasins in the study area.

ACME Accelerated Climate Modeling for Energy

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