Title: Spatially Distributed Snow and Glacier Melt Runoff Model (SDSGRM)

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Spatially Distributed Snow and Glacier Melt Runoff Model (SDSGRM), an evolution of the degree-day model SDSRM, simulates snow and glacier melt runoff and provides gridded snow parameters in unmonitored mountainous basins using satellite-derived snow albedo.

The enhancement was made by incorporating additional snowmelt depth generation options such as the radiation-temperature index, advection driven index, and a sophisticated energy balance method in ungauged catchments, leveraging globally available gridded data. The model now includes a glacier module that uses the glacier mass balance technique to daily generate glacier area and compute glacier-melt based on various approaches. SDSGRM is specifically engineered to differentiate and separately calculate melt/loss from snow and glaciers, categorize melt/loss production based on driving factors, and estimate snowmelt, glacier melt, rainfall-induced runoff, and total runoff at the watershed outlet. This comprehensive approach enhances the precision and accuracy of hydrological forecasting. Furthermore, SDSGRM can process meteorological data in both gridded and time series formats.

Fig. 1 Program splash screen

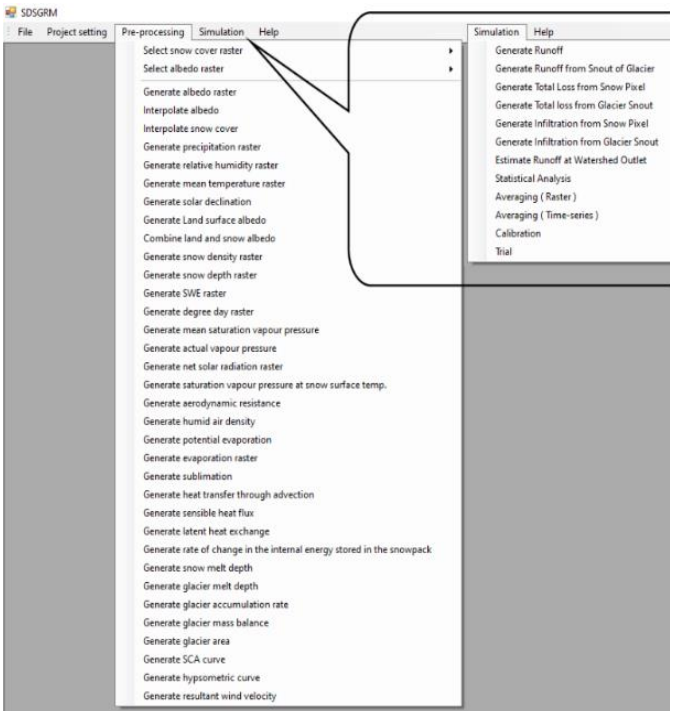

Fig. 2 Pre-processing and simulation menu of SDSGRM.