# Snow Data Assimilation and Its Use in Hydroclimate Prediction

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**Abstract**. Over the past 5 years, we have developed a global-scale multi-sensor snow data assimilation system based on the National Center for Atmospheric Research (NCAR) Data Assimilation Research Testbed (DART) and Community Land Model version 4 (CLM4). The DART has an unprecedented large ensemble (80-member) atmospheric forcing (temperature, precipitation, winds, humidity, radiation) with a quality of typical reanalysis products, which facilitates ensemble land data assimilation. This paper will evaluate the snow water equivalent product that results from the CLM/DART assimilation of Moderate Resolution Imaging Spectroradiometer (MODIS) snow cover fraction, Gravity Recovery and Climate Experiment (GRACE) terrestrial water storage, and Advanced Microwave Scanning Radiometer–EOS (AMSR–E) snow bright temperature. Additional results from using the snow data assimilation outputs as initialization fields in seasonal hydroclimate predictions will be presented, with a focus on relative contributions from the snow albedo–temperature feedback and soil moisture–precipitation feedback.