



## **Soil Moisture Prediction in the Soil, Vegetation and Snow (SVS) Scheme**

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A new land surface scheme has been developed at Environment of Canada to provide surface fluxes of momentum, heat and moisture for the Global Environmental Multiscale (GEM) atmospheric model. In this study, the performance of the soil, vegetation and snow (SVS) scheme in estimating surface and root-zone soil moisture is evaluated against the ISBA (Interactions between Surface, Biosphere, and Atmosphere) scheme currently used operationally within GEM for numerical weather prediction. In addition, the sensitivity of SVS soil moisture results to soil texture and vegetation data sources (type and fractional coverage) has been explored. The performance of SVS and ISBA was assessed against a large set of in situ as well as brightness temperature data from the Soil Moisture and Ocean Salinity (SMOS) satellite over North America. The results indicate that SVS estimates the time evolution of soil moisture more accurately, and compared to ISBA results in higher correlations with observations and reduced errors. The sensitivity tests carried out during this study revealed that SVS soil moisture results are not affected significantly by the soil texture data from different sources. The vegetation data source, however, has a major impact on the soil moisture results predicted by SVS, and accurate specification of vegetation characteristics is crucial for accurate soil moisture prediction.