

## **Title: Application of Remote Sensing based Soil Moisture data for Flash Flood Forecasting Using HL-RDHM Model**

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The main objective of this research is to evaluate the contribution of remote sensing technology to quantifiable improvements in flash flood applications. The study is focused on adding remote sensing component to hydrological Flash-Flood Guidance (FFG) Algorithm. The current operational FFG algorithm applies precipitation based Antecedent Precipitation Index (API) to counties across the USA and use the Mosaic NEXTRAD to issue Flash Flood Warnings. In order to determine the values of the SMAP data (or Remote Sensing data from AMSR-E) to NWS operations, we will merge SMAP test-bed soil moisture data to FFG algorithm to evaluate how many hits, misses and false alarm generated. The high resolution (1 km) test bed data have space dynamics of soil moisture, temperature from an integration of a distributed (DEM based) hydrological model. The same experiment can be repeated for the main-stem flooding model of the NWS (essentially Sacramento). Both cases will evaluate the value of remote sensing data to constrain the state of the system for main-stem and flash flood forecasting.