

## Weekly Report

SCSB/CISESS  
Cooperative Research Program Division (CoRP)  
STAR/NESDIS  
National Oceanic and Atmospheric Administration (NOAA)

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### Publications

**New Soil Moisture Product:** CISESS Scientists Jifu Yin and Li Fang (STAR/SMCD/EMB) have just published an article about a proposed new soil moisture product from the Soil Moisture Active Passive (SMAP) satellite. The SMAP data are coarse resolution so downscaling methods need to be applied to bring it up to fine resolution. This is done by using fine scale observations of soil moisture-sensitive quantities from other satellite sensors on the JPSS (NOAA-20) satellite. This study looked at the feasibility and quality of an operational near-real-time 1-km soil moisture product from SMAP. The optimal downscaling method used satellite land surface temperature (LST) and enhanced vegetation index (EVI) data. Results were validated against *in situ* soil moisture measurements. They found that this downscaled soil moisture product was 8% more accurate than the coarse-scale SMAP soil moisture product. This new product also outperformed the SMAP/Sentinel soil moisture product and would provide users with better data availability.

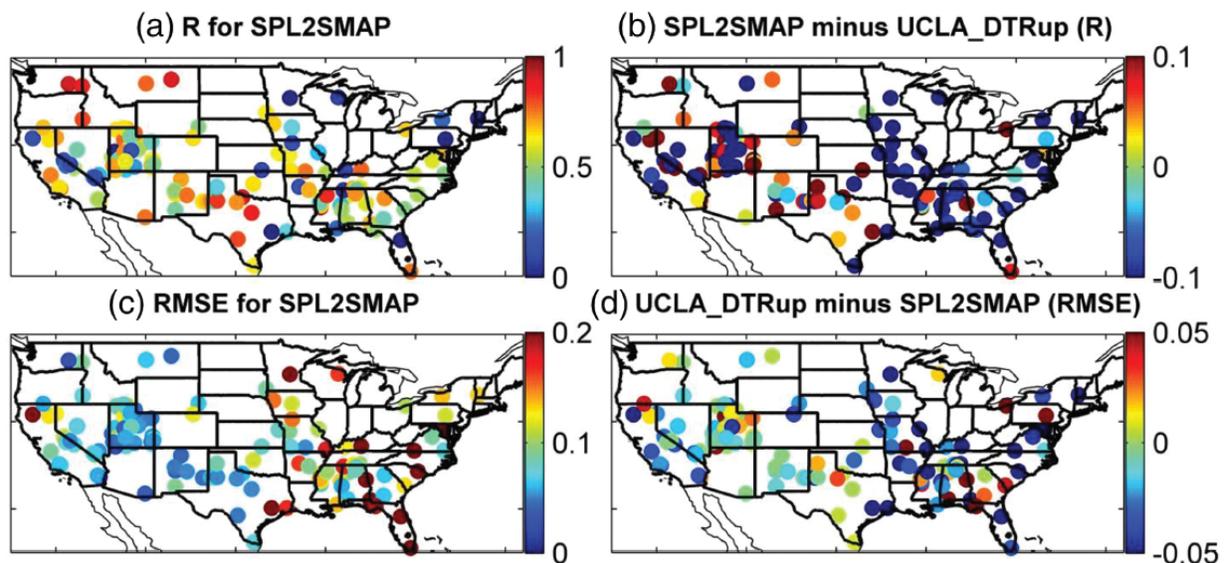


Figure: The correlation coefficient (a) and RMSE (c) for the SMAP/Sentinel soil moisture product [SPL@SMAP] and the difference between the SMAP/Sentinel and the new downscaled soil moisture product [UCLA\_DTRup] for (b) correlation coefficient and (d) RMSE. It is set up on the right to show improvement from the new product by negative numerical (blue) results.

**Yin, Jifu**, Xiwu Zhan Jicheng Liu Hamid Moradkhani **Li Fang** and Jeffrey P. Walker, 2020: Near-real-time one-kilometre Soil Moisture Active Passive soil moisture data product. *Hydrol. Processes*, **34**, 4083–4096, <https://doi.org/10.1002/hyp.13857>.

(POC: Jifu Yin, [jifu.yin@noaa.gov](mailto:jifu.yin@noaa.gov), Funding: JPSS PGRR & NASA)

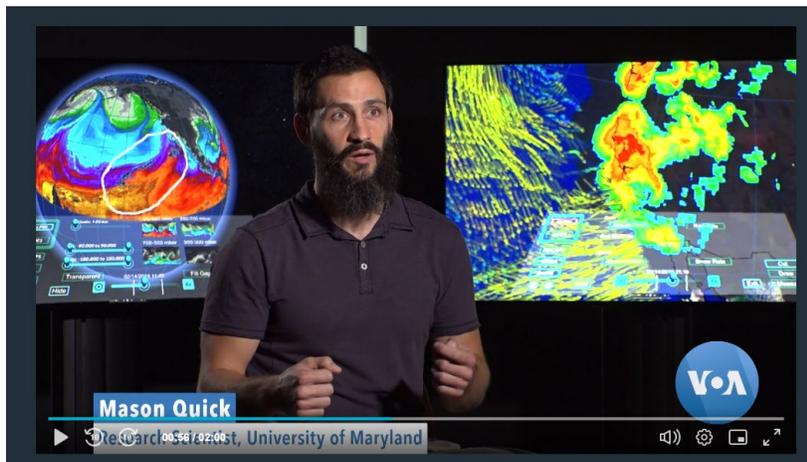
**Special Issue of the Asian-Pacific Journal of Atmospheric Sciences:** Ralph Ferraro was one of the three guest editors for a special issue on “Advances in Precipitation Measurements and Sciences,” that was released in the November 2020 issue of the *Asian-Pacific Journal of Atmospheric Sciences*. The articles included:

- [Comparative Analysis of Snowfall Accumulation and Gauge Undercatch Correction Factors from Diverse Data Sets: In Situ, Satellite, and Reanalysis](#)
- [Evaluating the Applicability of the PUSH Framework to Quasi-Global Infrared Precipitation Retrievals at 0.5°/Daily Spatial/Temporal Resolution](#)
- [Evaluation of Satellite Based Precipitation Products at Key Basins in Bolivia](#)

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## **Media and Outreach**

**Update on Voice of America Interview:** The Voice of America story that highlights the work of our UMD virtual reality development team [SCSB/CISESS Report 10-30-20] is now available at <https://www.voanews.com/episode/new-3-d-weather-mapping-program-could-revolutionize-forecasting-4484456>. Pictured below is CISESS scientist Mason Quick describing the project in the video feature. This project began with support from the FY2018 OPPA Technology Maturation Program (TMP) and continues as part of the FY2020 HPCC IT Incubator Program. Our JPSS PGRR proposal (under review) describes how we plan to integrate the VR technology into our satellite proving ground efforts.



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