

# Does soil moisture affect warm season precipitation?

Many papers have been published with conflicting results on the soil moisture (SM) effect on precipitation (P). We just published a GRL paper to resolve this controversy using the comprehensive in situ measurements over the U.S. Southern Great Plains (SGP) and the unique capability of NASA MERRA2 reanalysis (to quantify different dynamic regimes based on integrated water vapor tendency).

Xubin Zeng's  
MAP & SMAP  
Projects

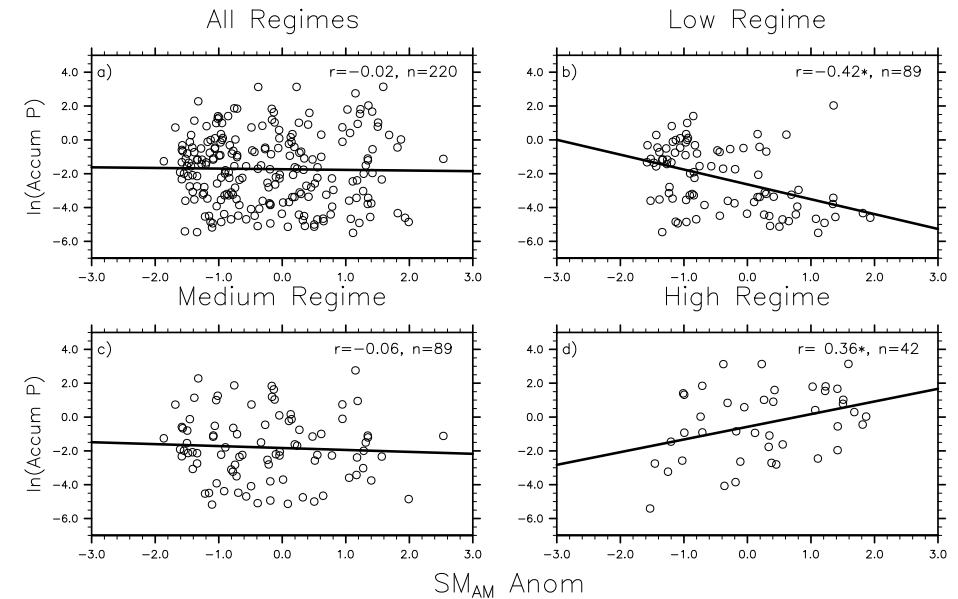
Precipitation is amplified over drier soils when dynamic influence (i.e. water vapor convergence) is suppressed (panel b).

Conversely, precipitation is enhanced over wetter soils when convergence is more pronounced (panel d).

There is no correlation between P and SM if all data are used (panel a)

Results are consistent using soil temperature and a variety of atmospheric variables (not shown)

University of Arizona released a news story and ABC-affiliated KGUN 9 did a prime time TV interview



Relationship between  $\ln(P)$  and seasonal standardized anomaly of morning SM under different dynamic regimes for JJAS 2002-2011.

**References:** Welty, J., & Zeng, X. (2018). Does soil moisture affect warm season precipitation over the Southern Great Plains? *Geophysical Research Letters*. <https://doi.org/10.1029/2018GL078598>

**TV interview:** <https://www.kgun9.com/news/local-news/can-human-activity-cause-it-to-rain->

**News Release:** [https://uanews.arizona.edu/story/does-rain-follow-plow?utm\\_source=uanow&utm\\_medium=email&utm\\_campaign=](https://uanews.arizona.edu/story/does-rain-follow-plow?utm_source=uanow&utm_medium=email&utm_campaign=)

