HESSD

Interactive
comment

Interactive comment on "Estimation of hydrological drought recovery based on GRACE water storage deficit" *by* Alka Singh et al.

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Please see the attached figures! Thank you very much!!

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2019-590, 2019.
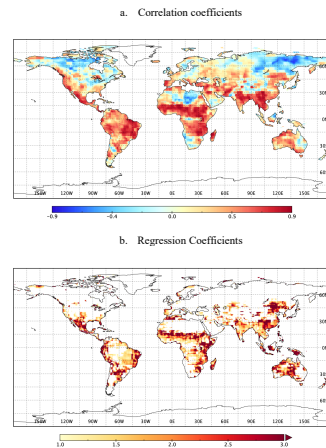
a. Correlation coefficients

b. Regression Coefficients

Figure 2: a) Correlation coefficients and, b) regression coefficients between cumulative detrended precipitation anomalies (cdPA) and detrended terrestrial water storage anomaly (dTWSA).

Fig. 1.

a. Annual Signal

b. Linear trend + inter-annual signal

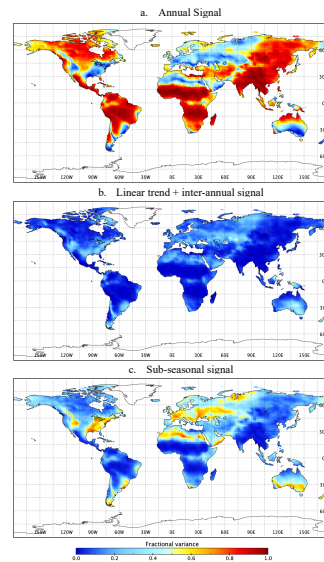c. Sub-seasonal signal

Fractional variance

Figure 4: Fractional variance of the decomposed signal to the full signal. a. Annual Signal, b. Long-term signal, c. sub-seasonal high frequency signal
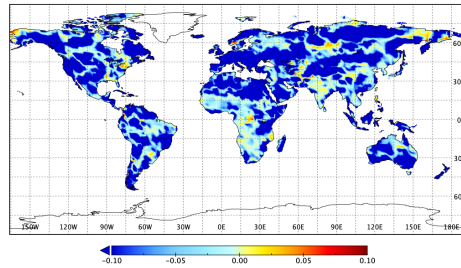
Fig. 2.

Figure 6: Nash-Sutcliffe coefficients for 2016-17 precipitation hindcasting.
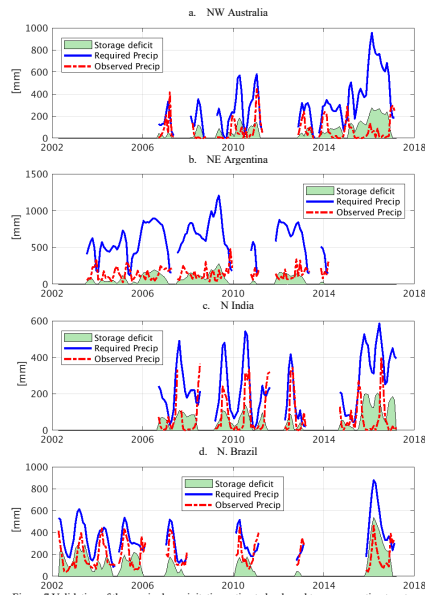
Fig. 3.

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Figure 7 Validation of the required-precipitation estimate by drought recovery estimates at example locations. The different instances of drought show that drought ends (from the perspective of TWSA) whenever observed precipitation (red plot) exceeds the required-precipitation (blue plot).
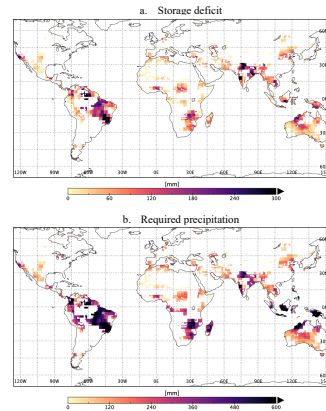
Fig. 4.

Figure 8: a) Storage deficit in an example month (January 2016). b) the amount of required-precipitation to fill the deficit.

Fig. 5.

a. Recovery period observed by GRACE

b. Recovery period estimated by the discussed method
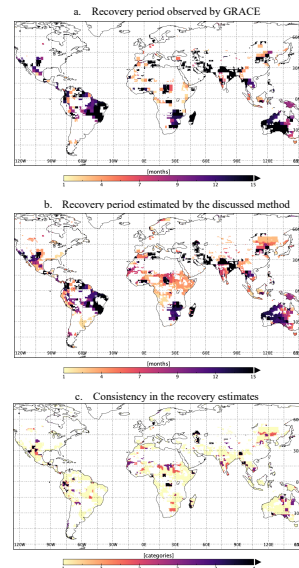
c. Consistency in the recovery estimates

Figure 9: Validation of the estimated required-precipitation by the recovery duration from January 2016 drought observed from: a) GRACE and b) estimated by the discussed method using GRACE and GPCP observations (middle panel). c) consistency in the observed recovery duration by GRACE and GPCP (1 = 1-2 months difference, 2 = 3-4 months difference, 3 = 5-8 months difference and 4 = 9+ months difference).
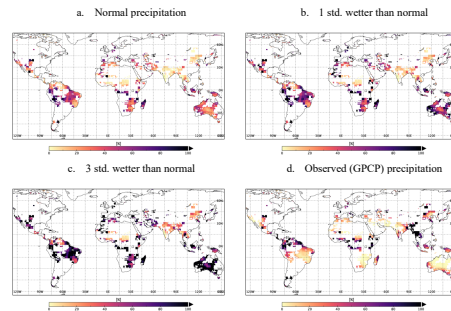
Fig. 6.

Figure 10: Expected percent recovery in a month given the three different precipitation scenarios and the observed GPCP precipitation.

Fig. 7.

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