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Supporting Information for

**Toward A Globally-Applicable Uncertainty Quantification Framework for Satellite  
Multisensor Precipitation Products based on GPM DPR**

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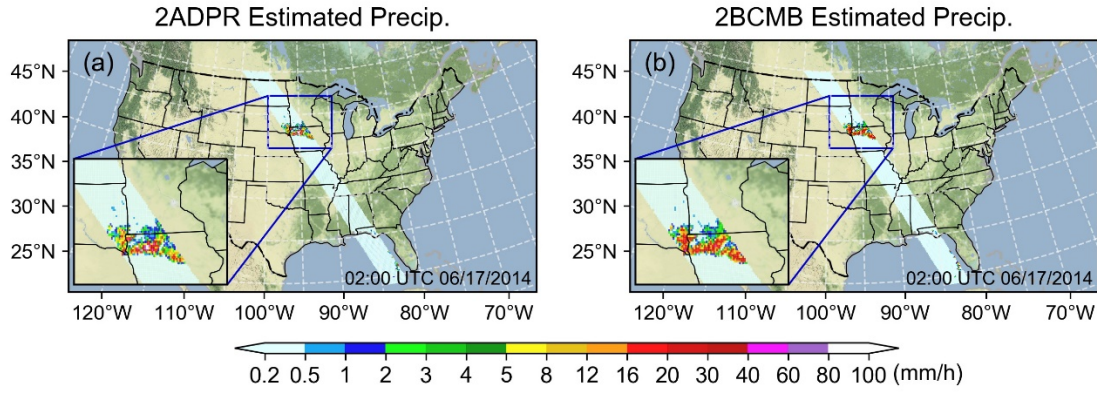
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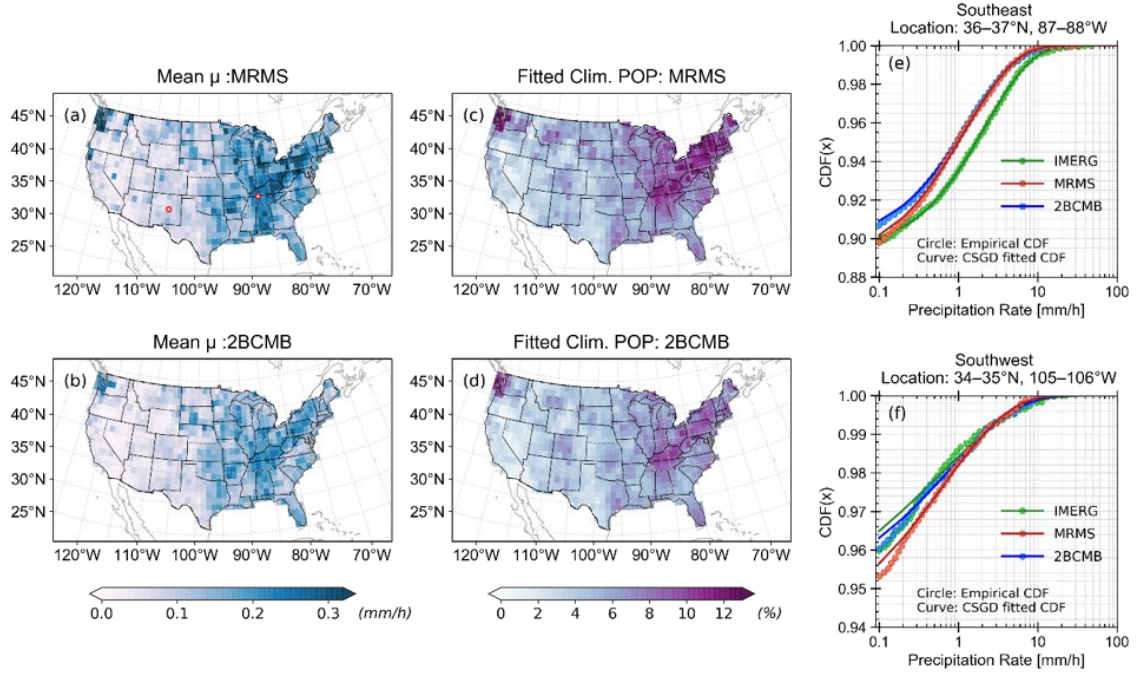
Figures S1 to S3

**Table S1.** The contingency tables for IMERG, benchmarked against GV-MRMS and 2BCMB. For each pair of the estimates, hits (top left), false alarms (top right), misses (bottom left), and correct non-detects (bottom right) are shown. The total paired data sample size over CONUS is 20,986,107.

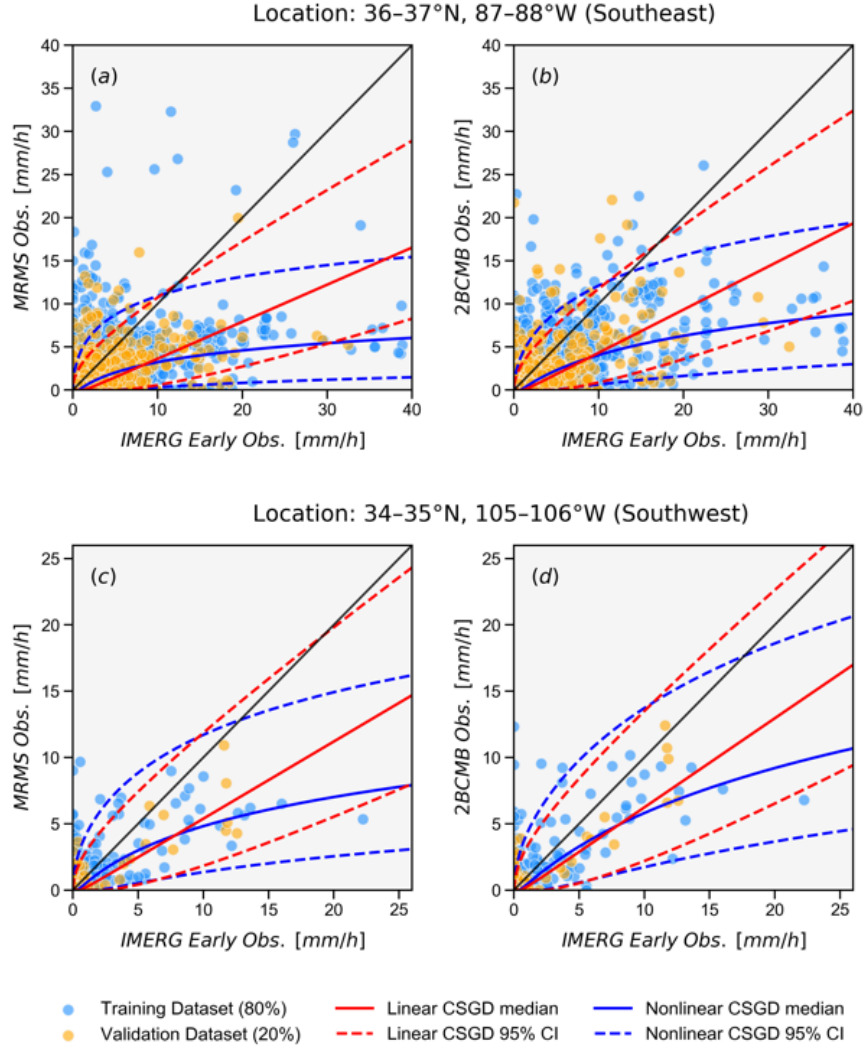
	$P_{\text{IMERG}} \geq 0.1 \text{ mm h}^{-1}$	$P_{\text{IMERG}} < 0.1 \text{ mm h}^{-1}$
$P_{\text{GV-MRMS}} \geq 0.1 \text{ mm h}^{-1}$	714,440 (3.4%) <sup>a</sup>	444,222 (2.1%)
$P_{\text{GV-MRMS}} < 0.1 \text{ mm h}^{-1}$	437,897 (2.1%)	19,389,548 (92.4%)
$P_{\text{2BCMB}} \geq 0.1 \text{ mm h}^{-1}$	681,936 (3.2%)	301,416 (1.4%)
$P_{\text{2BCMB}} < 0.1 \text{ mm h}^{-1}$	470,401 (2.2%)	19,532,354 (93.1%)



**Figure S1.** Coincident precipitation estimates from regridded (a) 2ADPR, and (b) 2BCMB for 02:00–03:00 UTC 17 June 2014. The swath coverage and retrieved precipitation spatial pattern of the two DPR derived products are similar, though 2BCMB shows enhanced precipitation intensities (which are closer to GV-MRMS observations, as shown in Figure 1b in the main article).



**Figure S2.** The spatial maps of fitted (a-b) climatological CSGD mean parameter  $\mu$  and (c-d) POP, and (e-f) the comparison of empirical CDFs (markers) and climatological CSGD fitted CDFs (lines) based on the coincident IMERG, GV-MRMS, and 2BCMB training data samples within the  $1^\circ \times 1^\circ$  boxes from the Southeast and Southwest CONUS, respectively. The locations of the two boxes are indicated by red circles in (a).



**Figure S3.** Linear (red lines) and nonlinear (blue lines) conditional CSGD models for (a, b) the Southeast  $1^\circ \times 1^\circ$  box, (c, d) Southwest  $1^\circ \times 1^\circ$  box, trained and compared against GV-MRMS (left panels) and 2BCMB (right panels). See Fig. 4 for identical results, but plotted on log scales.