

## Corrigendum

# Corrigendum to “Development and Application of Improved Long-Term Datasets of Surface Hydrology for Texas”

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In the article titled “Development and Application of Improved Long-Term Datasets of Surface Hydrology for Texas” [1], a computer coding error in the calculation of seasonal trends led to errors in Figure 3, which should be corrected in Figure 3.

Moreover, in Figure 5, the  $y$ -axis label for (e) should be “ $R/P$  ratio.” The corrected Figure is in Figure 5.

The forcing data used for calculating the trends in Figure 3 in this article were accurate and were downloaded from <ftp://livnehpublicstorage.colorado.edu/public/Livneh.2013.CONUS.Dataset/Meteorology.nc.v1.2.1915.2011.bz2/>.

The corrected MATLAB code is as follows:

```
JJA = [M6 M7 M8]; % Correct: JJA is a 94 * 3 matrix
```

```
Year_JJA = mean(JJA, 2); % Correct: the seasonal average for each year is calculated; Year_JJA is an array with 94 values  
x=linspace(1, 94, 94);
```

```
fit = polyfit(x, Year_JJA, 1);
```

```
slope=fit(1);
```

```
PREC_JJA_slope= slope
```

Additionally, it was determined that Table 4 and its legend were not informative enough. The values shown in Table 4 do not reflect how peak flows are typically analyzed; peak flows under different return periods are more meaningful for characterizing floods at the basin scale, while comparisons of the return periods themselves are less useful. The updated table is in Table 4.

To accommodate changes in Figures 3 and 5 and Table 4, some portions of the text should be corrected.

In the “Abstract” section, the following parts should be updated.

(1) The sentence “Results suggest that there is a decreasing trend in precipitation and an increasing trend in temperature in most of the basins” should be changed to “Results suggest that there is an increasing trend in precipitation and a decreasing trend in temperature in most of the basins.”

(2) The sentence “The modeled flood recurrence interval and the return period were also compared with observations” should be changed to “The modeled flood peak flows under different recurrence intervals were also compared with observations.”

In the “Introduction” section, the sentence reading “Historical drought (severity and duration) and flood (recurrence interval and return period) events are investigated based on simulated hydrologic variables” should be changed to “Historical droughts (severity and duration) and floods (under different recurrence intervals) are investigated based on simulated hydrologic variables.”

In the “Model Calibration” section, the sentence reading “The Brazos River Basin, which has the largest drainage area, does not match the observations well during the low flow seasons (August–November)” should be changed to “The Brazos River Basin, which has the largest drainage area, does not match the observations well during the late summer and fall (August–November).”

In the “Changes of the Hydrologic Cycle” section, the following parts should be updated.

TABLE 4: Peak flows under different recurrence intervals.

Recurrence Interval	10-year (above 90th percentile of AMS)		5-year (above 80th percentile of AMS)		2-year (above 50th percentile of AMS)	
	OBS	SIM	OBS	SIM	OBS	SIM
SABIN	2194.0	979.7	1627.7	847.6	1067.5	662.8
NECHE	1571.6	647.9	1078.9	579.0	685.3	441.8
TRNTY	1972.3	894.9	1581.5	727.8	278.5	325.2
BRAZO	2501.8	1977.5	2157.7	1818.9	1189.3	1233.1
COLOR	1564.5	750.7	1237.4	653.8	477.1	403.6
GUADA	1271.4	520.6	597.5	431.2	55.1	147.6
SANAN	683.9	255.2	427.6	203.8	172.7	106.4
NUECE	618.7	399.2	460.1	346.3	150.5	214.8
SANJA	611.6	102.7	430.4	86.3	186.7	52.4
LAVAC	641.4	131.3	518.2	108.3	222.0	62.9

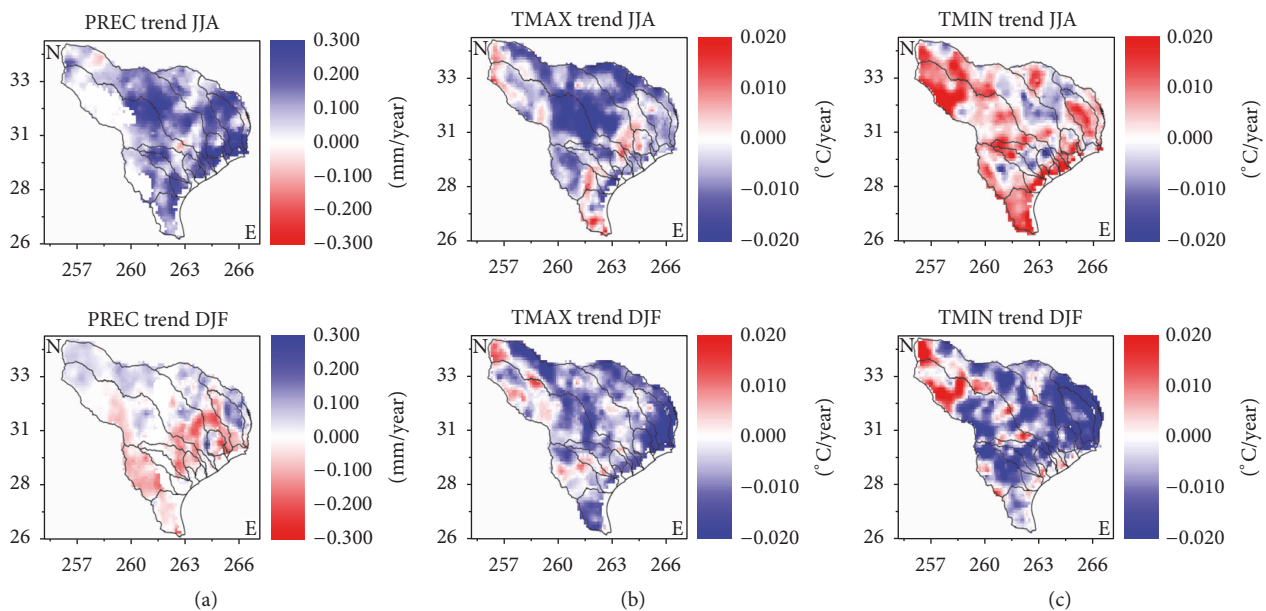


FIGURE 3: Summer (June–August) and winter (December–February) precipitation (a), maximum temperature (b), and minimum temperature (c) trend.

(1) The text reading “Summer (June–July–August, JJA) precipitation decreased across the entire state of Texas, with the exception of the northwest corner. In contrast, winter (December–January–February, DJF) precipitation increased in the semiarid mid-Texas and west Texas regions but decreased in the humid east Texas region. The maximum temperature increased in most of Texas during both seasons—with summer being the largest in magnitude. The minimum temperature also increased in both summer and winter. Compared to the maximum temperature trend, the changes with minimum temperature are relatively small (but are more uniform)” should be corrected as follows.

“Summer (June–July–August, JJA) precipitation increased across the entire state of Texas. In contrast, winter (December–January–February, DJF) precipitation decreased in the

semiarid mid-Texas and south-Texas regions but increased in the north-Texas region. The maximum temperature decreased in most of Texas during both seasons. Overall, the minimum temperature increased in summer and decreased in winter.”

(2) The sentence “As explained earlier about the impact of the temperature trend, the warming in Period 2 has little effect on altering runoff” should be removed.

In the “Drought Analysis” section, the following modifications should be made.

(1) The text reading “In 1971, some portions of North Texas received only one inch (2.54 cm) of rainfall during the entire year. As a result, this severe drought cost \$100 million worth of crop losses (mainly with wheat and cotton) and killed over 100,000 cattle (due to the drying up of

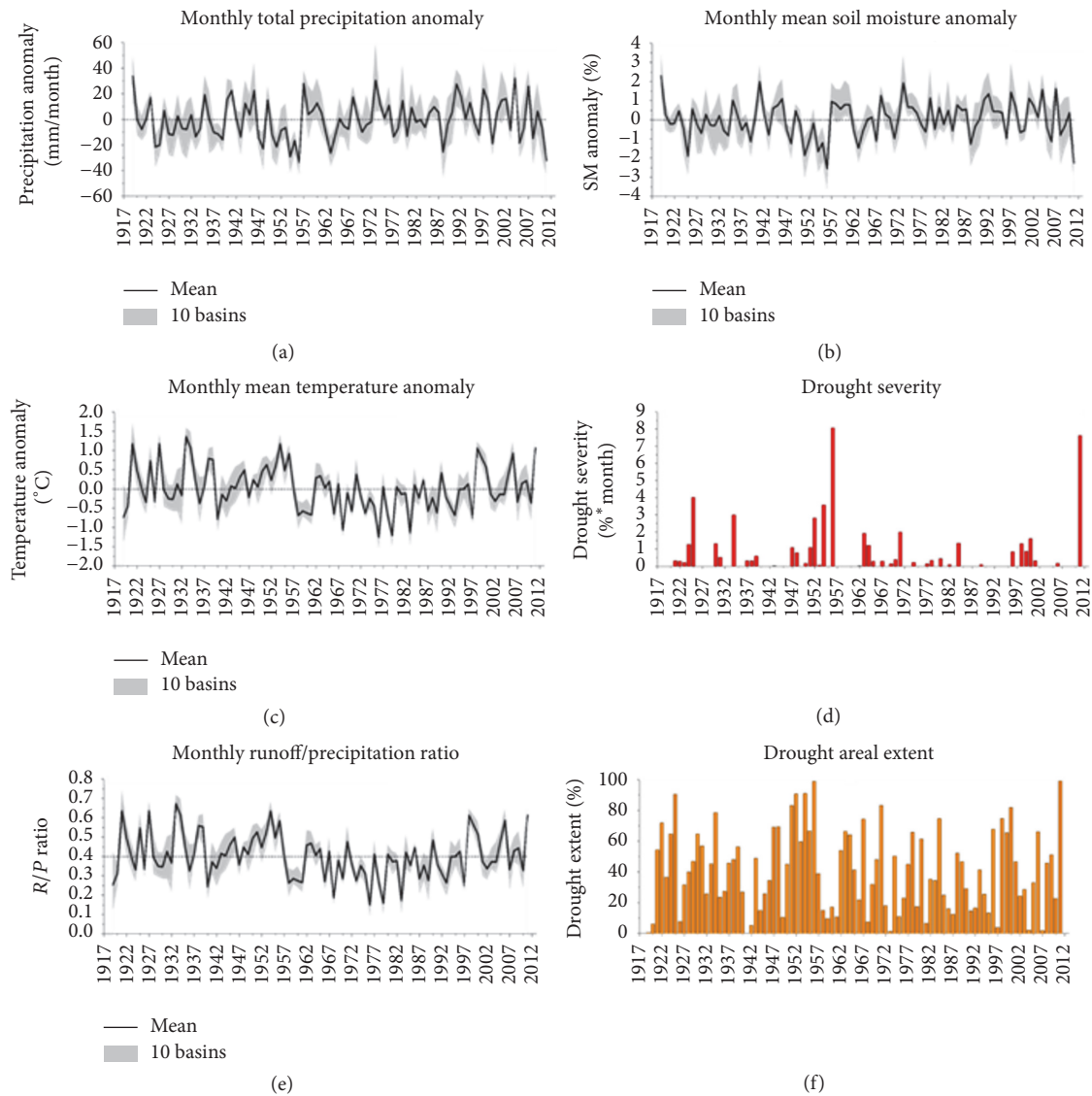


FIGURE 5: 20th-century Texas drought outlook (climate, surface hydrology, drought severity, and drought areal extent).

grasslands, and thirst from high temperatures). In 2011, the region experienced the hottest and driest one-year period ever recorded, with a loss of \$7.62 billion in the agriculture sector alone [10, 64, 65]” should be changed to “In 1971, the severe drought cost \$100 million worth of crop losses (mainly with wheat and cotton) and killed over 100,000 cattle (due to the drying up of grasslands and thirst from high temperatures). In 2011, the region experienced the hottest and driest one-year period ever recorded, with a loss of \$7.62 billion in the agriculture sector alone [10, 64].”

(2) The sentence reading “The drought severity is calculated as the product of the monthly soil moisture deficit (%) and the duration (counting the number of months that experience drought)” should be changed to “The annual drought severity is calculated as the product of the monthly soil moisture deficit (%) and the duration (counting the number of months that experience drought).”

(3) The sentence reading “Figure 6 shows the spatial patterns of drought severity and duration for the five selected historical drought events (in the order of severity: 1956, 2011, 1925, 1934, and 1971)” should be changed to “Figure 6 shows the spatial patterns of event based drought severity and duration for the five selected historical drought events (in the order of severity: 1956, 2011, 1925, 1934, and 1971).”

(4) The sentence reading “The region with the largest drought severity is centered on eastern Texas in 1925, while the highest impact drought is the one in the Trinity River basin in 1934” should be changed to “The region with the largest drought severity is centered on eastern Texas in 1925.”

In the “Flood Analysis” section, the text reading “According to Table 4, the simulated and observed recurrence intervals are in good agreement, especially for the shorter recurrence intervals. The simulated flows tend to be underestimated at the 90th percentile of AMS, which leads to an

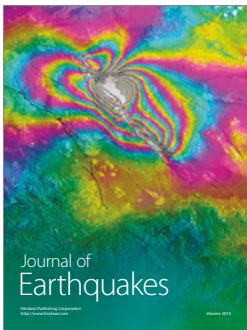
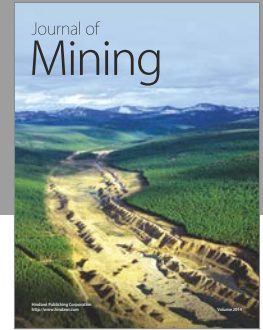
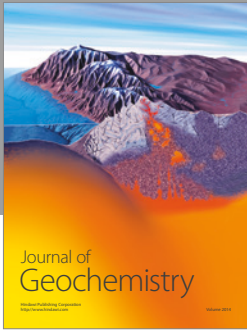
overestimation of the 10-year recurrence interval.” should be changed to “According to Table 4, the simulated peak flows under different recurrence intervals are biased low as compared with the observed counterparts, especially for the 10-year and 5-year recurrence intervals. Among all of the basins, the Brazos has the best performance (especially at the 2-year recurrence interval), while the largest errors are found in Guadalupe, San Jacinto, and Lavaca.”

The following reference should be removed:

[65] M. Waldron, “Rains ease year-long Texas drought,” *The New York Times Archives*, vol. 59, 1971.

## References

- [1] K. Lee, H. Gao, M. Huang, J. Sheffield, and X. Shi, “Development and application of improved long-term datasets of surface hydrology for texas,” *Advances in Meteorology*, vol. 2017, Article ID 8485130, 13 pages, 2017.



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