

Climate Review for PR and USVI – December 2019



Synopsis: December is normally a month of transition between the wet November to the dry January. This December had drier than normal rainfall across most of the northern half of Puerto Rico and Saint Croix, while the southern portions and northeast Puerto Rico as well as the northern U.S. Virgin Islands had higher than normal rainfall. Drought conditions improved slightly for Puerto Rico and a bit more significant improvement was observed for the northern U.S. Virgin Islands. A much warmer than normal December was observed, many high temperatures records were tied or broken, while the mean monthly temperatures were in the top-5 warmest Decembers across the local international airports.

Observed Conditions:

In the month of December, we observed higher than normal temperatures and locally induced showers and thunderstorms. The higher than normal temperatures were significant, and many temperature records were either tied or broken. With regards to rainfall, the overall pattern was one with showers moving in while much higher than normal moisture was over the area. At times, the combination of mid to upper level troughs with the local effects, moisture and prevailing wind flow caused the showers and thunderstorms to develop across the local area. Some areas received higher than normal rainfall, especially the southern and northeastern sections of Puerto Rico, as well as the northern U.S. Virgin Islands. However, the year to date rainfall deficit continues, reaching as much as 40 inches across portions of eastern Puerto Rico.

The local drought conditions over Puerto Rico (Figure 1) improved slightly from the previous month. A portion of eastern Puerto Rico is still classified as having a Moderate Drought (D1), while other sectors in eastern, south, and southwestern Puerto Rico, as well as Vieques Island, are considered to be Abnormally Dry (D0). A total of 10.86% of Puerto Rico's area is under the D1 classification, down from 15.54% in the previous month, and a 25.31% under the D0 classification, up from 24.18%. The U.S. Virgin Islands had some improvements as well. Saint Thomas and Saint John improved from D0 and D1 to no drought, but Saint Croix kept the D2 classification (Figure 2).

The departure from normal rainfall estimates ranged from around 6 inches above normal across southwestern, southeastern, and northeastern Puerto Rico, to about 4 inches below normal across the central interior (Figure 3). In terms of percentage, we observed from 35% of normal rainfall across central to western interior of Puerto Rico to just over 400% of normal across south and southwestern Puerto Rico. The total monthly rainfall estimates by the Doppler radar ranged from under an inch across eastern Saint Croix to around 15 to 20 inches across portions of northeastern Puerto Rico. (Figure 4).

The Saint Croix International Airport (ISX) observed below normal rainfall, while San Juan (JSJ) and Saint Thomas (IST) International Airports observed higher than normal rainfall (Table 1). All of the airports also observed above normal mean temperatures (Table 2). In fact, JSJ had the warmest December on record, while IST and ISX had the 4th and 2nd warmest December on record respectively. Many daily maximum temperature records were either tied or broken this month at ISX and JSJ, while rainfall records were broken at IST (Table 3). The overall highest temperature observed in December across any of our local COOP stations was 93°F at JSJ and the Aguirre station, while the lowest temperature was 54°F at the Toro Negro Forest station.

Looking Ahead:

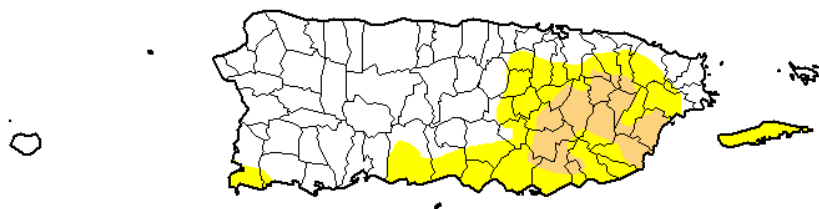
The latest seasonal outlook issued by the Caribbean Climate Outlook Forum (CariCOF) slightly favors near to above normal rainfall (Figure 5) and above normal temperatures (Figure 6) for the next 3 months. ENSO-neutral conditions are expected to persist through the JFM months, and through AMJ. ENSO-neutral conditions do not have a significant impact on seasonal temperature or rainfall forecasts, but it does add uncertainty. January is considered to be a dry month, therefore a trend towards drier weather will be expected.

More info: <http://rcc.cimh.edu.bb/climate-outlooks/>







Figures and Tables

U.S. Drought Monitor Puerto Rico

January 7, 2020
(Released Thursday, Jan. 9, 2020)
Valid 7 a.m. EST



Intensity:

-  None
-  D0 Abnormally Dry
-  D1 Moderate Drought
-  D2 Severe Drought
-  D3 Extreme Drought
-  D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

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droughtmonitor.unl.edu

Figure 1. U.S. Drought Monitor for Puerto Rico. Valid on January 7, 2020.

U.S. Drought Monitor U.S. Virgin Islands

January 7, 2020
(Released Thursday, Jan. 9, 2020)
Valid 7 a.m. EST



Intensity:

- ⊗ No Data
- No Drought or Dryness
- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

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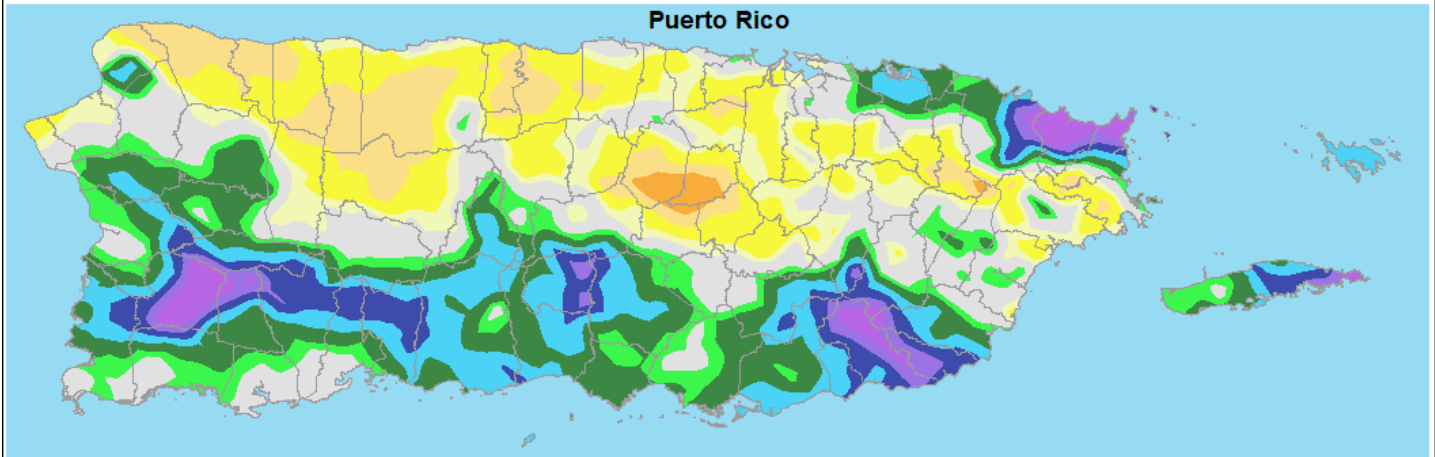
Figure 2. U.S. Drought Monitor for the US. Virgin Islands. Valid on January 7, 2020.



December 2019 Estimated Departure from Normal Rainfall
National Weather Service WFO San Juan
Data Source: AHPS*
Valid for December 1, 2019 to January 1, 2020
Data is Preliminary



*AHPS does not provide Departure from Normal data for the U.S. Virgin Islands at this time.



| Departure from Normal (inches) | | |
|--------------------------------|-------------|-------------|
| -8 or Lower | -1 to -2 | 2 to 3 |
| -5 to -8 | -0.5 to -1 | 3 to 4 |
| -4 to -5 | -0.5 to 0.5 | 4 to 5 |
| -3 to -4 | 0.5 to 1 | 5 to 8 |
| -2 to -3 | 1 to 2 | 8 or Higher |

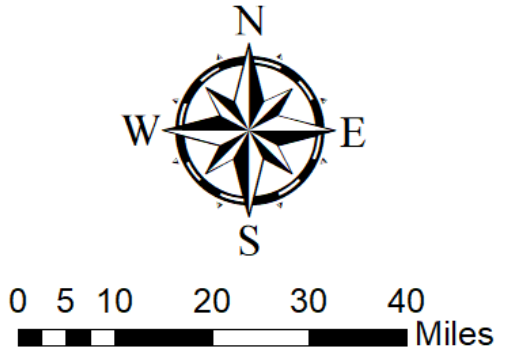


Figure 3. Departure from normal rainfall for the month of December 2019.



December 2019 Estimated Rainfall

National Weather Service WFO San Juan

Data Source: AHPS

Data is Preliminary

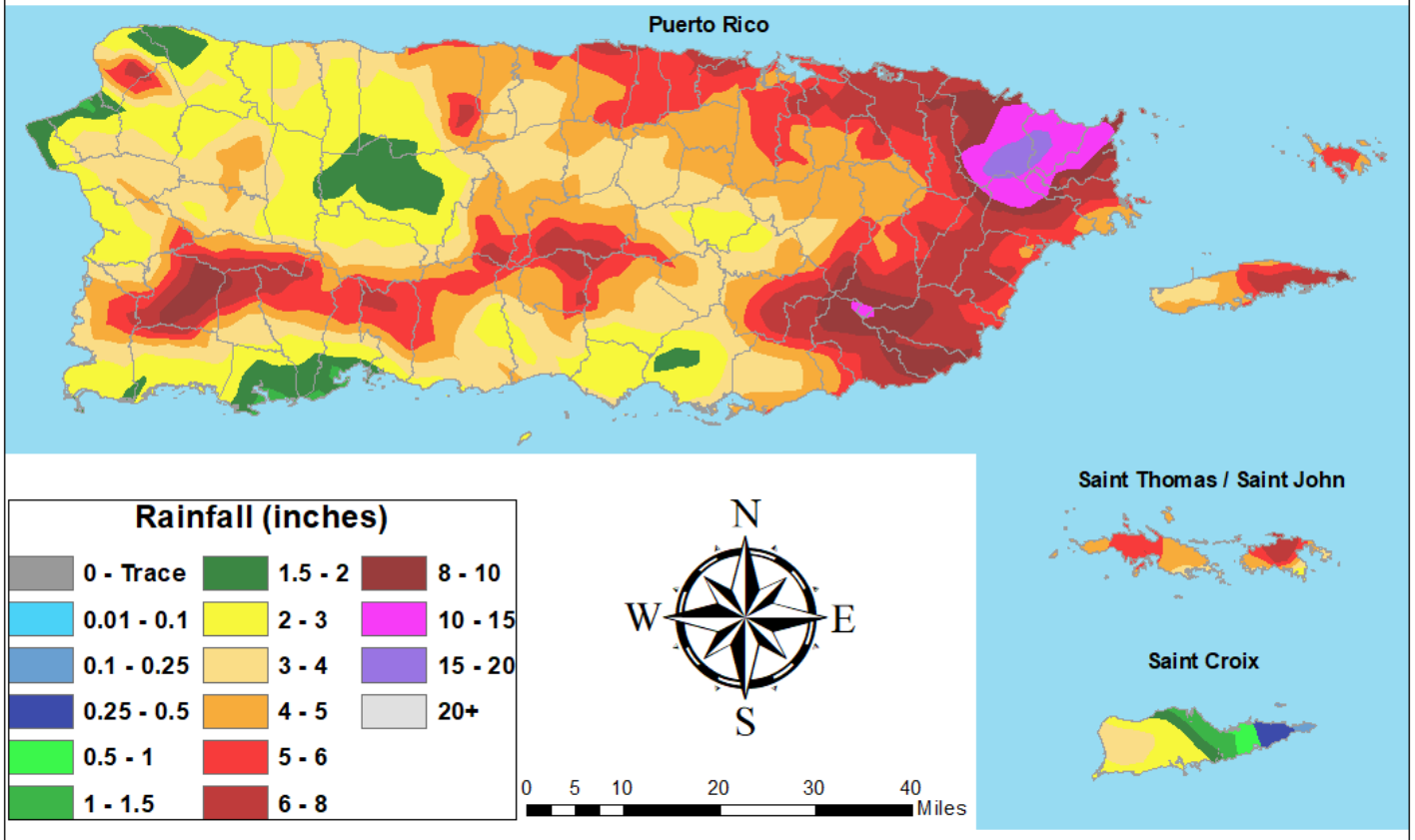


Figure 4. Total estimated rainfall for the month of December 2019.

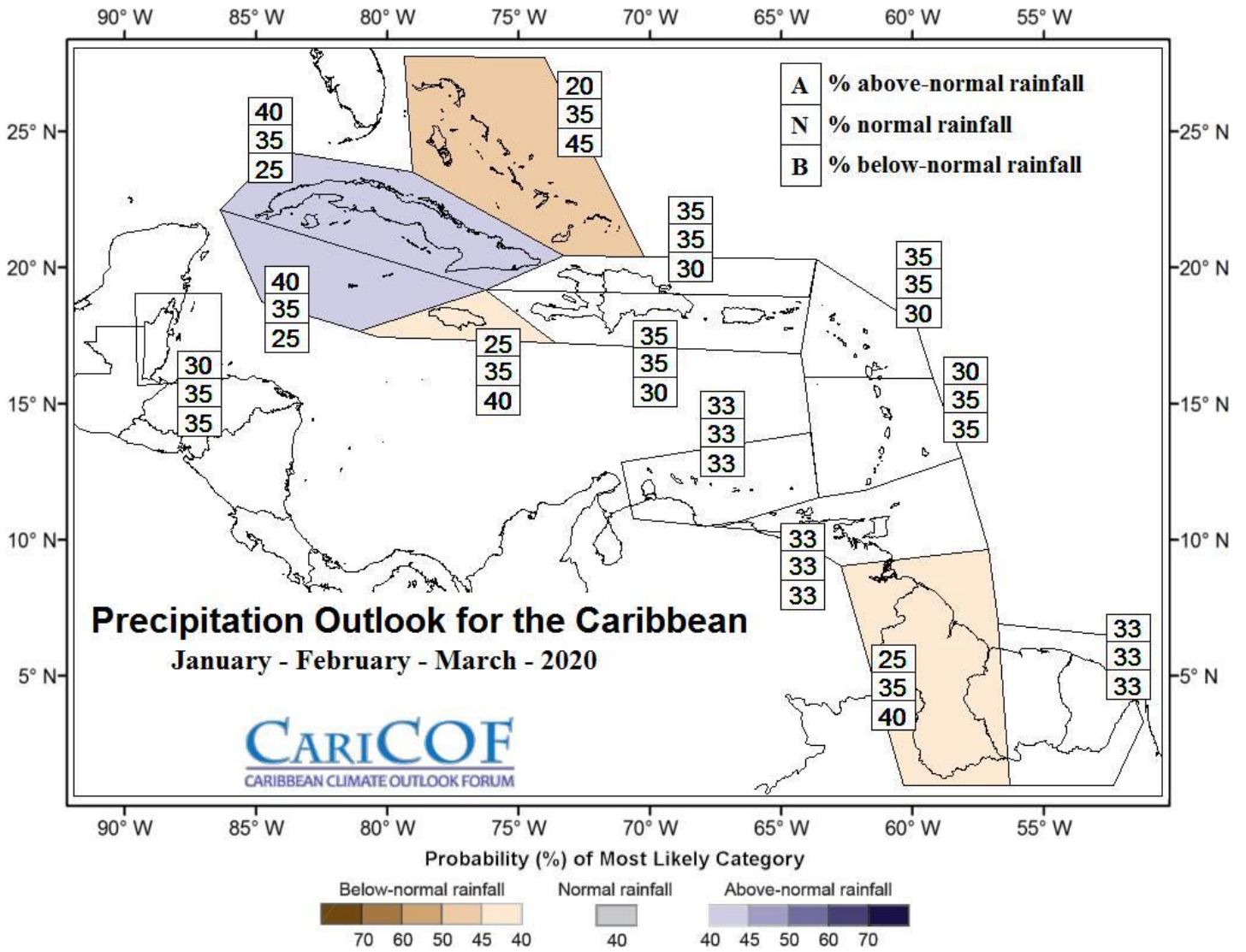


Figure 5. CariCOF 3-month rainfall forecast.

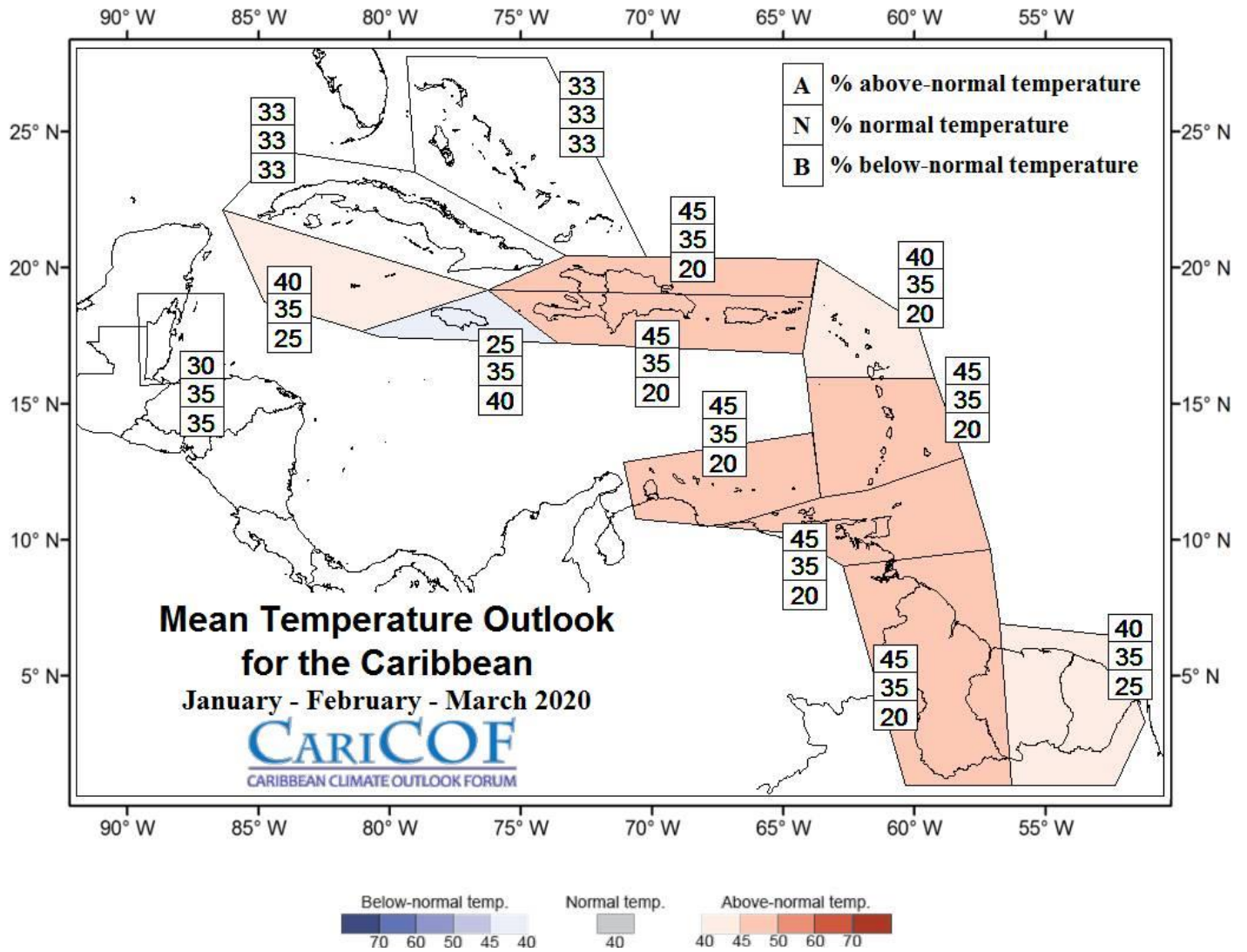


Figure 6. CariCOF 3-month temperature forecast.

| | Total Monthly Rainfall | Monthly departure from normal rainfall | Year-To-Date departure from normal rainfall. |
|------------|-------------------------------|-----------------------------------------------|-----------------------------------------------------|
| JSJ | 5.78" | 0.76" | -9.42" |
| IST | 4.93" | 1.97" | -2.21" |
| ISX | 1.78" | -1.19" | -11.78"* |

Table 1. Rainfall highlights for the local international airports.

*Due to missing data, the Year-To-Date departure from normal rainfall for ISX does not include the months of January and February.

| | Max Temp (°F) | Min Temp (°F) | Mean Temp (°F) | Monthly departure from normal Mean Temp (°F) |
|------------|------------------------------|------------------------------|-----------------------|-----------------------------------------------------|
| JSJ | 93 – Dec. 3 rd | 74 – Dec. 23 rd * | 81.5 | 2.8 |
| IST | 80 – Dec. 10 th | 73 – Dec. 29 th | 81.2 | 1.7 |
| ISX | 89 – Dec. 20 th * | 72 – Dec. 23 rd * | 81.2 | 2.2 |

Table 2. Temperature highlights for the local international airports.

*Date of last occurrence. This temperature was observed in more than one day.

| | Records Set or Tied This Month | Previous Record and Year |
|------------|------------------------------------------------|---------------------------------|
| JSJ | Daily Max Temp. – Dec. 2 nd – 91°F | 90°F – 1997 |
| | – Dec. 3 rd – 93°F | 90°F – 1989 |
| | – Dec 5 th – 91°F | 90°F – 2012 |
| | Monthly Mean Temp. – 81.5°F | 80.8°F – 2016 |
| IST | Daily Rainfall – Dec. 26 th – 1.65” | 0.55” – 1982 |
| | – Dec. 31 st – 1.11” | 0.64” – 1990 |
| ISX | Daily Max Temp. – Dec. 3 rd – 89°F | 88°F – 2002 |
| | – Dec. 8 th – 88°F | 88°F – 2012 |
| | – Dec. 14 th – 88°F | 88°F – 2018 |
| | – Dec. 15 th – 89°F | 88°F – 2008 |
| | – Dec. 16 th – 89°F | 88°F – 1998 |
| | – Dec. 17 th – 88°F | 88°F – 2013 |
| | – Dec. 18 th – 88°F | 88°F – 1998 |
| | – Dec. 19 th – 89°F | 88°F – 1998 |
| | – Dec. 20 th – 89°F | 88°F – 1963 |
| | – Dec. 26 th – 88°F | 88°F – 2017 |
| | – Dec. 28 th – 88°F | 88°F – 1998 |

Table 3. Records that were set or tied in the month of December 2019