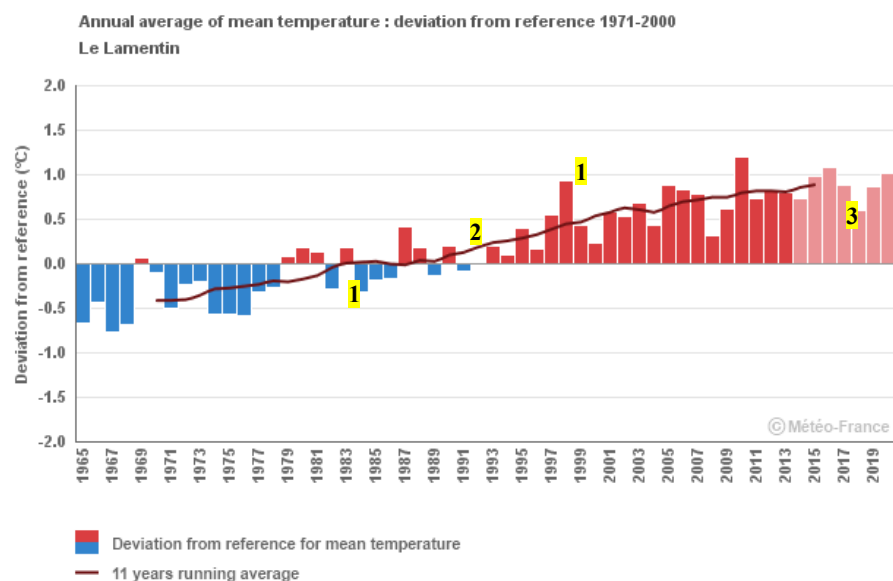


Evolution of annual/seasonal temperatures Past climate – French West Indies

1. Graph reading aid



3 time series are represented on the graph :

Series 1 'blue and red histogram' :

Deviation of the observed annual/seasonal average of daily minimum/mean/maximum temperatures (*homogenized series, see §3. Data and methods*) from the reference value (1971-2000 average of the observed annual/seasonal average of daily minimum/mean/maximum temperatures).

Values below and above the reference average over the 1971-2000 period are represented in blue and red, respectively.

Series 2 'purple curve' :

11-year running mean of the parameter represented by the histogram. The running mean being centered on the considered year by construction, there is no value for the first 5 years of the time series, nor for the last 5 years.

Series 3 'lighter' blue and red histogram' :

Deviation of the observed annual/seasonal average of daily minimum/mean/maximum temperatures (*non-homogenized series, see §3. Data and methods*) from the reference value (1971-2000 average).

2. Definitions

Weather seasons :

- Dry season : February to April
- May - June : transition season into the wet season
- Wet season : July to November
- December and January : transition season into the dry season

Minimum/maximum/mean temperatures :

- Daily minimum temperature (TNq) = minimum observed temperature between D-1 day at 8 pm local time and D-day at 8 pm local time
- Daily maximum temperature (TXq) = maximum observed temperature between D-day at 8 am local time and D+1 day at 8 am local time
- Daily mean temperature (TMq) = $(TNq + TXq)/2$

Deviation of the annual/seasonal average of daily minimum/maximum temperatures from its reference value (1971-2000 average) :

- Annual/seasonal average TNs (resp. TXs) of daily minimum (resp. maximum) temperatures = average over the year/season of daily minimum (resp. maximum) temperatures TNq (resp. TXq)
- Reference over the 1971-2000 period (Ref TNs or Ref TXs) = average of the 30 TNs or TXs values
- Deviation from the reference = difference between the annual/seasonal mean (TNs or TXs) and the reference (Ref TNs ou Ref TXs)

Deviation of the annual/seasonal average of daily mean temperatures from its reference value (1971-2000 average) :

- Annual/seasonal average TMs of daily mean temperatures = average over the year/season of daily mean temperatures TMq
- Reference over the 1971- 2000 period (Ref TMs) = average of the 30 TMs values
- Deviation from the reference = difference between the annual/seasonal mean (TMs) and the reference (Ref TMs)

3. Data and methods

Homogenized series :

Observed time series cannot be used directly to analyze climate change. Indeed, they are affected by changes in measurement conditions over time, such as displacements of the measuring station, or changes in sensors. These changes cause shifts, which can be of the same order of magnitude as the climate signal. Homogenization is a statistical treatment that consists in detecting and correcting shifts in observed time series in order to produce reference series adapted to quantify climate change.

Homogenized series are produced for a particular period, e.g. 1965-2013. On the graph, they are extended until a more recent date with raw data, represented with a lighter colour.

In the French West Indies (Guadeloupe and Martinique), there are 4 homogenized series of monthly average minimum temperature and 4 homogenized series of monthly average maximum temperature, all located in Martinique (absence of homogenized series of temperature in Guadeloupe). Among these, 3 homogenized series are available for both minimum and maximum temperatures, and have therefore been selected.