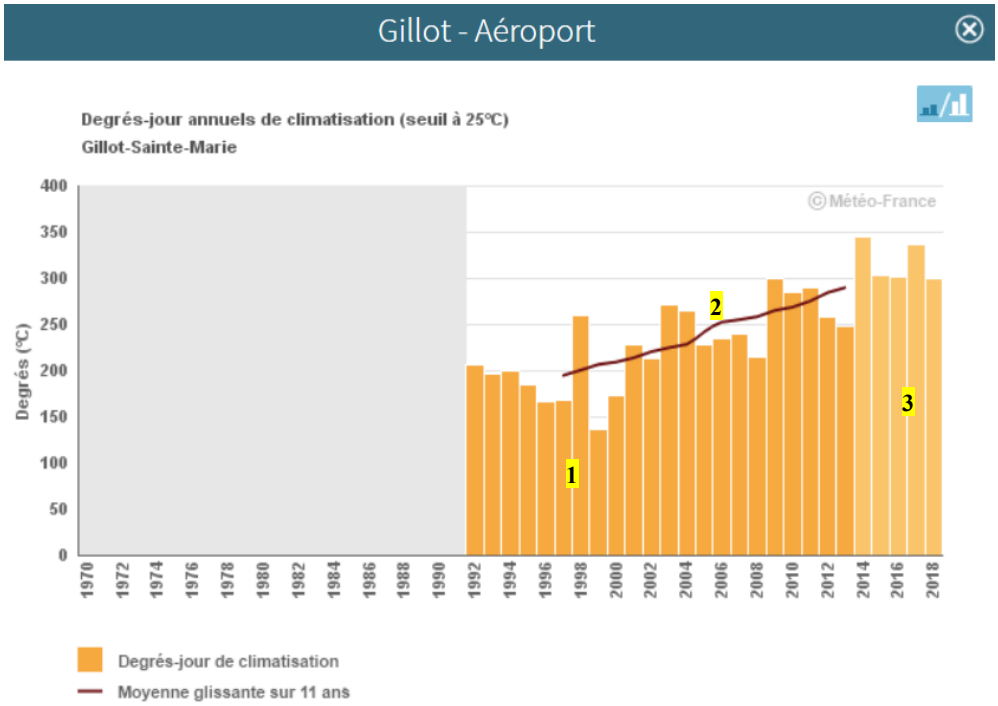
Evolution of cooling degree-day
Past Climate – Reunion Island

1. Graph reading aid



3 data series are represented on the graph:

Series 1 'yellow histogram':
Cooling degree-day indicator is used to evaluate the energy consumption for air conditioning. For each year, annual cumulative cooling degree-day from daily observed data *(daily reference series, see § 3 Data and methods)* is calculated *(see §2.2 Definition)*

Series 2 'brown curve':
11-year moving average of the parameter represented by the histogram. For example, the value of the 2000 year is the average of the values between 1995 and 2005. Due to the moving average which is centered on the concerned year, there is no value for the first 5 years of the series, nor for the last 5 years.

Series 3 *'lighter* yellow histogram':
Cooling degree-day indicator *(see §2 Definition)* from observed data *(non-homogenized series, see §3 Data and methods)*.

Missing data: grey shaded areas.

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2. Definitions

Cooling Degree-Day: (TMq - 25) if TMq > 25°C
This threshold (25°C) has been adapted for Reunion Island (18°C in metropolitan France).

Daily average temperature (TMq): TMq = (TNq + TXq)/2

Daily minimum temperature (TNq): minimum temperature observed between D-1 day at 7pm local time and D-day at 7pm local time.

Daily maximum temperature (TXq): maximum temperature observed between D-day at 7am local time and D+1 day at 7am local time.

3. Data and methods

Homogenized series:
Data series are not directly usable for analyzing climate change. They are affected by changes in measurement conditions over time, such as movements of the measuring station, or changes in sensors. These changes cause breaks, which can be of the same order of magnitude as the climate signal. Homogenization is a statistical treatment that consists of detecting and correcting breaks in measurement series in order to produce reference series adapted to quantify climate change.

Daily reference series :
Homogenization applies to monthly average data series. The homogenized series therefore do not allow to analyze the evolution of daily extremes, such as the number of days with temperature exceeding a threshold.
The daily reference series are data series with no detected break in the process of homogenization, which were selected for their quality. They may start later than the homogenized series, if they do not fit the quality criteria at the beginning of the period.

For average temperatures, only one daily reference serie was selected on Reunion Island (Gillot-Ste-Marie since 1992), according to criteria of availability, quality and representativeness.