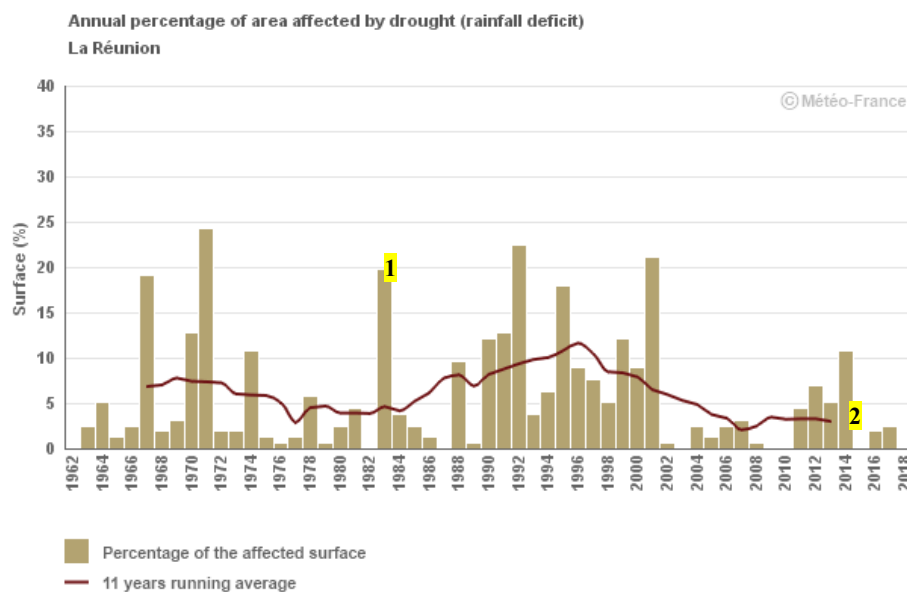


Evolution of droughts Past climate – Reunion Island

1. Graph reading aid



2 data series are represented on the graph:

Série 1 'beige histogram':

Drought index in Reunion Island (based on rainfall deficits) since 1962.

The values can range from 0 (no part of the territory in rainfall drought conditions at any time of the year) to 100 (the entire territory in rainfall drought conditions throughout the year). See §3 *Data and methods*.

Série 2 'brown curve':

11-year moving average of the parameter represented by the histogram. For example, the value of the year 2000 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 serie, nor for the last 5 years.

2. Définitions

Total rainfall amount over 6 months:

Quantity of rainfall collected in between 6 months.

SPI (Standardized Precipitation Index):

SPI is the index recommended by WMO (World Meteorological Organization) to monitor rainfall drought conditions. It consists of a "normalization" of precipitation data using a probability distribution function such that the SPI values are standard deviations from the median.

SPI is associated with a classification system that defines the intensity of rainfall drought events.

- from $-1,0$ to $-1,49$: moderately dry
- from $-1,5$ to $-1,99$: very dry
- lesser than -2 : extremely dry

3. Data and methods

Data:

The data series used are the total rainfall amounts over 6 months transformed into a 6-month SPI.

13 stations of Reunion Island have been selected so as to have a homogeneous distribution throughout the territory with good quality series since 1962.

Calculation of the Reunion Island Drought Index (based on rainfall deficits):

For each of the 13 stations - and for each of the 12 months of the year - the 6-month SPI is used.

For Reunion Island, it is considered that rainfall drought conditions at the station occur if the value of the 6-month SPI is less than or equal to -1.28 , a value that corresponds to a return period of 10 years.

For each month, stations with rainfall drought conditions are counted. This monthly number is divided by 13 to give the percentage of territory affected by rainfall drought conditions for this month.

The 12 monthly percentages are then added together. A division by 12 gives a number that integrates both spatial dimension (100% of the territory being represented by the 13 stations) and temporal dimension (the 12 months representing 100% of the year).

Multiplying by 100, the Reunion Island Drought Index is obtained. It varies from 0 (no part of the territory in rainfall drought conditions at any time of the year) to 100 (the entire territory in rainfall drought conditions throughout the year).

4. Références

Standardized Precipitation Index User Guide (WMO-No. 1090)

https://library.wmo.int/pmb_ged/wmo_1090_en.pdf