

RECENT EVOLUTION OF THE REGIONAL CLIMATE

AIR Focus 1

The long climatological series of the Belgian reference station at Uccle show the major trends in climate change in the country for more than a hundred years¹. In particular, it shows that the average annual temperature has increased by about 2°C since the beginning of the 20th century. For the trends in Wallonia, research at the Royal Meteorological Institute (RMI) aims to establish reference series from 1880 onwards.

Wallonian climatological reference series to be established

In order to have long series of quality observations other than the Uccle series, a digitisation of all climatological observations made since 1880 has recently been carried out². The study of changes in regional climates based on raw instrumental data involves monitoring the data, reconstructing missing observations and correcting the effects of changes in measurement conditions over time. Any change of instrument or shelter, station displacement, or alteration of the station's environment can induce variations in the series of observations of the same order of magnitude as the climate trends into which scientists are attempting to gain insight. A statistical analysis of the long reconstructed climate series is currently being carried out to identify and compensate for these disturbances³. This is called "homogenisation" of the observation series⁴.

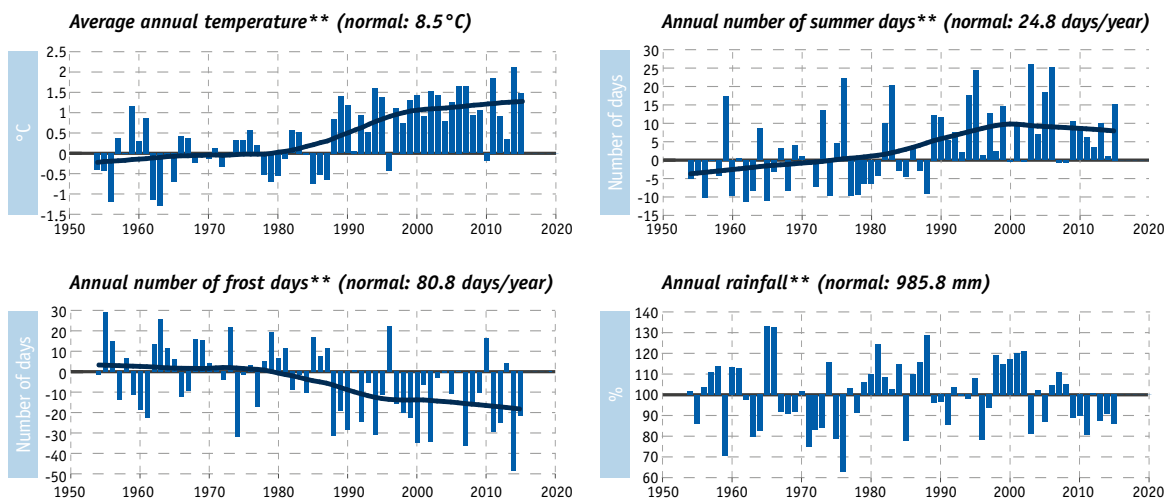
Climate trends in Wallonia from 1954 onwards

A first estimate of climate trends for Wallonia can nonetheless be drawn up from climatological observations as early as 1954. These data have already been verified for observation errors and supplemented in the event of missing values, but are not homogenised. As such, in order to make up for this shortcoming, six series spread over Wallonia that stand out due to the good continuity of the measurement conditions were selected (Beauvechain, Bierset, Florennes, Forges,

Stavelot and Saint-Hubert). The average of these 6 series is used here for the evaluation of climate trends in order to limit as much as possible the impact of non-homogenisation of the series. These trends indicate an increase in the average temperature of more than 1°C above normal calculated over the period 1961-1990⁵. This increase in average temperature is most noticeable in spring and summer, with almost systematically positive deviations from normal over the last three decades. The normal deviations in winter and autumn are mostly positive. This is reflected by an increase of almost 40% in the annual number of summer days⁶ and a decrease of 30% in the annual number of frost days⁷. As regards rainfall, a large interannual variability is observed. As such, no clear trend can be identified for this parameter.

^[1] RMI, 2015 | ^[2] RMI & IAS, 2012 | ^[3] BEL-HORNET project (Belgian Homogenized Long-term Reference Climate Time Series) as part of the BRAIN-be programme. More information can be found at https://www.belspo.be/belspo/brain-be/themes_6_Collect_fr.stm | ^[4] Aguilar *et al.*, 2003 | ^[5] The normal value is an average of a meteorological parameter calculated over a period of 30 years. | ^[6] A summer day is a day when the maximum temperature is at least 25 °C. | ^[7] A frost day is when the minimum temperature is negative.

Fig. AIR Focus 1-1 Climate parameters in Wallonia (1954-2015): deviations from normal*



* Normal = average over 6 Wallonian stations for the period 1961-1990 ** Annual average over 6 Wallonian stations

SOERW 2017 – Source: RMI