

# PUBLICATION OF BELGIAN CLIMATE MODEL PROJECTIONS AND CLIMATE IMPACT INDICATORS



Climate change shifts our climate to more frequent and high-impact climate extremes, such as heat waves, droughts, extreme rainfall.

In complement to existing international or European climate projections, Belgian projections with a high level of temporal and spatial detail are crucial to study climate extremes and the expected future climate change at national level.

The existing Belgian climate projections follow the emission scenarios or Representative Concentration Pathways as used in the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) and were produced in the context of two former research projects ('[CORDEX.be](#)' and '[CICADA.be](#)').

These Belgian climate projections are currently being updated to be in line with the latest emission scenarios from the 6th IPCC Assessment Report. These updated projections are expected to be ready in 2026.

In the meantime, the existing Belgian climate projections and impact indicators are now openly accessible in a centralized location:



This spatially detailed climate information is essential to help researchers, policymakers, businesses, and citizens to take climate actions both for mitigation measures to reduce greenhouse gas emissions as well as for adaptation measures to get our society better prepared to the impacts of climate change.

## WARMING TREND IN BELGIUM GOES TWICE AS FAST AS GLOBALLY

Anthropogenic emissions have led to a continuous increase in the concentration of CO<sub>2</sub> and other greenhouse gases in the atmosphere, resulting in 2023 in the warmest year on record, with the global average near-surface temperature at 1.45°C above the pre-industrial period (1850-1900).

Europe is the fastest-warming region worldwide, with temperatures increasing at around twice the global average rate. In Belgium, the warming trend also goes twice as fast as globally (since 1982 0.4°C per decade in Uccle and 0.2°C per decade worldwide), with a warming level more than double the global average (+3.3°C in Uccle in 2023 with respect to 1850-1900).

Furthermore, the heatwave of September 2023 in Belgium was the first heatwave ever recorded so late in the year, illustrating the impact of global warming on our country.

## MAIN FUTURE CLIMATE CHANGE TRENDS IN BELGIUM

By the end of the century and for a high-impact scenario.

### Temperature

The average warming is expected to be highest in summer and smallest in winter. There will be more tropical days and fewer frost days. Heat waves are expected to occur more often and to last longer. Citizens living in cities will experience the highest heat stress during heat waves.

### Precipitation

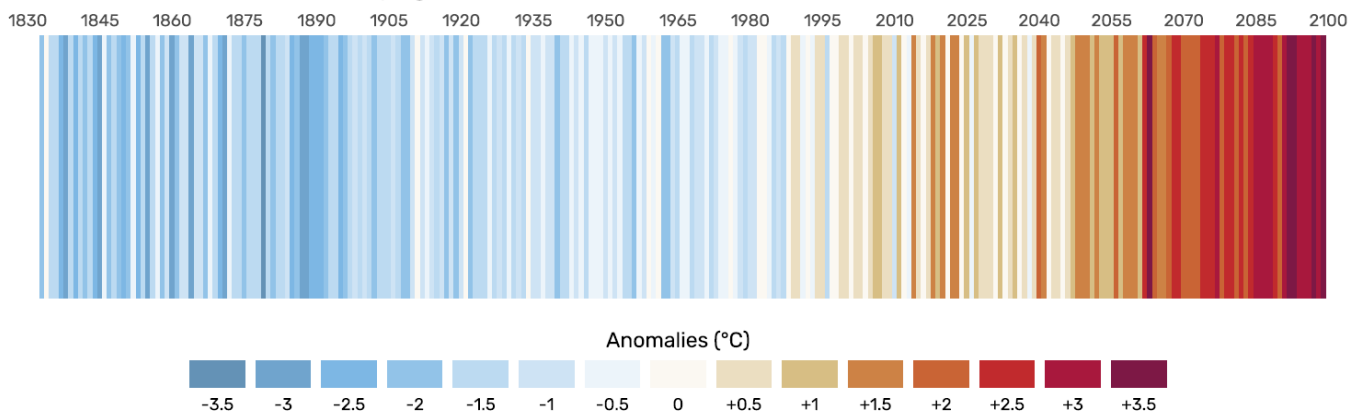
In a warmer climate, the precipitation is expected to increase during winter. Overall, winters will become wetter, and summers will become drier. But when it rains in summer, it will also rain harder, especially in urbanized areas.

### Droughts & evapotranspiration

Summers are expected to become drier with more moisture to be evaporated from the soil. As a result, prolonged droughts are expected to occur more often.

### Temperature change in Uccle compared to 1976-2005 levels

Scenario RCP 8.5 (2024-2100) - very high emissions



Source:  
Royal Meteorological Institute of Belgium (KMI-IRM) for observational data between 1833 and 2023;  
CORDEX.be I, models include ALARO-0 (RMIB-UGent) for projections between 2024 and 2100,  
CCLM5.0 (UCL) and COSMO-5.0-TERRA-URB (KULeuven) for projections between 2070 and 2100.