

## Belgium to launch a Centre of Excellence for Climate

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Part of the “Climate as seen by satellites” series (1/5)

“Today, climate research is carried out by Belgium’s federal scientific institutions. However, it is rarely seen as a priority, and it is poorly coordinated.” Less than a year after this statement from the Belgian government, the country is getting ready for the launch of a new Centre of Excellence for Climate in a few weeks’ time.

“The founding of this Climate Centre within the federal scientific institutions meets this need for coordination, but that’s not the only thing,” explains Arnaud Vajda, Chairman of the Board of the Belgian Science Policy Office ([BELSPO](#)).

“The Centre actually has three main objectives. The first one is to bring all of Belgium’s climate-related research efforts together under one roof. At the moment, the Belgian government doesn’t have a central port of call for information about the climate. When the government needs advice, it consults a number of different experts. This new centre will be able to provide integrated scientific data on which the government can base policy decisions.”

### **The centre aims to become a benchmark for Europe**

“Of course, several administrative units are equipped with these competences, but they are not necessarily capable of using them to carry out the necessary scientific research. They tend just to be departments delivering standard data,” explains Vajda. “What we lack is a more global, comprehensive approach that doesn’t just focus on a few aspects of global warming. Our aim is to unite the different resources that are working on these issues with the goal of establishing a shared scientific understanding.

Bringing the individual lines of research under the one umbrella should also enable the Belgian centre to achieve critical mass. The ultimate objective is for the centre to become a benchmark for climate research in Europe.

### **Breaking down silos and adopting an interdisciplinary approach**

The second goal of the new centre is to create cooperative partnerships between universities, scientific institutions and research centres. This interdisciplinary approach, which also includes social sciences, is an absolute necessity for addressing the complex global climate challenges that we face. The resulting symbiosis, together with the coordination of activities, will enable all institutions to benefit from a higher standard of research.

“If we imagine this as a series of concentric circles, the first circle represents Belgium’s federal scientific institutions,” explains Vajda, “while the second groups together the universities. Adopting

an interdisciplinary focus and breaking down existing silos will allow us to tackle the climate problem with a more integrated approach and make sure that we don't duplicate research efforts. Finally, the third circle is devoted to international collaboration."

The third main aim of the new climate centre is for it to provide climate services to public authorities, as well as to the Belgian private sector. "In fact, Belgian companies don't have a one-stop shop where they can get advice and information on climate issues," explains Belspo's Chairman of the Board. "This new centre will fill this gap."

### **The Royal Meteorological Institute director's former house is being turned into lodgings**

The new Centre of Excellence for Climate will be established on the Uccle plateau. The site is already home to the [Royal Observatory of Belgium](#), the [Royal Belgian Astronomy Institute](#) and [Belgium's Royal Meteorological Institute](#).

The house next to the main entrance, where the director of the Royal Meteorological Institute used to live, is currently being renovated and will soon become the home of the climate centre's initial team members. This team will be working alongside scientists from Uccle as well as other researchers from federal scientific institutions such as [the Royal Belgian Institute of Natural Sciences](#), [the Royal Museum for Central Africa](#) and [Sciensano](#), who are planned to support the new centre from the outset.

### **An annual start-up budget of €2 million for the first three years**

The Belgian government's investment in this new centre amounts to two million euros per year over a period of three years. That may seem a modest sum, considering what the centre aims to achieve.

"What we are establishing can be compared to a start-up," explains the Chairman of the Board of the Belgian Science Policy Office. "I know that it's unusual to use a private-sector term to describe a public service. But we're laying the foundations of a centre that is expected to expand over the next few years, especially in terms of the services it provides. This expansion will be more costly. But before we get this far, we need to prove that the climate centre works, and that it plays a key role in supporting political decisions."

### **New digital capacities**

Recruitment of the climate centre's two directors – one administrative and scientific – is currently in progress. The names should be announced over the next few weeks. The Régie des Bâtiments, the national building authority, is renovating the building that will house the headquarters of the climate centre. And, while we are still waiting for the appointment of the climate centre's directors and the centre's official inauguration (scheduled for November), the Belgian Science Policy Office has already begun investing in its computing capacities.

"We are currently in the process of replacing some of the servers on the Uccle plateau," says Daniel Gellens, Acting Managing Director of the Royal Meteorological Institute. "The public tender for this has taken into account the needs of the future climate centre so that it can get up and running with its services very quickly," confirms Vajda.

As Gellens adds, "our ageing servers needed to be replaced – not so much to improve computing capacity, but more to benefit from the massive storage potential of new servers. The climate centre will need to calculate various simulations – and we need to be able to rely on accessible data to do so. A quarter of the capacity of this new storage infrastructure, i.e. 1 to 1.5 petabytes of data [*one petabyte = 1,000,000,000,000,000 bytes – Ed.*], will be reserved for the climate centre. This should enable the centre to fulfil one of its major roles, which consists of having the necessary data to draw up high-resolution climate scenarios for Belgium, and to keep these updated.

"The actual calculation will probably be performed by Belgium's large academic computers," concludes Gellens.

## **A European weather cloud on the agenda in Brussels**

The management, storage and use of data are also key concerns for EUMETSAT. “This specialised agency is developing a cloud dedicated to the exploitation of meteorological data,” explains Gellens.

“The emergence of a new generation of meteorological satellites, such as the Meteosat Third Generation (MTG), as well as new sensors and an increase in the number of channels used to observe the planet, means that there will come a time when we can no longer distribute all the data to all users due to the sheer volume of information.”

“The idea behind the cloud is to enable users to connect to EUMETSAT and ECMWF ([European Centre for Medium-Range Weather Forecasts](#)) servers for their calculations. A new way of working is currently emerging, which creates a perfect synergy between these two intergovernmental agencies and the European Union’s Earth Observation Programme, Copernicus.

The solution is based on the development of a cloud known as the EWC (European Weather Cloud). These developments will be discussed at length at the annual EUMETSAT user conference, which will take place from this year in Brussels from 19 September.

Several other issues are related to the concept of the cloud, including scientific research, operational problem solving, the use of artificial intelligence and managing big data. The overall aim is to develop new and increasingly effective methods of using meteorological data.