



Consolidated Report

Stakeholder Workshop on C3S NCP project “Climate service for Belgian vector-borne disease management”

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1. Meeting Details

1.1 Scope

- Inform stakeholders on the C3S NCP “Climate service for Belgian vector-borne disease management” project
- Engage and captivate stakeholders
 - Retrieve feedback from the broader stakeholder community, as eventual possible (future) user
 - Get insights on how stakeholders could benefit from a similar service, eventually to be developed in the future
 - Collect user requirements for eventual future services

1.2 Venue and Date

Belgian Climate Centre, Avenue Circulaire, 3 - 1180 Uccle, Stratus Room
December 12th, 2024

1.3 Participants

The workshop gathered over 15 stakeholders and representatives from various relevant institutions, including the Flemish Government (Department of Care and Department of Environment), the Belgian Federal Government (FPS Public Health), the Institute of Tropical Medicine, the Spatial Epidemiology Lab (ULB), the Belgian Climate Risk Assessment Centre (CERAC), and Vivalis.



2. Agenda



Kick-off user workshop “Climate service for Belgian vector-borne disease management”

BELGIAN CLIMATE CENTRE – THURSDAY 12 DECEMBER 2024

Programme

09:30 – 10:00	Coffee & registration
10:00 – 10:10	Welcome Rozemien De Troch, Belgian Climate Centre
10:10 – 10:20	Introduction C3S National Collaboration Programme ECMWF, online
10:20 – 10:40	The role of climate in vector-borne disease management Marie Hermy and/or Laurence Geebelen, Sciensano
10:40 – 11:00	Climate service outline Nele Veldeman, VITO
11:00 – 11:15	COFFEE BREAK
11:15 – 12:15	Roundtable discussions and interactive feedback with stakeholders
12:15 – 13:30	LUNCH

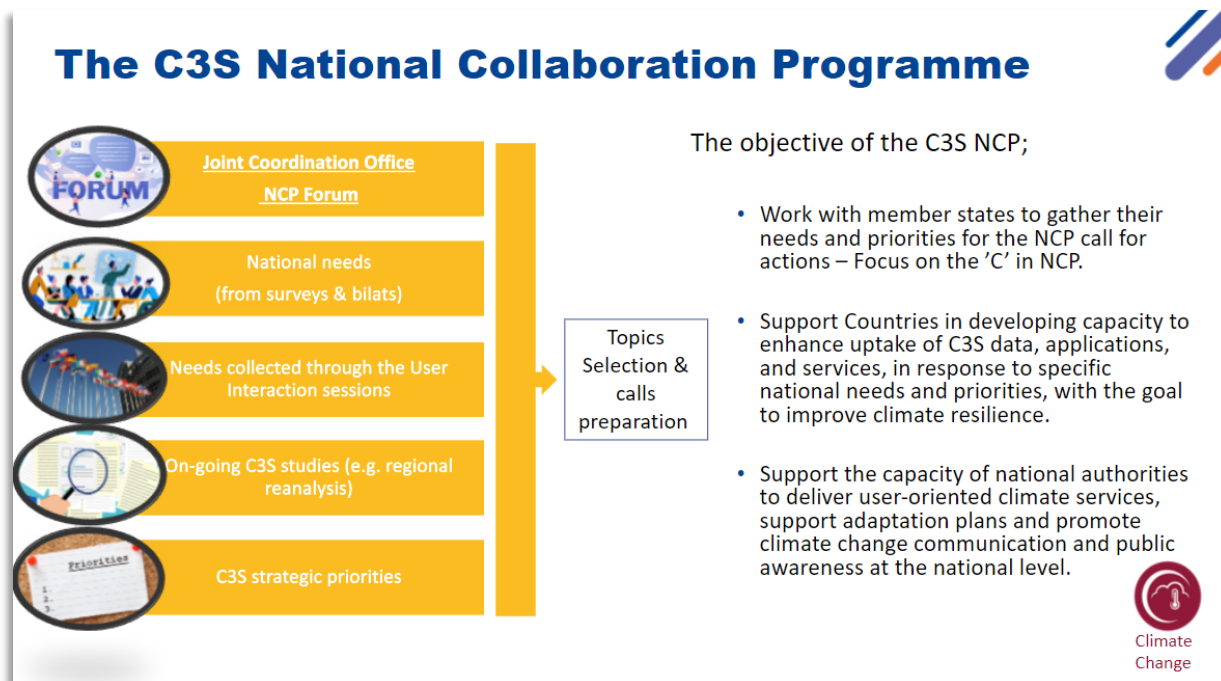


3. Report

3.1 Introduction C3S National Collaboration Programme - Filip Lefebre (VITO)

The Copernicus **Climate Change Service (C3S)** provides authoritative information about the past, present and future climate, as well as tools to enable climate change mitigation and adaptation strategies by policy makers and businesses. C3S also provides training and support services, as well as communications products, to enable users to make use of the data.

C3S launched a **National Collaboration Programme (NCP)** that aims to support Countries in developing capacity to enhance uptake of C3S core products, applications, and services, in response to specific national needs and priorities, with the goal to improve climate resilience.



C3S NCP projects serve to:

- Communicating the benefits of the NCP activities (vs the status quo)
- Delivering impact
- Showcasing the value of C3S at the national level and beyond



3.2 The role of climate in vector-borne disease management - Laurence Geebelen (Sciensano)

Sciensano's **Vector-borne diseases and zoonoses** analyses the epidemiology of vector-borne diseases and zoonoses in Belgium. The unit assesses the impacts of such diseases on public health, it reports to international health authorities, provides expertise and advice on the topic at (sub-) national level and it also plays a role in informing citizens and raising awareness. They manage different research projects including citizen surveillance, seroprevalence studies, KAP (Knowledge, Attitude, and Practices) survey on mosquitoes.

For vector surveillance, Sciensano makes use of **citizen science**:

- For mosquitoes: [MuggenSurveillance.be/SurveillanceMoustiques.be](https://muggensurveillance.be/surveillancemoustiques.be)
- For ticks: tekennet.be/tiquesnet.be



Evaluatie van het huidige risico op tekenbeten

Op basis van het aantal meldingen in de voorliggende weken verwachten we dat het huidige risico op tekenbeten **hoog** is en dat het tekenrisico normaal aan de gang is. In het jaar wordt het risico op tekenbeten geleidelijk aan groter tot juni en neemt het daarna weer af. Het is belangrijk om tekenbeten te **voorkomen**, te **opsporen** en een mogelijke blootstelling en, zo nodig, een teek zo snel mogelijk te **verwijderen**.



Sciensano also develops **risk maps** showcasing the risk on tick bites based on tick bite reports and environmental factors (including climate).

Climate hazards play a role in different steps of the process of transmission of vector-borne diseases, and they exacerbate the risks related to such diseases. Sciensano already makes **use of climate data on a project-based ad-hoc manner**:

- For mosquito surveillance: they calculate the start of the active season to plan monitoring activities (MEMO+) making estimations based on retrospective data at a large scale
- For ticks: they developed risk maps based on climate data from ERA5-Land, 1990-2020, and they assess seasonal risks based on temperature and RH from Uccle

This use of climate data lacks accuracy and efficiency.




Current use climate data

Mosquitoes:

- Calculate start active season to plan monitoring activities (MEMO+)
 - Estimation based on retrospective data, large scale


Ticks:

- Risk maps:
 - Climate data: T, rainfall, SD (ERA5-Land, 1990-2020) Recent years missing
- Seasonal risk (ongoing):
 - T, RH from Uccle Large scale data





Evaluatie van het huidige risico op tekenbeten

Op basis van het aantal meldingen in de voorbije weken verwachten we dat het **huidige risico** op te worden de meeste tekenbeten gemeld in de periode van maart tot en met oktober. Het is echter het tekenbeest op te lopen.



= Project based, ad-hoc data requests & downloads, retrospective
 => lack of accuracy and efficiency (time consuming)

In the future, Sciensano aims to leverage climate data to improve the management of mosquito and tick-related risks.

- For mosquitoes, the focus will be on determining the start of the active season such as egg hatching and the appearance of the first adult mosquitoes, using Growing Degree Days (GDD) based on temperature. This will be done on a very local scale, ideally within 100-200 meters around existing establishments, allowing for more precise and timely prevention and control measures.
- For ticks, the plan is to update risk maps and to use real-time data on a smaller scale to assess seasonal risks. The goal is to have early warning systems for tick bites and to model the risk of diseases like Lyme disease and Tick-Borne Encephalitis (TBE). The latter will be done from a One Health perspective, which considers the interactions between ticks, animals, humans, and the environment. This will involve integrating data on ticks, tick bites, diseases, animals, environment and climate for predicting tick-related risks in Belgium. In addition, the impact of local weather conditions on the tick bite risk in gardens will be investigated.

The aim is to use automated, real-time data and even predictive models to implement targeted prevention and raise awareness in specific geographic areas and at the right times.

In the long-run, Sciensano aims to model the time period for optimal disease transmission for mosquitoes and to model risks for other zoonoses such as hantavirose, leptospirose etc.

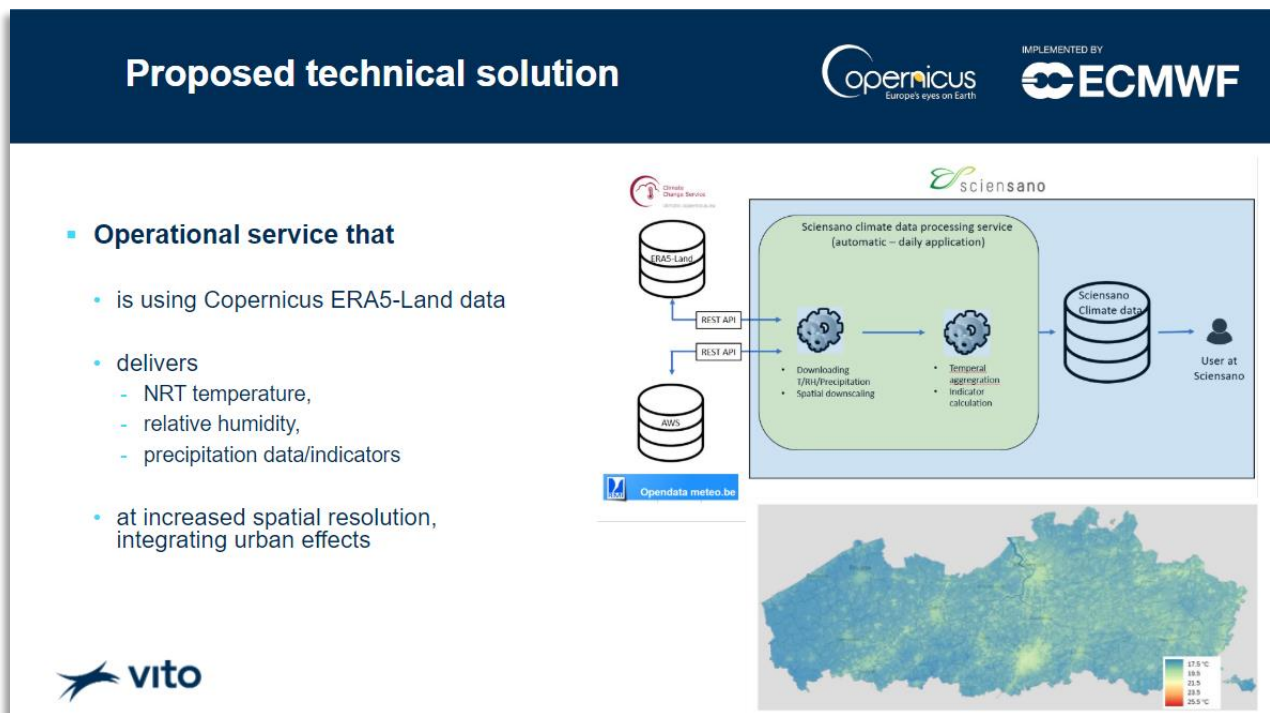




3.3 Climate service outline - Nele Veldeman (VITO)

The project is **funded by ECMWF – C3S2** (“C3S2 National Collaboration Programme – Call for Actions 2024-1”) and it will last 2 years. It is led by **VITO** (lead on service development and management) in collaboration with the **Belgian Climate Centre** (in charge of communication, outreach, and stakeholder engagement). The **primary user and implementer** of the service will be **Sciensano**.

The project aims to develop an **automated operational climate service**, including transfer of technology and knowledge towards Sciensano. The focus will be on **ticks and mosquitoes** (*Aedes Albopictus*). Despite the differences in terms of vector presence, disease burden, monitoring platforms and impacts that climate change has on these vectors, their surveillance requires the analysis of the same climate parameters: temperature, humidity (presence, activity & transmission), extreme weather (survival & activity). For this reason, it will be possible to develop a climate service that will satisfy Sciensano’s requirements for both vectors.



The operational service will use **Copernicus ERA5-Land data** (delay of 5 days to present) and interpolate it with data from Automatic Weather Stations from KMI-IRM (near-real time data). The team will also work on the **spatial downscaling of data** (spatial resolution between 100 and 500 meters) to deliver higher resolution data that integrates local variations because of urbanisation (urban heat island effect) and orography. Finally, the project team will **transfer the data, service, and knowledge to Sciensano**, so that the service can be directly integrated into Sciensano’s workflows.



Questions and answers on the climate service outline:

- Does the project/Sciensano envisage working on risk maps that include forecasts (e.g. coming days/week)?
→ Forecasts are not within the mandate of C3S, but rather of the national weather services.
- Will the project include data relating to native mosquitoes?
→ The climate service to be developed in this project will -in the first place- be used to assess risks related to Aedes Albopictus, so out of the scope of the current project.
- Will the climate service be made available to other users (besides Sciensano)?
→ VITO will be owner of the climate service; a license will be given to Sciensano.

NOTE:

VITO/Sciensano aim to maximize the use of the service by a wide range of users. However, public availability demands specific technical and logistical conditions, heavily relying on data storage, scripts, ... and the resources needed to maintain the service and to manage data requests. Within the project, the primary focus will be on usability for Sciensano.

The possibility of making the climate service publicly accessible will be explored in collaboration with ECMWF.



3.4 Roundtable discussions and interactive feedback with stakeholders

To ensure that the initiative will align with the needs of the broader community of stakeholders working on the health and environment interface, an interactive session, focussing on specific challenges or gaps in addressing vector-borne disease management, features or functionalities of a climate service, and the use of different networks and community platforms, was set up. Below, a brief summary of the discussion items is listed.

What specific challenges or gaps in addressing vector-borne disease management, or climate-related health issues in general, do you see this service filling (e.g. spatial detail of climate data)? And why?

What features or functionalities would make this service better suited to your needs or your organization's needs?

- It would be useful to include humidity-related data. Relative humidity is already included within the scope of the project, but the specific indicator must be decided depending on relevance.
- The climate service could help develop risk maps that enable the prioritisation of actions (e.g. help understand the level of urgency) and that improve the precision of integrated risk management.
- Forecasting and real-time data at higher resolution are important for decision making at the local level. Risk maps must also be simple for decision-makers to use.
- Risk maps for mosquitoes would be useful, although this falls outside the scope of this project. Sciensano clarified that there are no plans to develop them now, but this could be a longer-term goal.
- It is important that data is made available as time series at pixel level. This is important to assess population dynamics. The project foresees to deliver daily mean data (mean minimum and mean maximum). The granularity in terms of time series is also influenced by data storage availability.
- It could be interesting to have daily data to extrapolate longer-term trends and develop scenarios on vector-borne diseases. Belgian climate projections (until the end of the century, see CORDEX.be) could be used for this purpose, but this is not foreseen in the current project. There are also many uncertainties relating to the use of seasonal forecasts for the Belgian region. In the absence of forecasts, it would be difficult for decision-makers to make use of this service as it is, but it will rather be useful for research purposes that can in turn inform decision making in the future.



How could we use your networks or community platforms to present the service that will be developed and share project updates? (e.g. NEHAP, relevant workshops/events)

- As the climate service will relate to Belgium, it might be difficult to exploit European networks for this purpose. ERA-5 Land data can easily be extended to all EU Member States, but what makes this service interesting is the interpolation with national-level data from Automatic Weather Stations, and the availability of such data varies amongst countries.
- Working groups organized in the context of the National Environment and Health Action Plan (NEHAP), such as the ones on “exotic mosquitoes and other vectors” and “resilience of healthcare systems” could be used as platforms to share information and updates relating to the project.
- The project team will also share a request for input at key moments during the project (e.g. for the definition of variables to be considered, circulate draft of design and implementation plan, ...) to interested workshop participants. The results of the project will also be presented in a final project workshop, as well as in at the Belgian Science for Climate Action Conference organised by the Belgian Climate Centre in February 2026.



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