

# Farm BETTER

Concept Note



CLIMATE42





## BACKGROUND

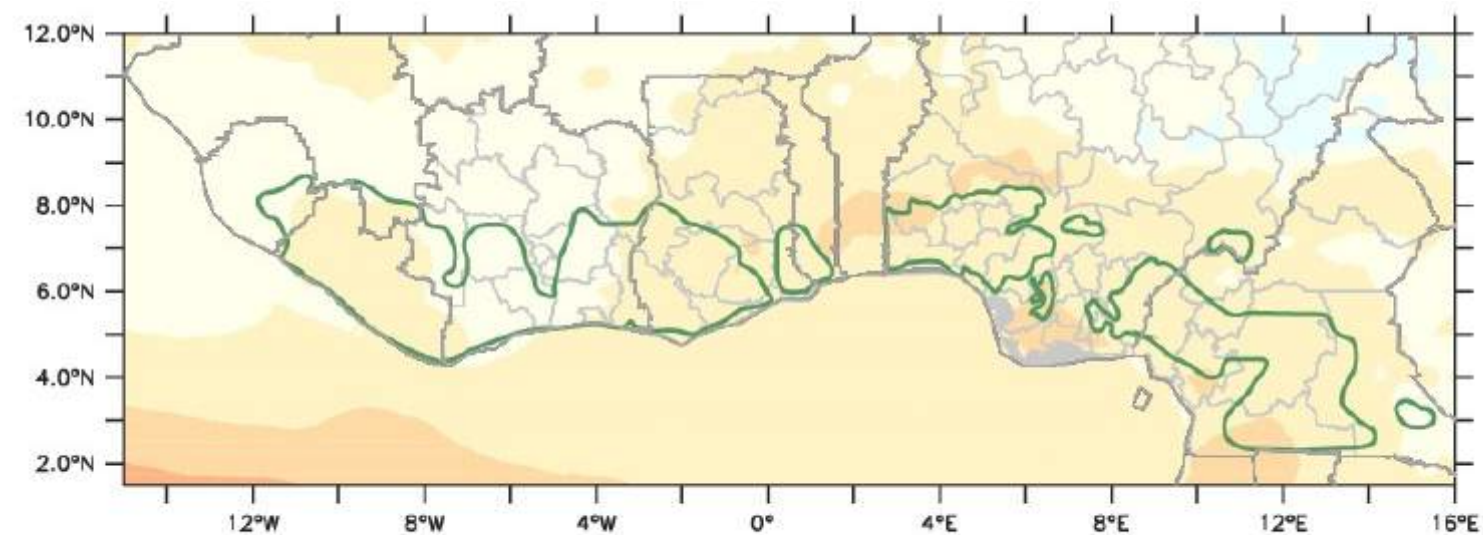


Farmers in developed markets do not take *any* action without first checking weather forecasts. This information is used to make optimised decisions on farm management, which results in a cost-efficient and optimal operating environment.

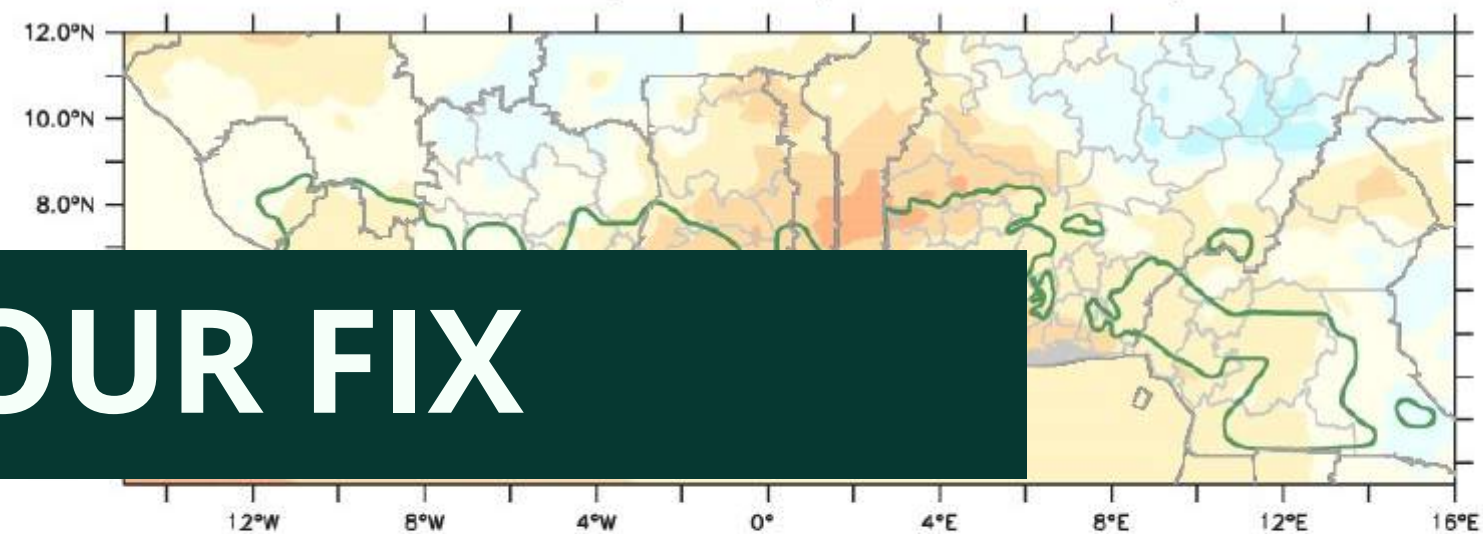
There is not a single winemaker in France, a corn grower in the USA or a commercial rice grower in China that does not use climate-related advice to improve their efficiency and optimize their output.

Farmers in West Africa, however, tend not to benefit from this type of support. They are the most exposed and sensitive to climate variability. Adding to this, they suffer from very limited access to locally adapted and weather-informed agricultural best practices.

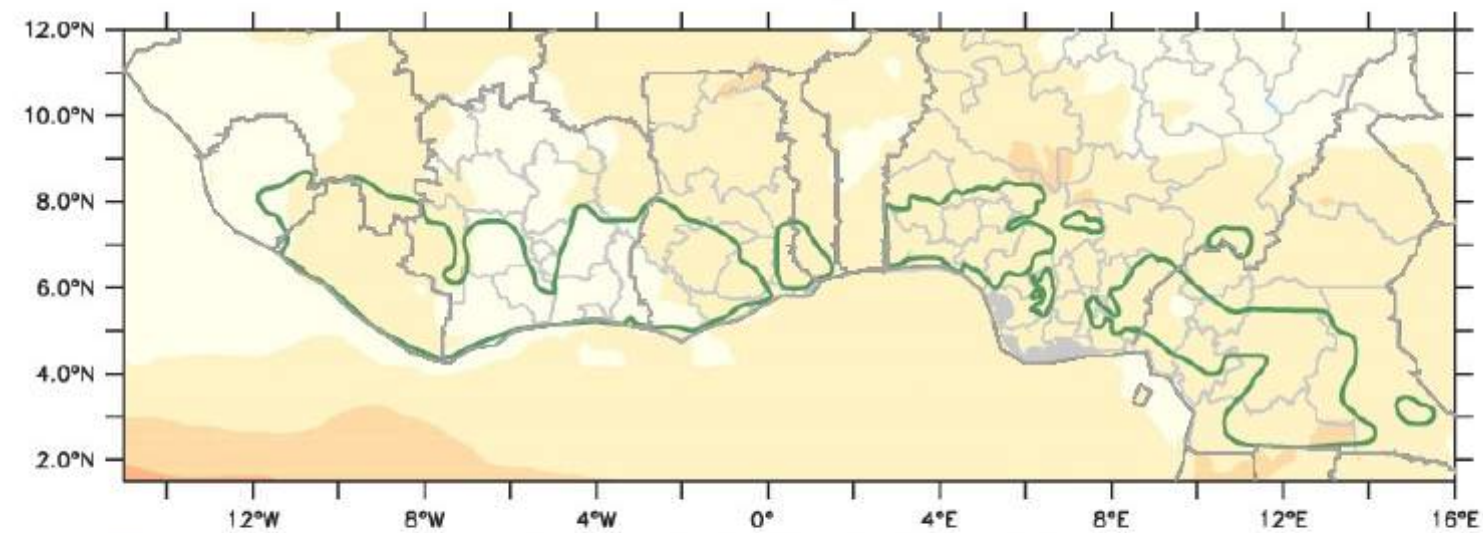
Regular access to this information would help them plan their crops and improve the efficiency of their actions, reduce the cost and waste of their inputs, and optimise the production cycle of their cocoa crops.



Maximum daytime temperature anomaly



Minimum nighttime temperature anomaly



○ Cocoa production regions cf. Schroth et al. (2016)

1 Jul – 31 Jul 2021 average near-surface air temperature anomaly w.r.t. 1987–2016 climatology [°C] (data: ERA5; analysis: Climate42)

Much of the information currently available is outdated and not climate-aware. It is also hard for farmers to have consistent & qualitative access. And when they do, it is often very difficult to understand and know how to put it into practice.

**Our proposal is to correct this situation by providing West African cocoa farmers with weather-related agronomic advice in real-time.**

Climate42 scientists have developed a series of approaches and algorithms based on 7 years of scientific research that correlate West African **climate information to cocoa plant physiology**.

The team has translated this into actionable information that helps farmers build capacity by empowering and improving agricultural decision-making.

**OUR FIX**

# HOW?

Climate42 is undertaking a 3-year field study to validate our R&D related to the impacts of climate variables on cocoa production. This field study takes place after 7 years of extensive in-house research. Our objective is to replicate the results in the field.

This pilot will study the impacts that farmers can have on their production yields when they apply weather-related best practices, which we will communicate directly to them. These messages will be based on localised weather monitoring and forecasting, and will be combined with our in-house research on the latest best practices according to the current crop production cycle.



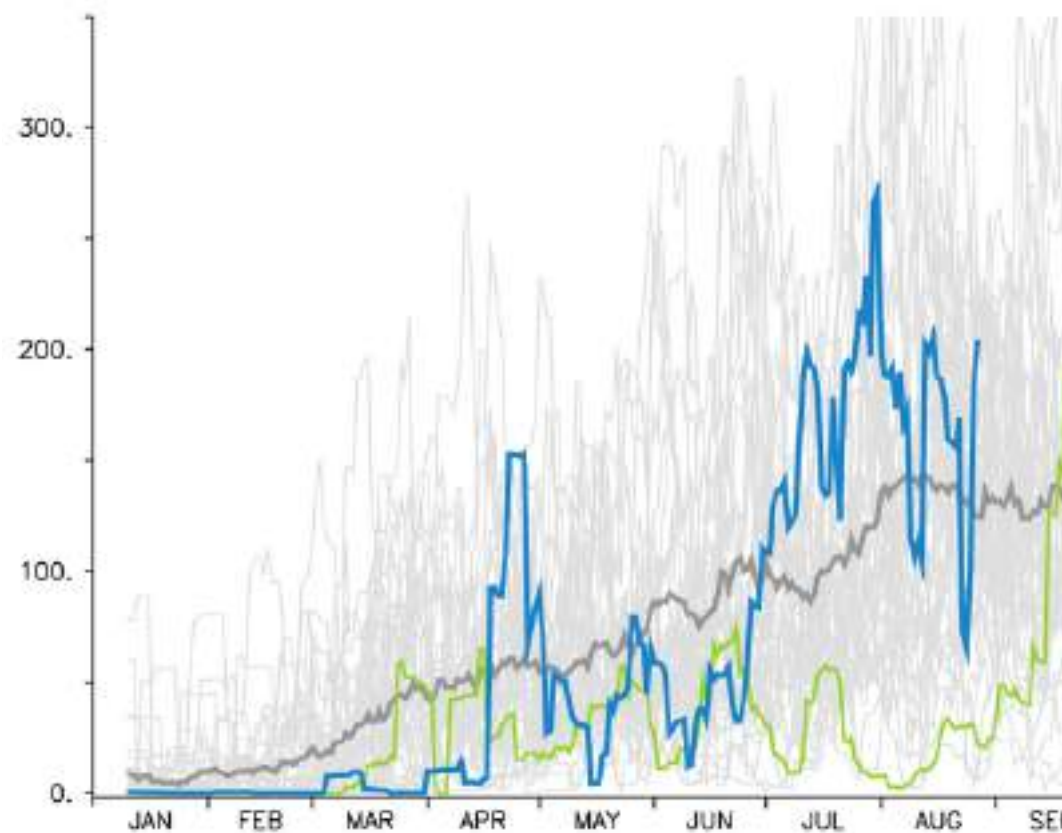
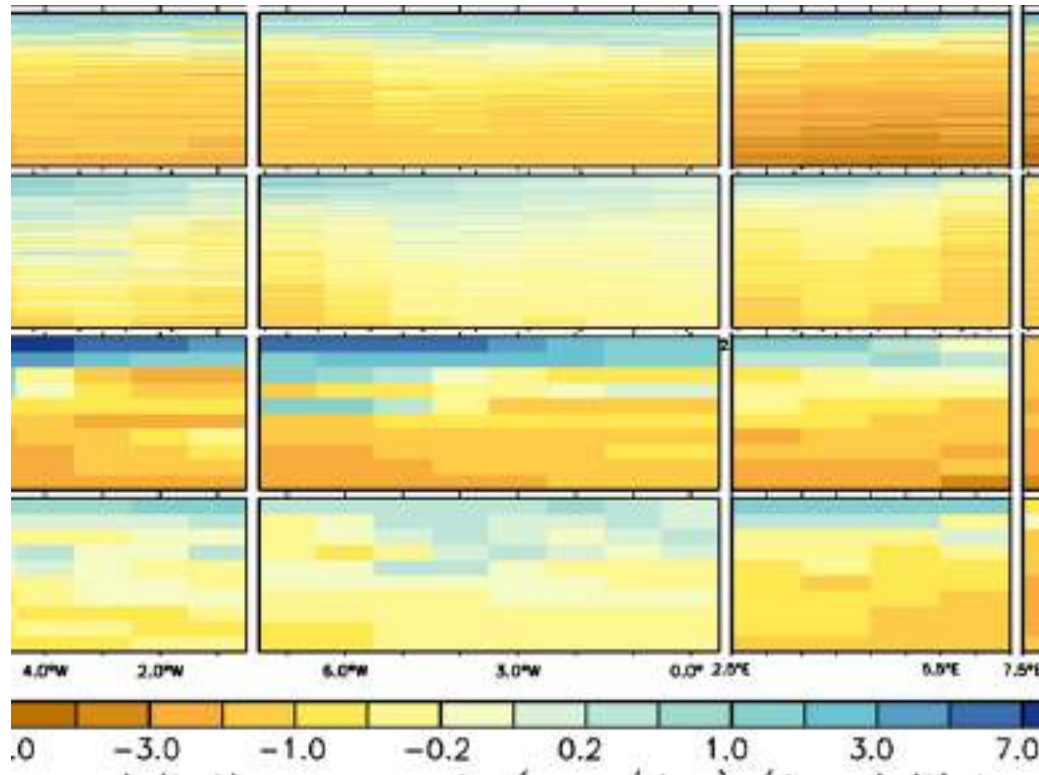


## WHY?

Cocoa is the main cash crop in Ghana and Ivory Coast and represents an important source of income for **2m households**. This makes it an excellent opportunity to improve the economic situation in rural areas.

We are focused on building up actionable knowledge in the farmers so that they can **optimise cocoa crop yield in Phase 1**, and create **crop diversification opportunities in Phase 2**.

# The PILOT



During this pilot, we will document:

1. how the farmers **change their management practices based on the agro-climatic information** they receive, and
2. **quantify the increase in the economic output** of cocoa farming (including measurements in cost reduction, increased yields, etc.)

This pilot will study the level of impact that weather-informed best practices have on the farmers' production yields. We will communicate localised weather monitoring and forecasting, and combine this with our in-house research on the latest best practices according to the current crop production cycle.

Between 500 - 1000 farmers in Ghana & Ivory Coast will receive tailor-made agroclimatic information as well as help to incorporate this into their decision-making processes. Farmers will be supported by agricultural technicians (extension workers) in their network.

# The PILOT

All the farmers involved in the study will be constantly monitored to collect data to compare farm profitability.

1. A control group of at least 250 farmers will be used, evenly distributed over the territory chosen for the project (see figure 1. light blue),
2. The second group of farmers will receive the services of the FarmerCare program designed by Climate42 (see figure 1. dark green).

Information and advice will be sent by text message (SMS) for major field operations such as pruning, timely fertilization and disease control, as well as regular information on climate monitoring and forecasting.

Farms involved in the study will be homogeneously distributed over the territory and assigned to one of the two treatments in order to ensure a Gaussian farm size distribution in both groups.

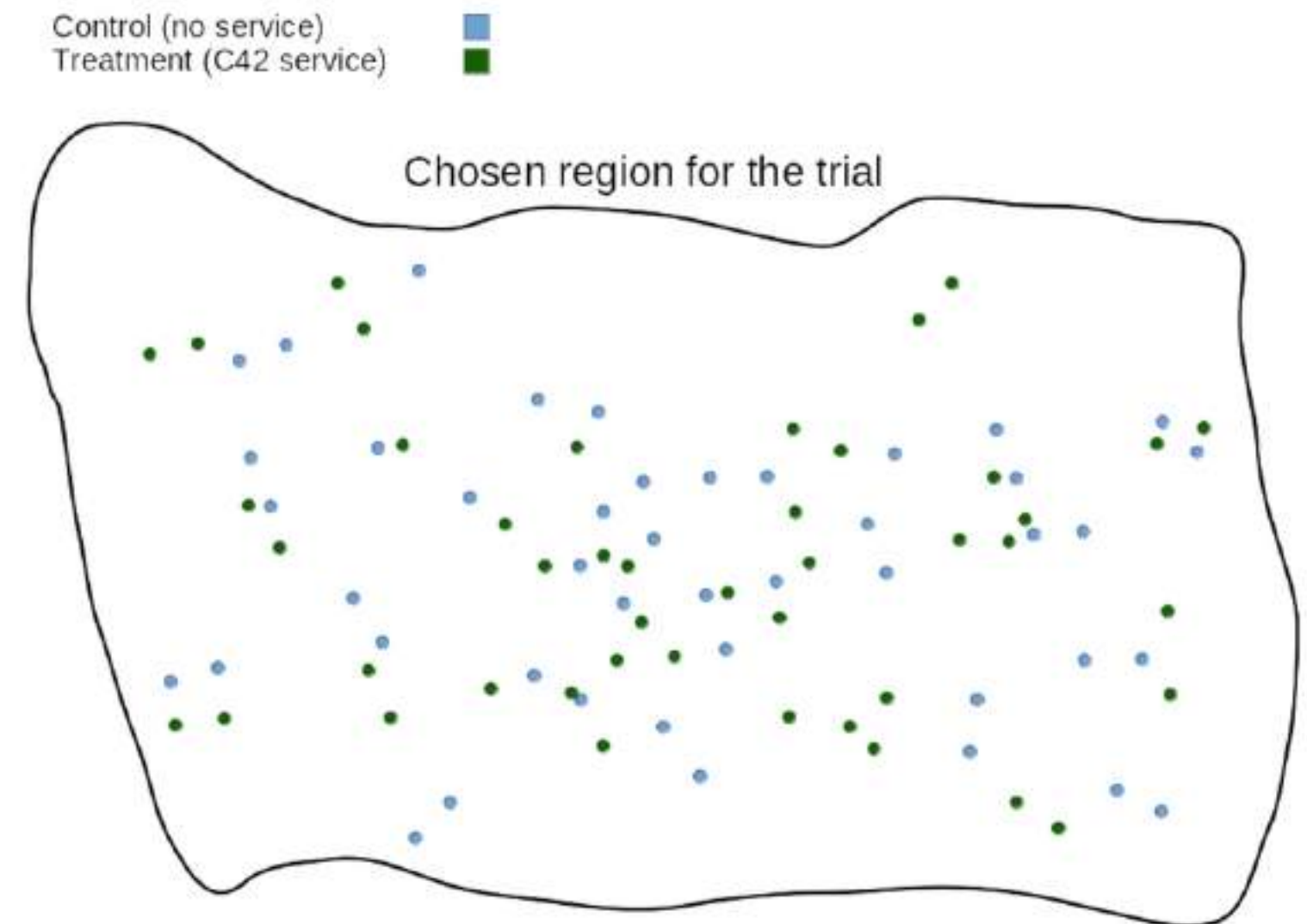


Figure.1 Example distribution of the farms involved in the test trial experiment.

## About Climate42

**Dr. Alina Gainusa-Bogdan** is our lead research scientist and specialises in climate science. **Dr. Pietro Della Sala** is our lead agronomist.

We provide analysis and commentary on the effects of the climate on cocoa plant physiology and production. This is based on our in-house **climate monitoring, seasonal predictions** and **agronomic research**.

## Our Research Collaborations



**CocoaSoils**

