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CLIMATE CHANGE IMPACT ON CULTIVATED AND WILD CACAO IN PERU AND THE SEARCH FOR CLIMATE CHANGE TOLERANT PROPAGATION MATERIAL

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Introduction

- Cacao cultivation is expected to be impacted by climate change
- Tolerant genotypes are the most promising adaptation option to climate change
- Peru has a wide genetic diversity of cacao genotypes

➢ **Use cacao genetic diversity to support adaptation to climate change in Peru**

Objectives

1. Assess the **future impact of climate change** on cacao in Peru

2. Identify areas where **climate change tolerant genotypes** are present

3. Develop an **online tool** to help cacao farmers to select propagation material for climate change adaptation

Methodology

- Ensemble **suitability modelling**
- 20,000 points for cultivated and 1,200 for wild cacao
- **Future projections** for three periods (2030, 2050, 2070) and two emission scenarios (RCP4.5 and RCP8.5)
- **Outliers analyses** to identify areas where climate change tolerant genotypes are present

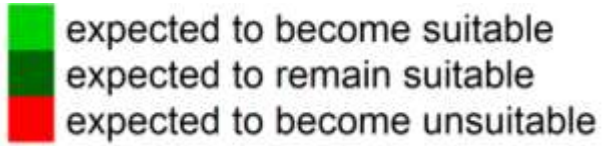
1. Assess the future impact of climate change on cacao in Peru

Future projections for 2050s – RCP4.5

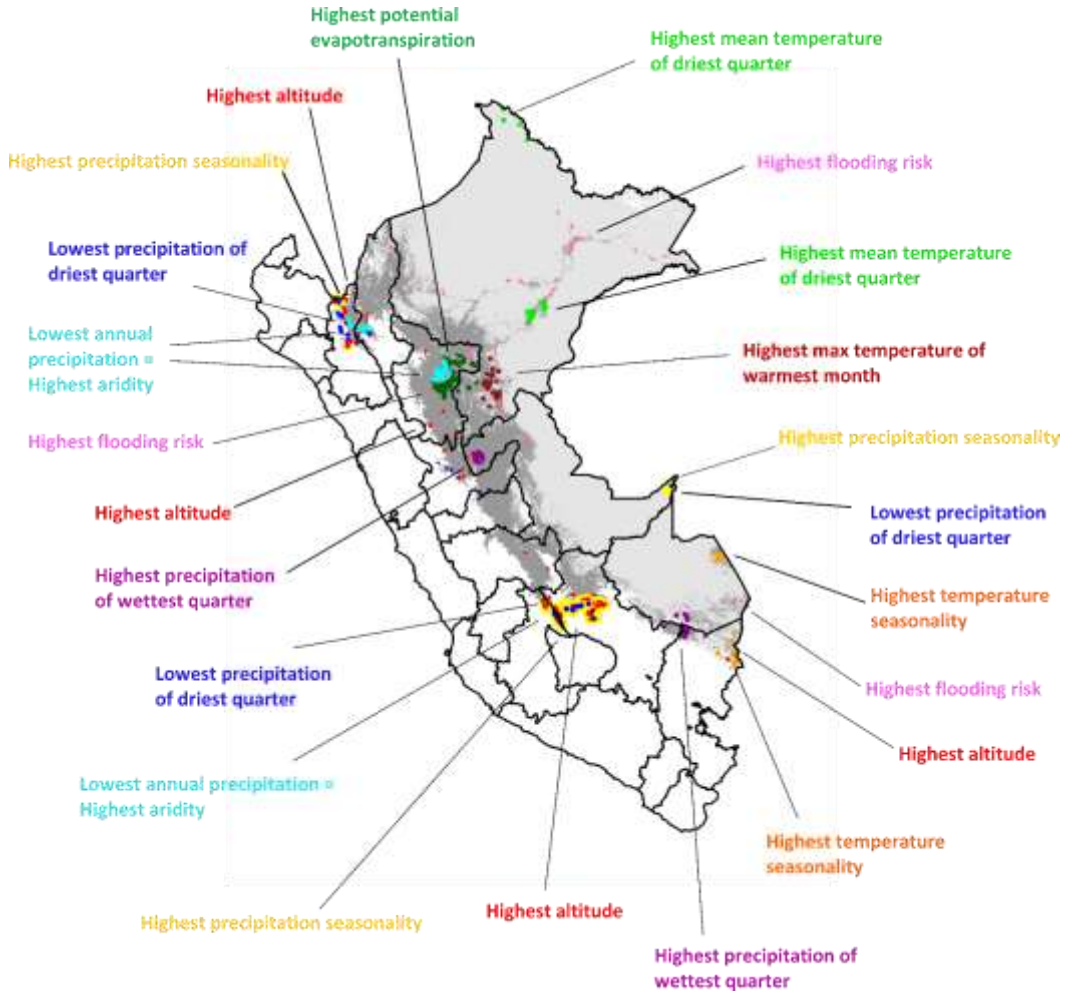
Cultivated cacao

Wild cacao

- Net contraction of suitable area of cultivated cacao
- Wild cacao will mostly remain suitable and further expand

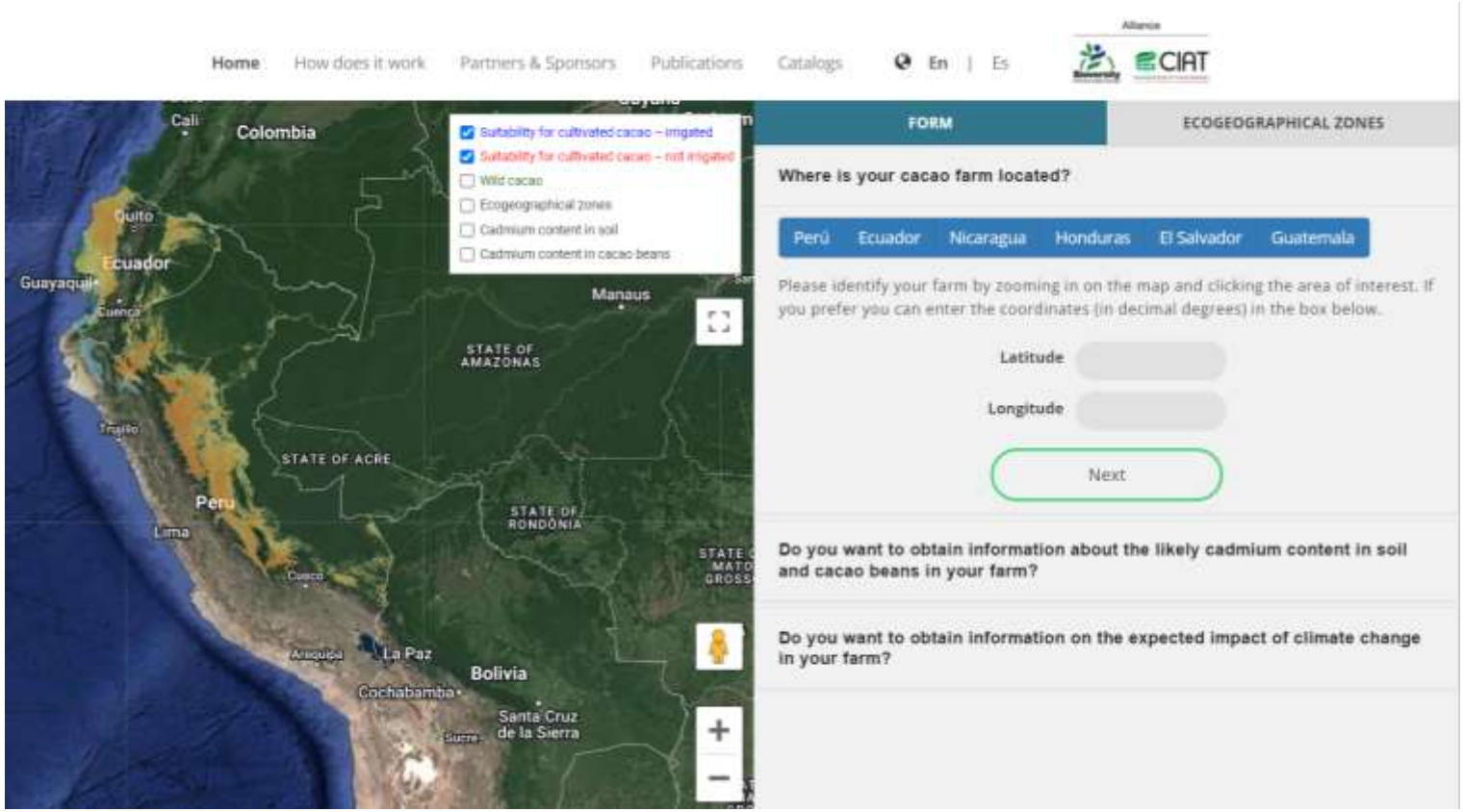


2. Identify areas where climate change tolerant genotypes are present



- Several populations in Peru that may be tolerant to climate change
  - Collection missions in the identified areas
  - Climate chamber experiments
  - Introduction in farmers' fields
  - Breeding programs

3. Develop an online tool to help farmers to select propagation material



www.cacaodiversity.org

- Tool available online
- Select coordinates of farm
- Automatic report

Conclusions

- Use the cacao genetic diversity in Peru to identify **climate change tolerant genotypes** and support farmers' adaptation to climate change

- Online tool **CacaoDiversity** to support farmers' decision making for selecting locally-adapted and climate change tolerant cacao propagation materials

➢ Improve **livelihood and income** of cacao farmers in Peru

➢ Given the its high cacao genetic diversity, the results of this research could benefit not only Peru but also Latin America and other cacao-producing countries in Africa and Asia

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