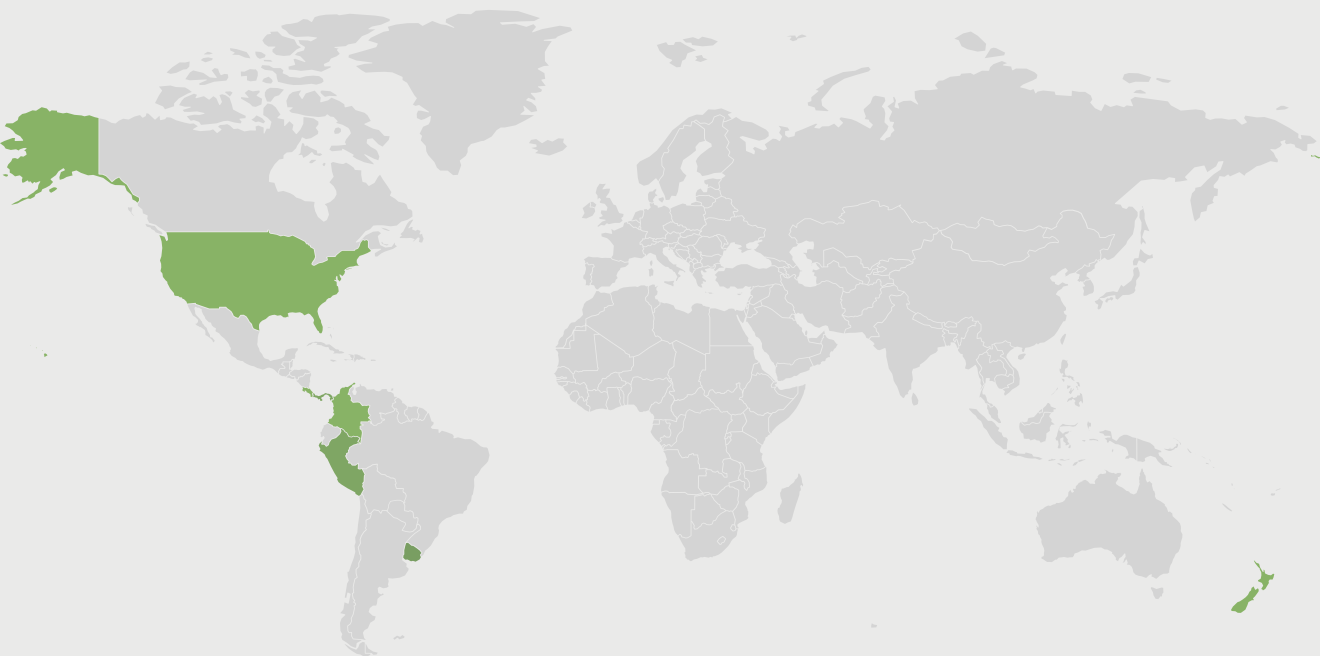# Transforming the Measurement of Greenhouse Gas Emissions in Rice Cultivation

In an innovative development for monitoring greenhouse gases in agriculture, the project "Satellite Monitoring of Methane in Latin American Rice Regions" is testing two technologies that will transform GHG measurement in rice cultivation.

Uruguay / Panama / Peru / Colombia / Costa Rica / New Zealand / United States

2
Technological solutions

0.7
Correlation with the traditional method

95%
Time Reduction

1
Protocol

4
AI models

1
Web platform

6
Workshops

3000
Number of beneficiaries

The implemented initiative

The main objective of the project is to strengthen regional capacities for monitoring, reporting, and verification of methane emissions in rice ecosystems through a satellite tool that provides frequent, reliable, and free estimates to the rice community and governments. This project, in turn, has three specific objectives: i) to design AI models based on satellite information to estimate methane emissions in rice ecosystems, ii) to validate the models using field samples acquired in rice regions with contrasting ecosystems and iii) to develop a web platform with open access to the data and knowledge generated within the framework of this project.

The technological solution

The implemented technological solution is based on the use of satellite sensors to monitor methane (CH_4) emissions in rice cultivation systems. Satellites have the potential to provide reliable and free data that can be used to analyze spatiotemporal changes at different spatial scales, including regions and countries. The project aims to strengthen regional capabilities for monitoring and verifying these emissions by integrating field data obtained from novel methane sensors with satellite data. The validation results will be presented on a freely accessible web platform, benefiting rice communities and governments by providing frequent, reliable, and free methane emission estimates. This technological solution will contribute to formulating policies to mitigate greenhouse gas emissions and enhance climate resilience among rice farmers in target countries.

MÁS INFO

Results

Design of models based on satellite information to estimate methane emissions in rice ecosystems using artificial intelligence (AI) algorithms with the aim of emulating the physicochemical processes encoded in atmospheric gas transport models. It is planned to use meteorological data, land cover, and atmospheric CH_4 concentrations to predict emission fluxes from rice ecosystems using satellite data. This will allow the characterization of different rice-growing regions using novel methane sensors. The data acquired in the field will be correlated with satellite data, and the results of this validation will be included in a web platform to be available to the entire rice community and governments. This is expected to result in an innovative information system that contributes to the formulation of policies aimed at mitigating GHG emissions and improving the welfare of rice producers.

Main donors

Participating Organizations

LA MOLINA   PLAR   University of Otago   USDA   IICA   FONTAGRO