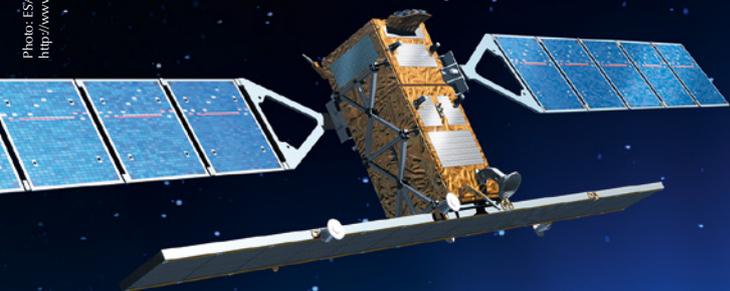


# REMOTE SENSING-BASED INFORMATION AND INSURANCE FOR CROPS IN EMERGING ECONOMIES



<b>Duration</b>	February 2012 – April 2018
<b>Objectives</b>	Reducing vulnerability of smallholder farmers engaged in rice production by establishing rice crop information and monitoring systems and providing access to crop insurance solutions.
<b>Partners</b>	The project is jointly implemented by Allianz Re, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), International Rice Research Institute (IRRI), sarmap (a swiss satellite technology company) and the Swiss Agency for Development and Cooperation (SDC).

# ASIA IS THE GLOBAL RICE BOWL



Rice is one of the most widely grown crops in the world, and it is by far the most important food crop for the poor: more than 3.5 billion people depend on it worldwide. 90% - or about 140 million hectares - of the world's rice is produced and consumed in Asia. In most Asian countries, rice availability is equated with food security and closely connected to political stability.

For the five target countries of the RIICE project, floods, typhoons and droughts are at the days order. Governments traditionally assist their farmers when a catastrophe has led to massive yield losses which threaten sufficient food supply but they often struggle to identify losses quickly and allocate aid in an efficient manner. In any case is their aid relief a strain on their national budgets.



## RISK MANAGEMENT & INSURANCE

The target of RIICE is to reduce vulnerability of smallholder farmers engaged in rice production. The tools of RIICE provide information about the scope and impact of disasters and a precise and timely overview of planted rice area and expected and actual yields - down to the village level. This helps government decision makers, agricultural intermediaries, traders and relief organizations in better managing domestic rice production and distribution during normal growing conditions and after natural catastrophes struck.

The establishment of national rice crop monitoring and information systems help governments, agricultural intermediaries, traders and relief organizations in **better managing domestic rice production and distribution** during normal growing conditions and after natural catastrophes struck.

The generated information can further be used to make **agricultural insurance solutions** more efficient and transparent.

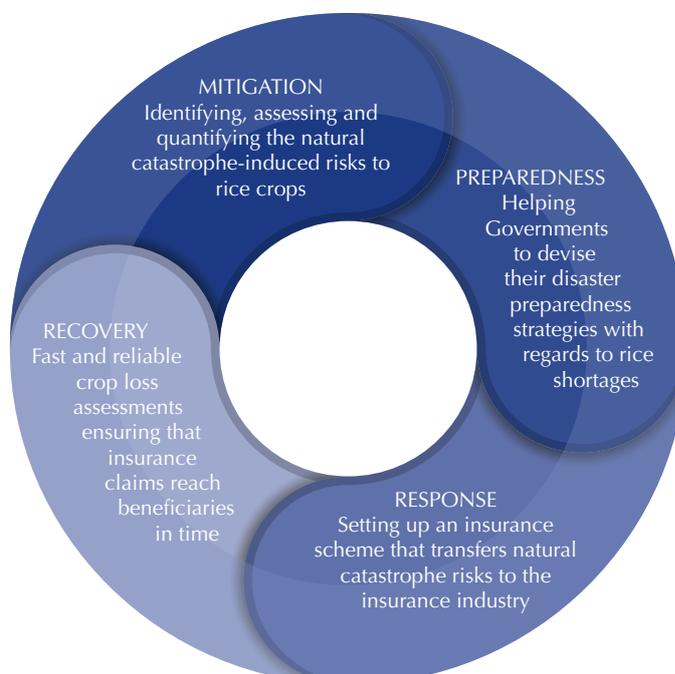
RIICE provides capacity building for and technical advice to decision-makers on the design and implementation of satellite-supported insurance solutions which can cushion the negative financial effects caused by natural catastrophes for governments, agricultural intermediaries and rural farmers.



## WHAT HAS BEEN ACHIEVED SO FAR

- ✓ Technological proof of concept (remote sensing, crop modeling, webGIS, smartphone data collection) with promising results in all countries so far (accuracy assessments in the range between 85% and 93% across the different countries based on over 1,300 ground validation points per season).
- ✓ More than 6 million hectares monitored since 2012.
- ✓ Over 50 training courses across six countries with partner countries' ministries, technical implementation partners and partners from the insurance sector.
- ✓ Agreements with national or state-level ministries on the use of the technology in food security policies.
- ✓ Substantial investment from the Philippines government to move to a national scale operational system called PRISM, as well as in-kind investments from all other countries.
- ✓ High impact outputs from 2015 include flood damage assessments in Tamil Nadu (see case study last page), drought assessments in Thailand, typhoon and drought damage assessments in the Philippines as well as regular monitoring outputs on area, seasonality and yield.

## RIICE SUPPORTS ITS PARTNERS IN ALL STAGES OF THE RISK CYCLE

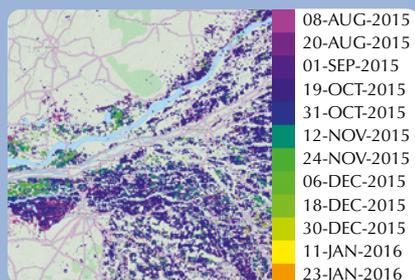


# IMPROVING FOOD SECURITY OF SMALLHOLDERS IN RICE PRODUCTION BY ...

... **reducing vulnerability** caused by natural catastrophes through **disaster loss assessment** and **risk transfer solutions**.

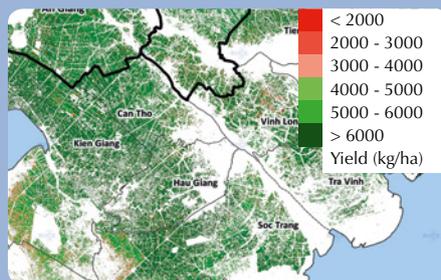
Establish national **rice crop monitoring and information systems** and provide **access to insurance** solutions for governments, agricultural intermediaries and individual rural farmers.

## PRODUCTS OFFERED BY RIICE



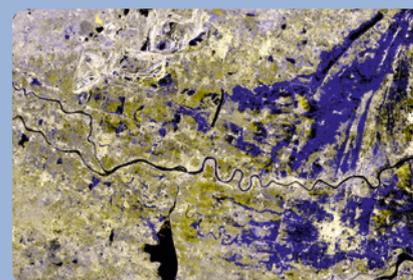
### Area Maps & Seasonality

Start of the Samba season 2015/2016 in Tamil Nadu, India. The map shows if the season is early or delayed as well as the heterogeneity of planting.



### Yield Forecast & Yield Estimation

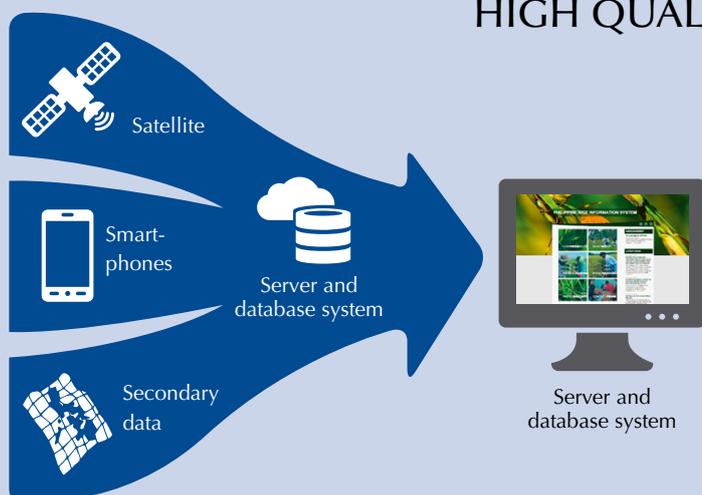
Yield map winter spring season 2015/16 of Mekong River Delta, Vietnam. Yield forecasts during the season and final estimates are the most important variable for food security monitoring and the input variable for crop insurance solutions.



### Flood & Drought Maps

November 2015: Map showing flooded areas of Cuddalore district, Tamil Nadu, India.

## HIGH QUALITY DATA



RIICE is demonstrating how technologies like remote sensing, crop modeling, smartphones and web platforms can revolutionize information on the when, where and how much of rice is grown. RIICE works with **satellite data** derived from the Sentinel-1 space mission, which is carried out by the European Space Agency (ESA). Sentinel-1 provides free radar images of the earth's surface at 12-day intervals. RIICE partners have developed automated processing chains to perform regular large-scale monitoring of rice production. It further uses **secondary data** such as soil, weather, crop management data as input variables. **Smartphones** are used for field-based validations.

## RIICE IMPLEMENTING PARTNERS

To date the project has established partnerships with the following institutions:

### Thailand



Ministry of Agriculture and Cooperatives of Thailand; Thai Rice Department of the Ministry of Agriculture and Cooperatives; Fiscal Policy Office of the Ministry of Finance; Bank of Agriculture and Agricultural Cooperatives; Geo-Informatics Space Technology Development Agency (GISTDA).

### Vietnam



Ministry of Agriculture and Rural Development; National Institute of Agricultural Planning and Projection; Can Tho University; Bao Viet Insurance Corporation.

### India



Department of Agriculture at the Government of Tamil Nadu; Tamil Nadu Agricultural University; Agricultural Insurance Company of India.

### Cambodia



Ministry of Agriculture, Forestry and Fisheries; Department of Planning and Statistics of the Ministry of Agriculture; Cambodia Agricultural Research and Development Institute; Royal University of Agriculture.

### Philippines



Philippine Rice Research Institute; Philippine Insurers and Reinsurers Association.

## CASE STUDY

# RIICE REMOTE SENSING-BASED FLOOD ASSESSMENT HELPS GOVERNMENT OF TAMIL NADU, INDIA IN QUICKLY DIRECTING FLOOD RELIEF MEASURES

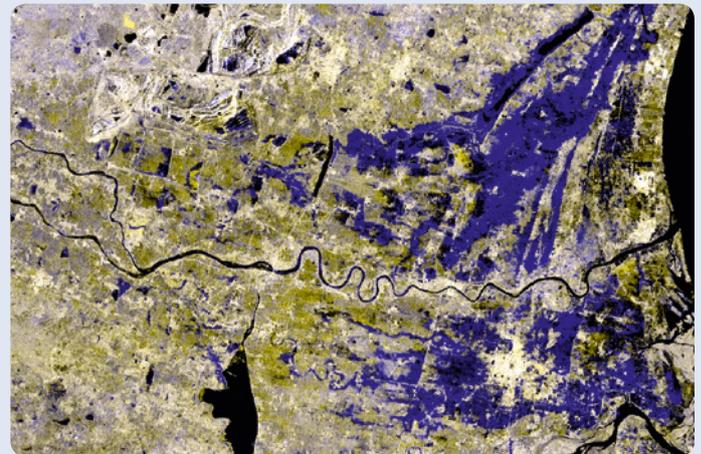


The heavy rain that struck Tamil Nadu in November 2015 lasted for several weeks, causing over 300 fatalities and leaving airports under water and entire stretches of land cut off. The authorities urgently needed to find out who had been worst hit in order to act immediately.

Help was at hand from Tamil Nadu Agricultural University (TNAU), RIICE's implementation partner. TNAU supplied vital information on who had been affected in which areas and in what form, thus helping the authorities to provide carefully targeted assistance.

Just a few days after the heavy rain started, TNAU drew up an initial disaster report for the Chief Secretary to the Government of Tamil Nadu based on high-resolution radar images. Thanks to this information, the government was able to take immediate action.

Farmers in Cuddalore received 50 metric tons of rice seed and 30,000 vegetable seedlings. According to the state government official responsible for coordinating the response, the RIICE report had been 'the main tool to rapidly decide on the provision of relief materials such as input, seeds and seedlings to 400 flood-affected farmers in the district'.



Blue areas indicate flood extent areas in the district of Cuddalore, Tamil Nadu Province, India as of 12th November 2015. Overall over 20,000 ha were flooded.

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