IFAS
Integrated Flood Analysis System
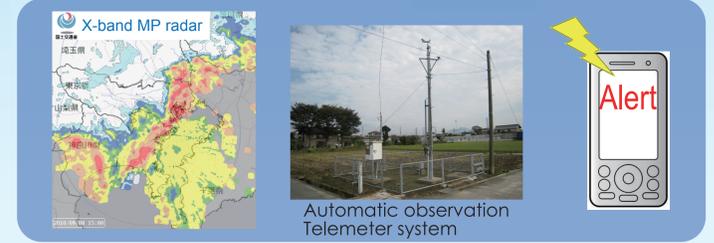## −To mitigate flood damage in insufficiently gauged basins−

Recent water-related disasters

May 2008 Myanmar

Sep 2009 Philippines

Image source: http://globalbalita.com/2009/09/29/typhoon-ondoy-update-and-pictures/

Jul 2010 Pakistan

Image source: http://www.boston.com/bigpicture/2010/08/severe_flooding_in_pakistan.html

Water-related disaster damage has been increasingly worsening in recent years. One of the most critical factors behind this is that flood forecasting and warning systems are not properly developed in some countries due to lack of financial resources and rainfall data. ICHARM has developed IFAS to help such countries with flood damage reduction. IFAS allows users, even with limited funding and data, to easily construct an efficient, effective system for flood forecasting and warning.
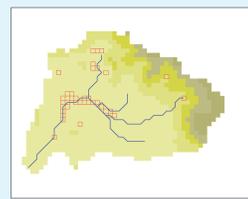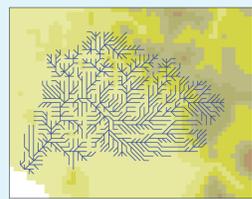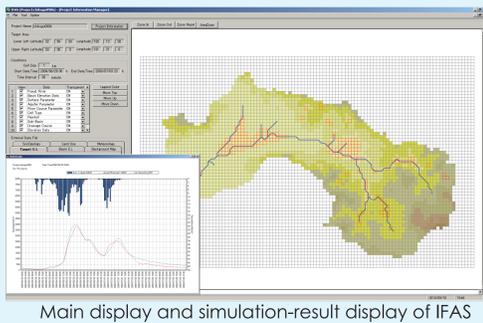
Japan

X-band MP radar

Automatic observation
Telemeter system

Alert

Insufficiently gauged basins

Rainfall observation by hand
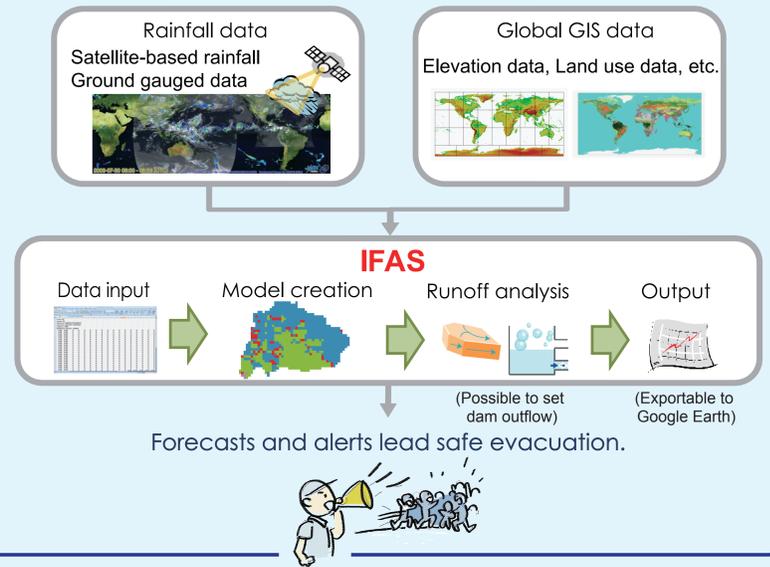
Houses built along a river

Main features of IFAS

1. IFAS can use both ground and satellite rainfall data.
2. IFAS can use GIS data available at no cost for model and parameter settings.
3. IFAS can handle everything from data acquisition to runoff simulation to result display, once installed in a computer with internet access.
4. IFAS can be downloaded free of charge from ICHARM website.

Flow of IFAS application

Rainfall data
Satellite-based rainfall
Ground gauged data

Global GIS data
Elevation data, Land use data, etc.

IFAS

Data input → Model creation → Runoff analysis → Output

(Possible to set dam outflow)

(Exportable to Google Earth)

Forecasts and alerts lead safe evacuation.

Main display and simulation-result display of IFAS

Flow direction generation
(Flow direction is determined at each cell;
then, the basin boundary is generated.)

Basin boundary and
pseudo river-channel generation
(The topography of red cells is automatically corrected for flow direction generation.)

Utilization of IFAS

Utilization of IFAS as a training tool

IFAS training was provided for over 1,000 participants from about 50 countries (2007-2017).

IFAS training for ASEAN countries (JICA/AHA center, October 5-9, 2015 in Jakarta)

Recent IFAS training

Country	Date	Organizer
Cambodia	2016 May	JAXA
Egypt	2015 December	UNESCO
Indonesia	2015 October	JICA
Malaysia	2015 September	JST-JICA SATREPS
Vietnam	2015 April	JICA
Myanmar	2014 June	JAXA UNESCO

Indus IFAS (flood forecasting system based on IFAS & RRI, UNESCO Pakistan project, 2012-Present)

IFAS :
Rainfall runoff in upper Indus

RRI（Rainfall−Runoff−Inundation）model :
Inundation in lower−middle Indus

Combination of IFAS and RRI

User friendly display of Indus−IFAS

Control panel
(operation settings)

Hydrographs

Plane view (rainfall, runoff, inundation)

IFAS

Inundation

RRI

Flood forecasting system covering the most part of Indus basin

KML Exporter

Export of KML format data

A KML file is an XML type text file format displayable on Google Earth

ICHARM will improve the system continuously to make it more user−friendly software and contribute to flood mitigation at local communities.

IFAS software is downloadable free of charge from the following website
http://www.icharm.pwri.go.jp/research/ifas/index.html