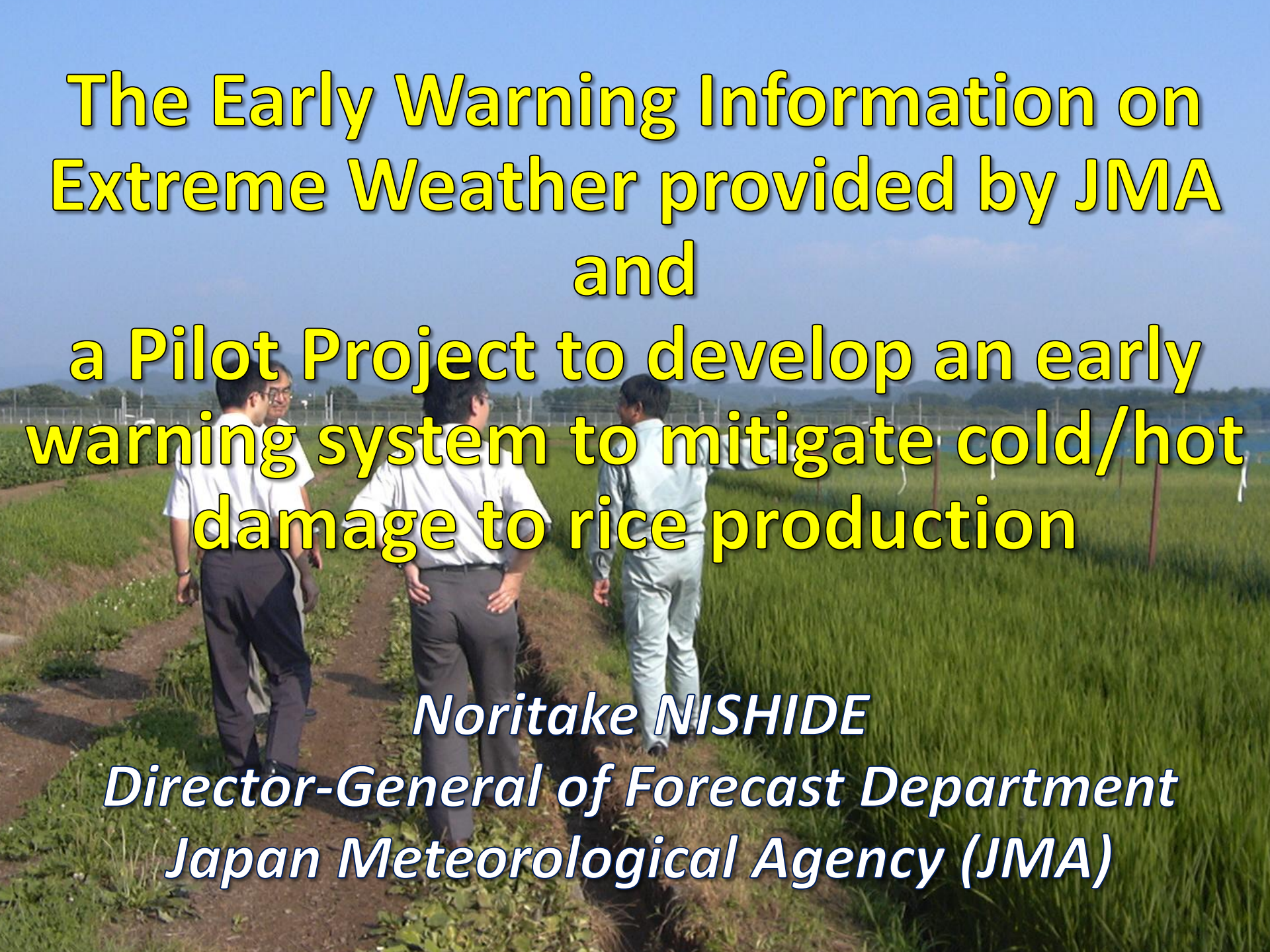
The Early Warning Information on Extreme Weather provided by JMA and a Pilot Project to develop an early warning system to mitigate cold/hot damage to rice production



Noritake NISHIDE
Director-General of Forecast Department
Japan Meteorological Agency (JMA)

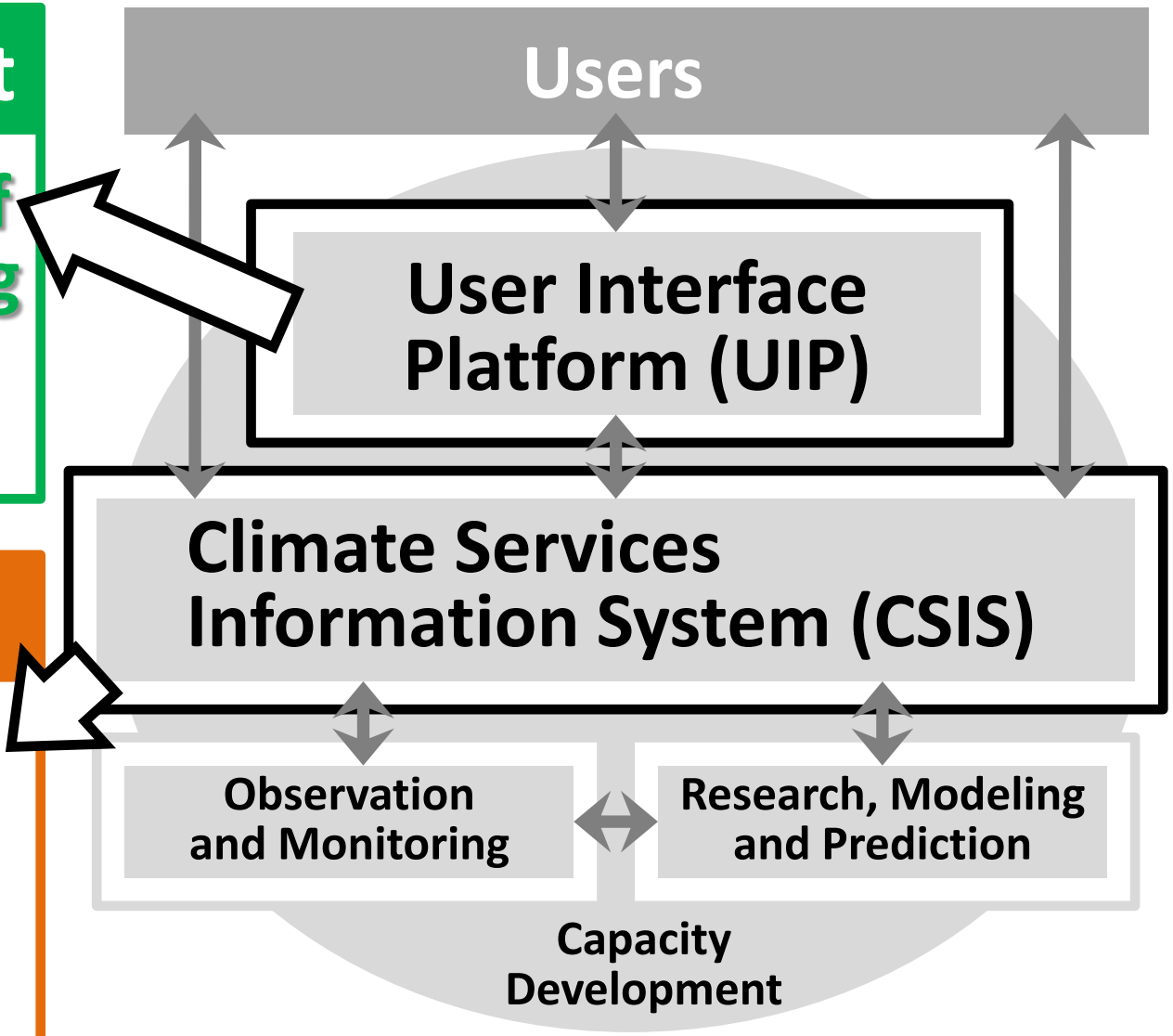
Introduction

2. Pilot Project

Development of an early warning system for agriculture

1. EWE

Early Warning Information on Extreme Weather



GFCS five pillars and their links to users

Introduction

2. Pilot Project

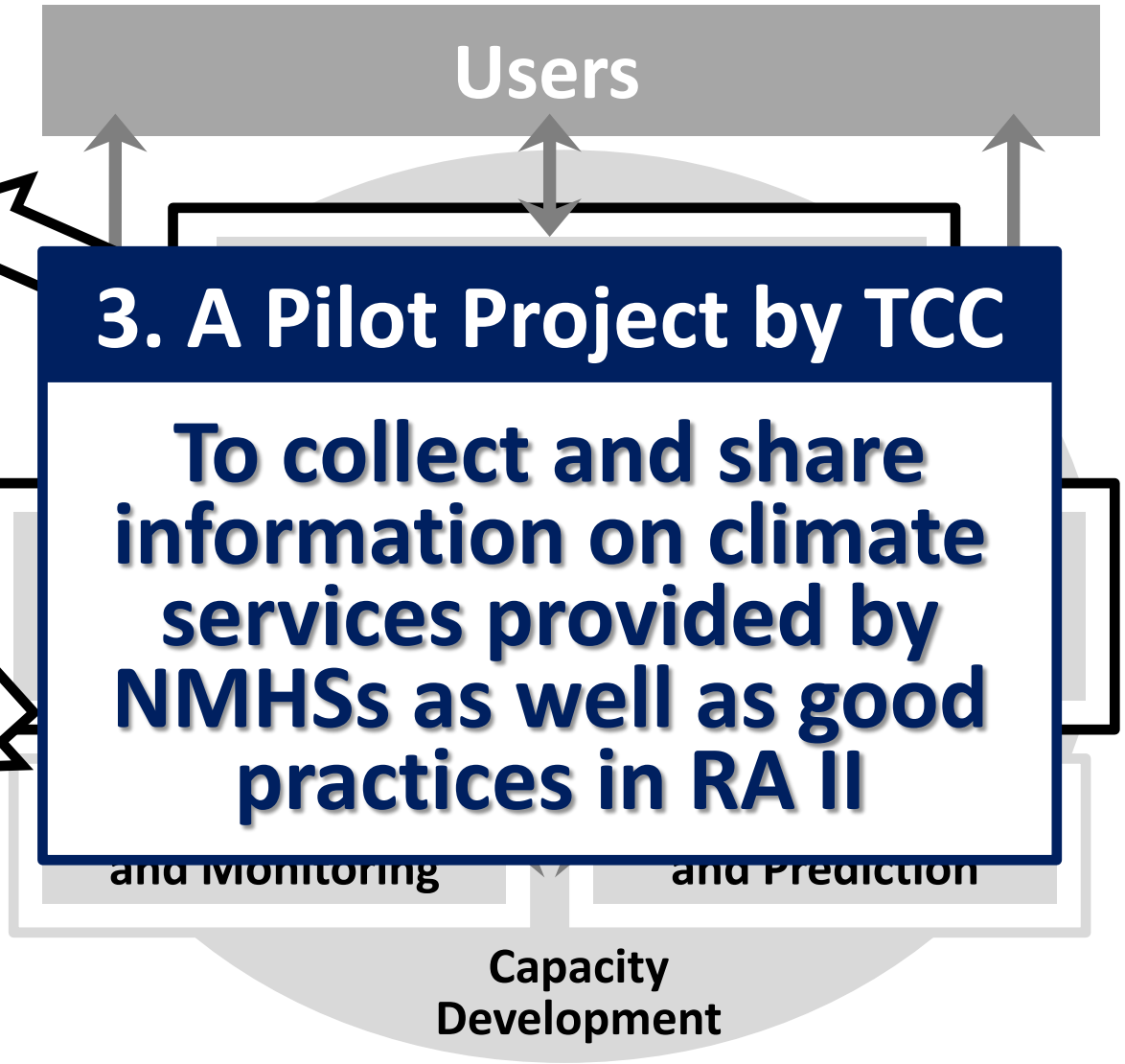
Development of an early warning system for agriculture

1. EWE

Early Warning Information on Extreme Weather

3. A Pilot Project by TCC

To collect and share information on climate services provided by NMHSs as well as good practices in RA II

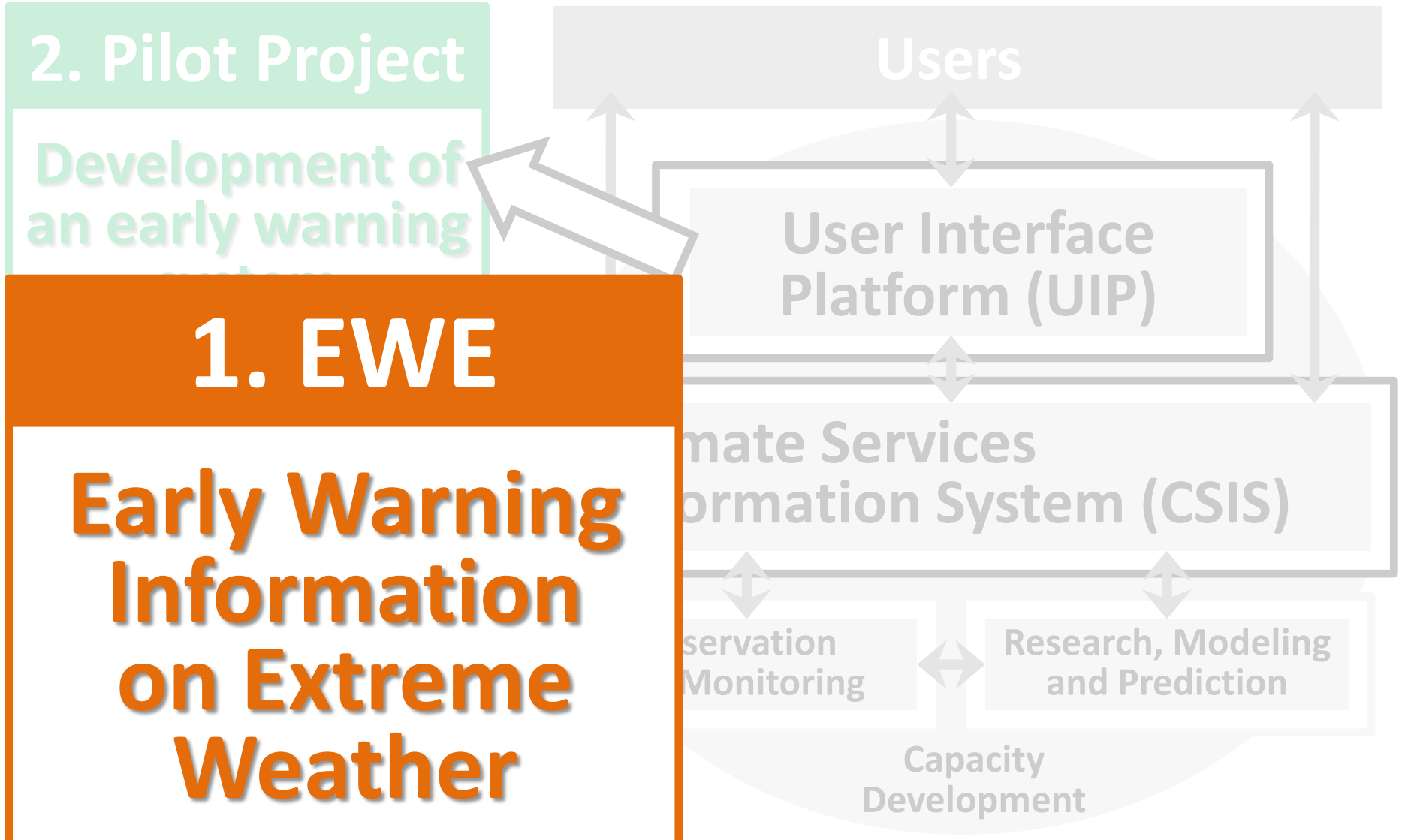


GFCS five pillars and their links to users

Introduction

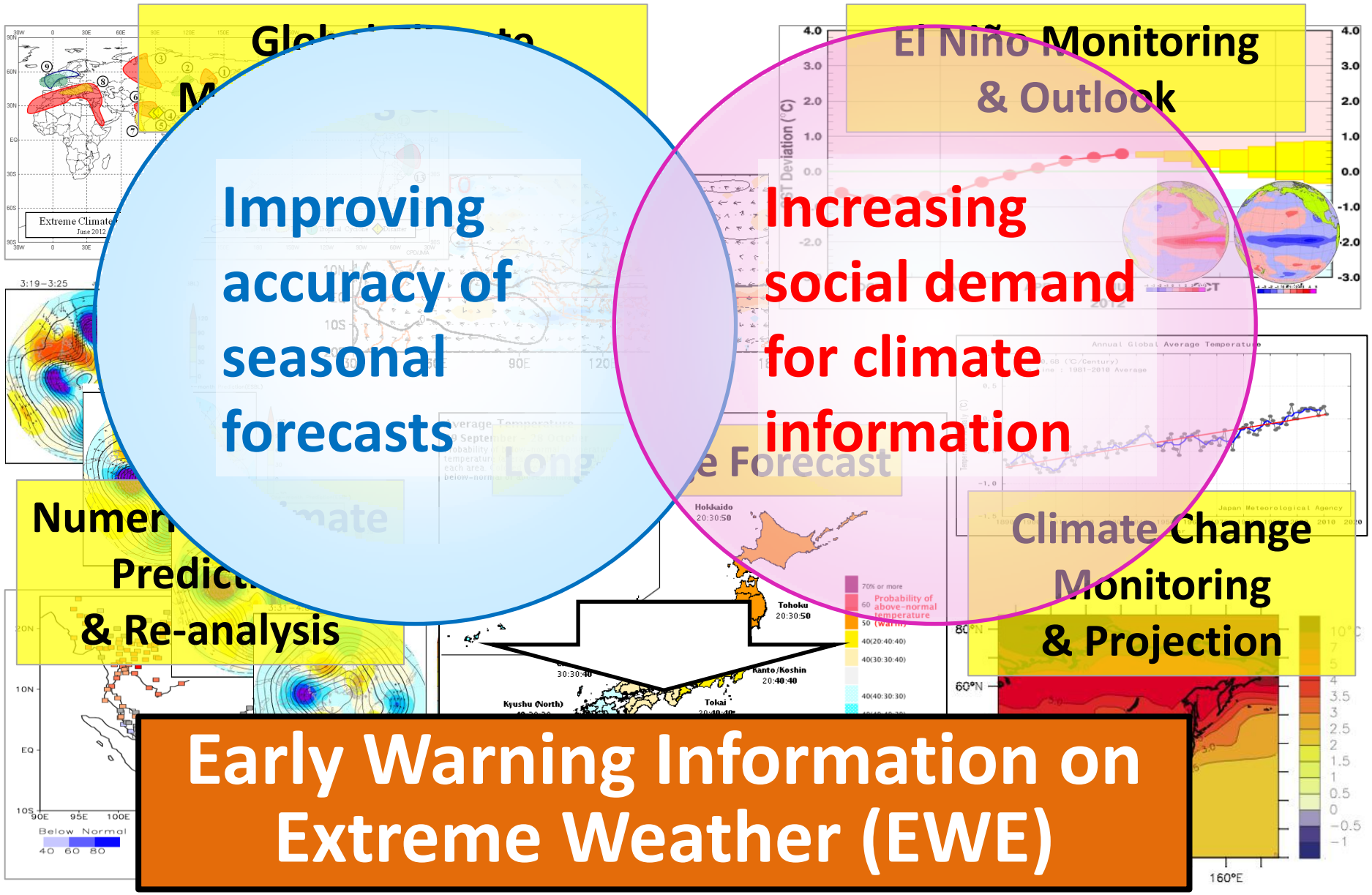
1. EWE

Early Warning Information on Extreme Weather



GFCS five pillars and their links to users

Background for EWE



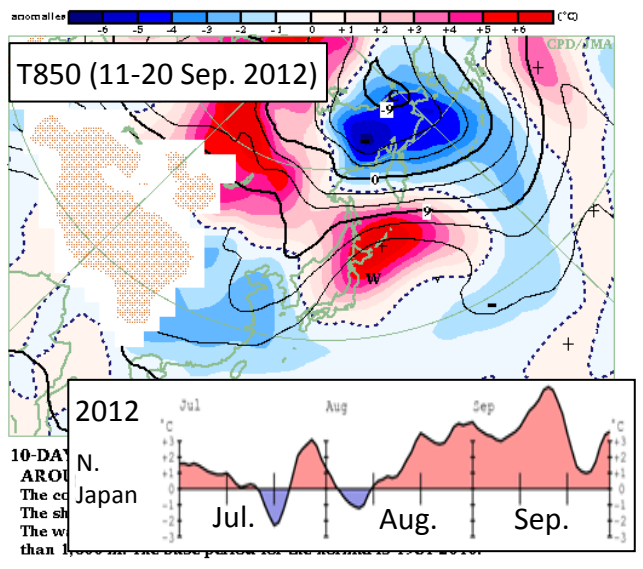
Early Warning Information on Extreme Weather

date	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Tu	Wd	Th	Fr	Sa	Su	Mn	Tu	Wd	Th	Fr	Sa	Su	Mn	Tu

Issue

Weekly forecast

Heat wave

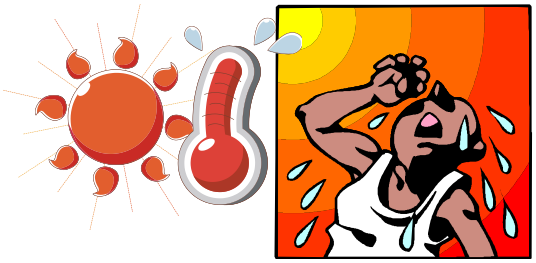


Early Warning Information on Extreme Weather (EWE)

- Persistent **Heat wave** & **Cold spell** -

Users can take actions for preparedness to mitigate adverse impacts by extremely high/low temp.

Application of EWE in Energy sector



EWE

Expected **T average**
for the week after next

(Statistical relation)

Expected **T maximum**
for the week after next

Provider

JMA

User

ANRE*

Electric Power Companies

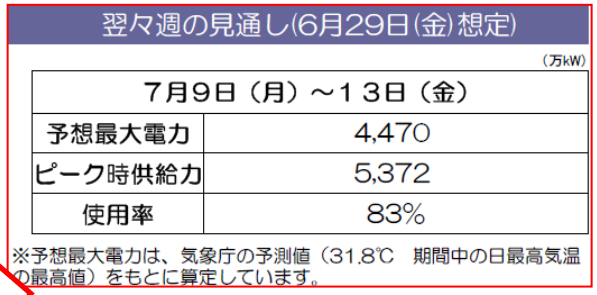
Application

Electricity demand forecast
for the week after next

* the Agency for Natural Resource and Energy of Japan

Application of EWE in Energy sector

In summer 2012, electric power companies in Japan issued **Electricity Demand Forecast** for their responsible areas, and called people **to save electricity**.


翌々週の見通し(6月29日(金)想定)

(万kW)

7月9日（月）～13日（金）	
予想最大電力	4,470
ピーク時供給力	5,372
使用率	83%

※予想最大電力は、気象庁の予測値（31.8℃　期間中の日最高気温の最高値）をもとに算定しています。

Electricity Demand-Supply Outlook for the Week after Next (As of Friday, June 29)

(x 10 MW)

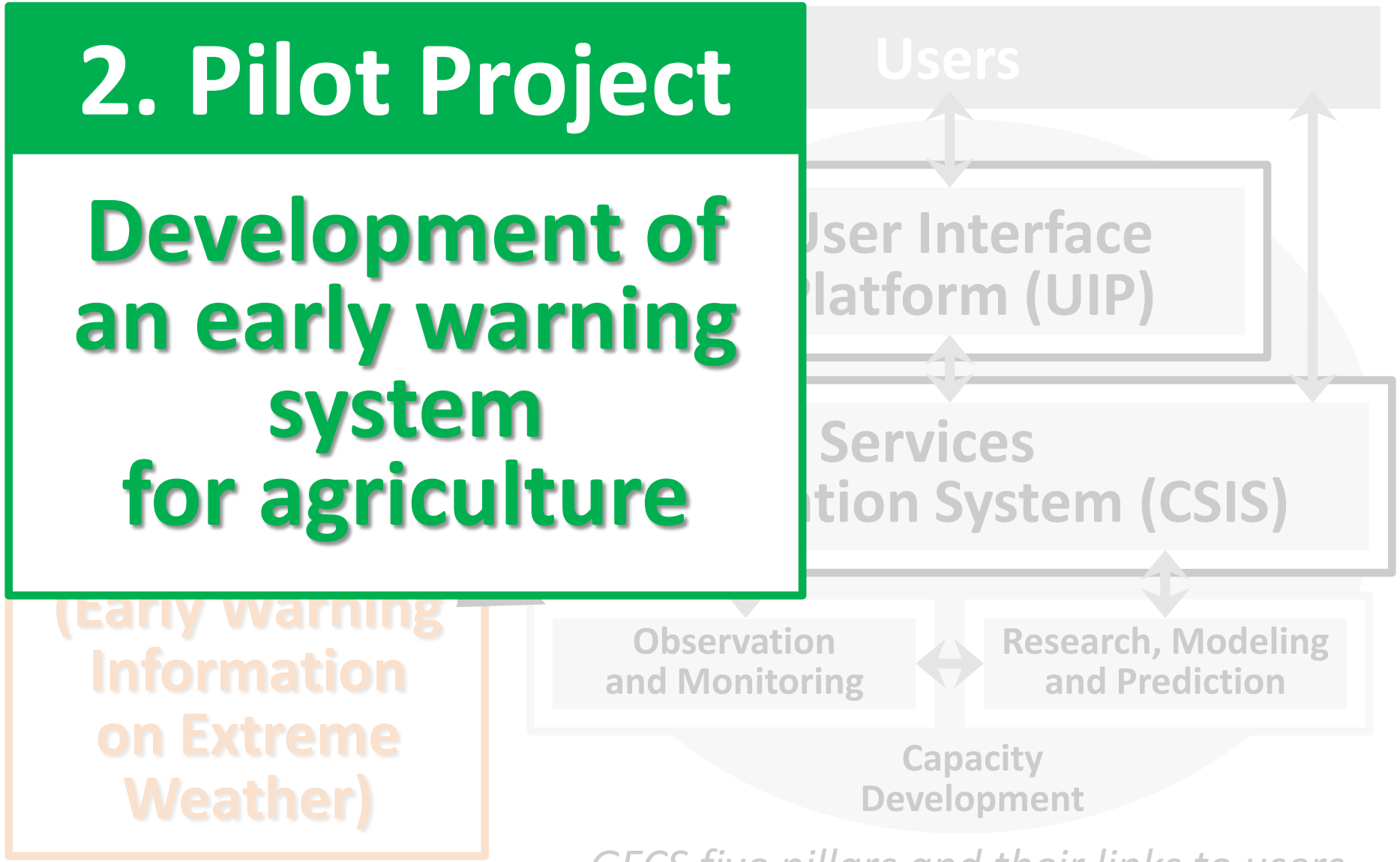
Monday, July 9 – Friday, July 13	
Max. demand forecast	4,470
Max. supply capacity	5,372
Consumption rate	83%

* The maximum power demand outlook is calculated based on the forecast provided by the Japan Meteorological Agency.

Introduction

2. Pilot Project

Development of an early warning system for agriculture



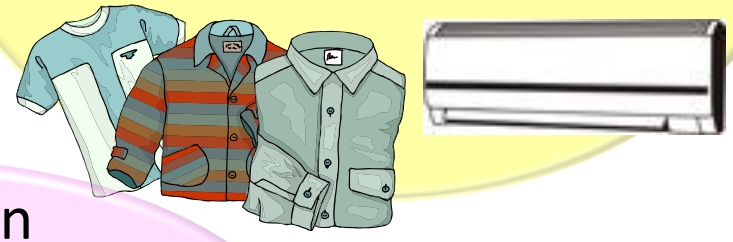
GFCS five pillars and their links to users

Climate risk impacts on various fields

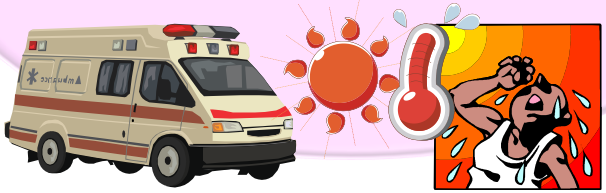
JMA is making efforts to find best practices to use climate information in various fields.

Impacts on
Agricultural products
- Cold/heat waves hinder the growth of agricultural products.
- Heavy rainfall or drought causes destruction of crops.

Impacts on
Retail selling
- Cold/heat waves damage the selling of clothes and electric appliances.



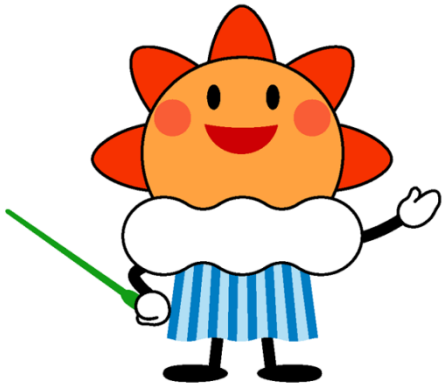
Impacts on
Human Health
- Heat waves increase the risk of heat stroke.



And so on…

A pilot project for agriculture: rice production

Impacts on
Rice production
- Cold/hot summer conditions cause damage to rice.



Collaboration!

Provider

JMA

User/Intermediary

Agricultural Research Institute (NARO/TARC*)

* National Agriculture and Food Research Organization/Tohoku Agricultural Research Center

Key processes of Pilot Project

1. Dialogue & Sharing knowledge

2. Joint technology development

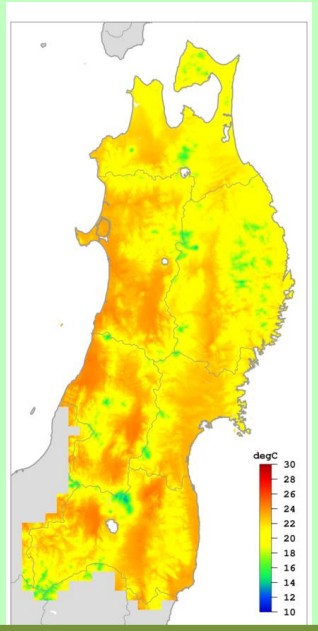
3. Spread of best practices

Joint Technology Development

Dialogue & Sharing knowledge

Making 7-day mean temp.(T7d) prediction at **a 1-km resolution up to two weeks ahead**

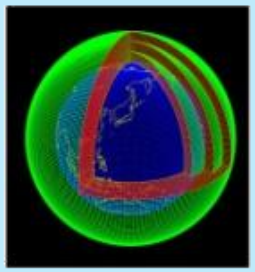
Agricultural Research Inst.



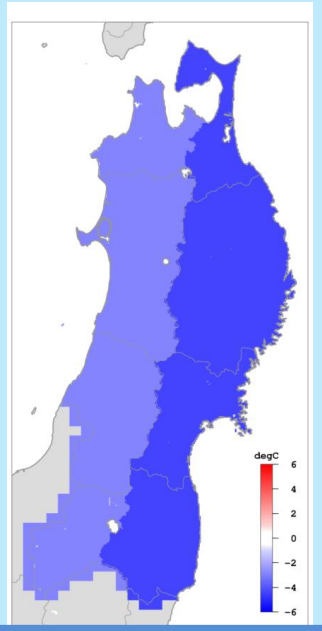
Climatological normal of T7d **(1km-resolution)**

+

JMA



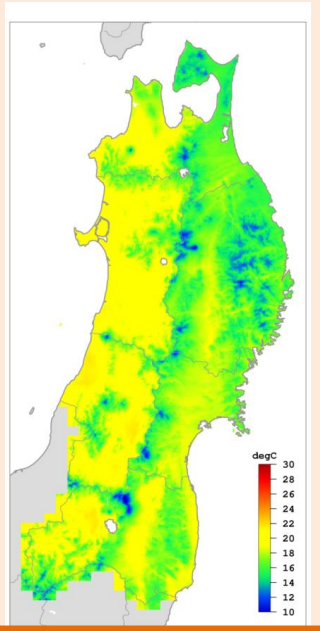
Numerical Weather Prediction



Mean value of predicted T7d anomalies (regional-scale)

=

New Product



Mean value of predicted T7d **(1km-resolution)**

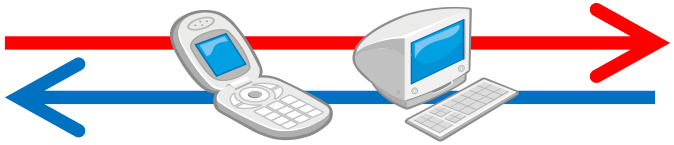
Tailoring and experimental provision

•The agricultural research institute (NARO/TARC) **tailors** temperature prediction to **customized information for agriculture**.

•Farmers can **view the information** for their registered points **on the Internet** and **receive an alert by e-mail**.

Agricultural Research Institute (NARO/TARC)

Tailored climate information



Feedback by questionnaire survey

Farmers

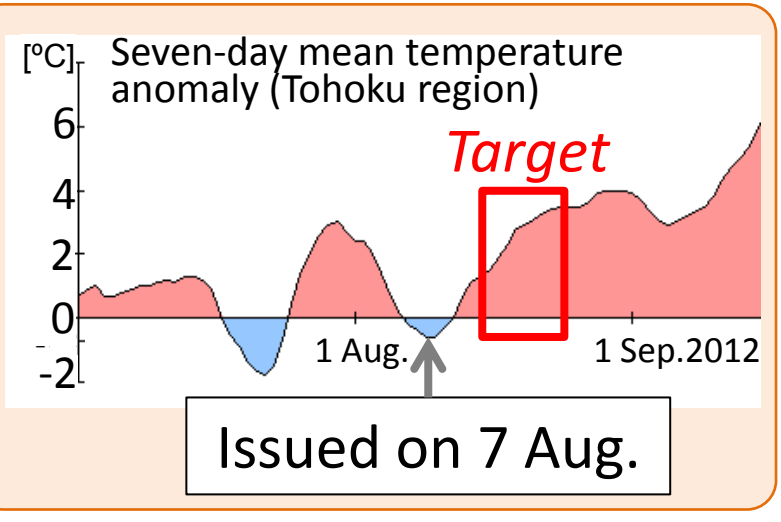
Action!

* In collaboration with the Faculty of Software and Information Science at Iwate Prefectural University (IPU)

Tailoring and experimental provision

- On 7 Aug., 2012, predicted **probability of temperatures of ≥ 27 °C was 57%** during the period from 15 to 21.

- The agricultural research institute called farmers **to take countermeasures controlling water depth in their rice fields** to avoid poor grain filling in rice crops.

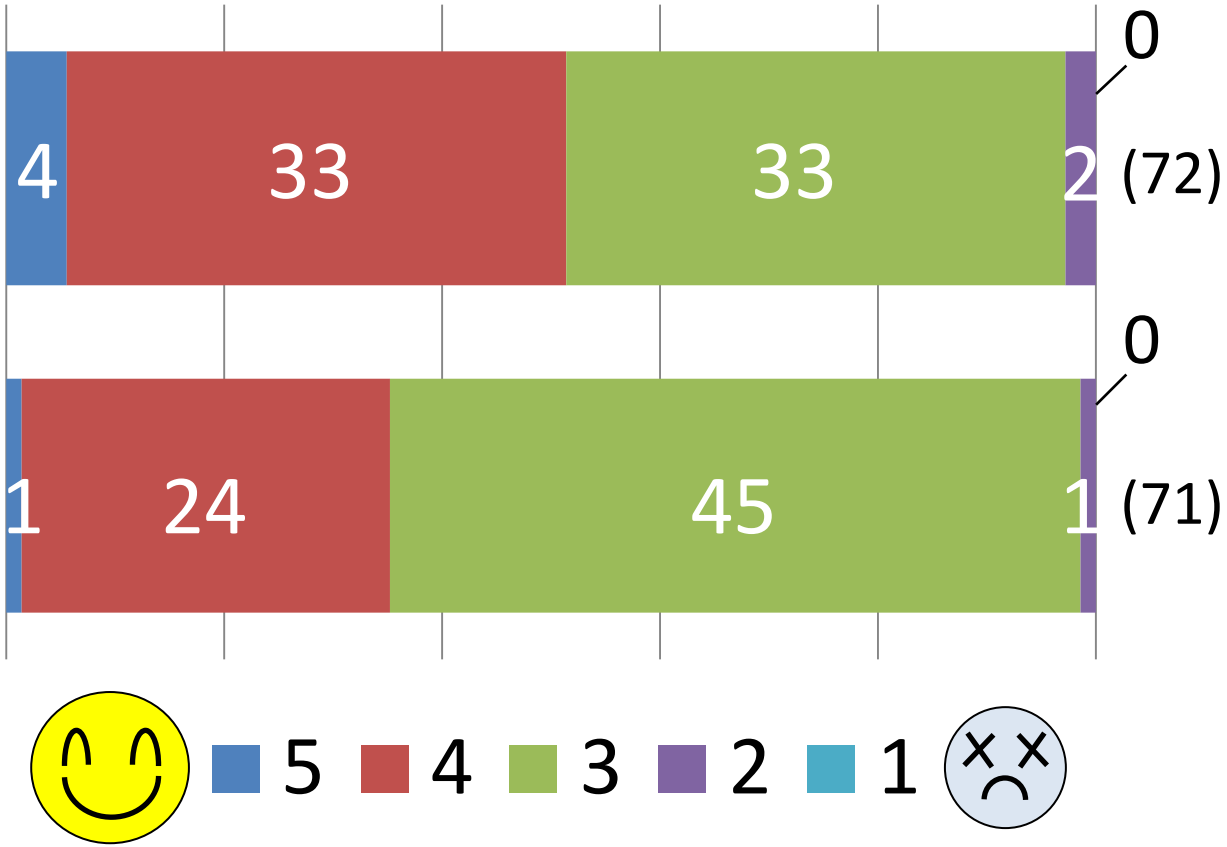


Feedback by questionnaire survey

Based on the questionnaire survey in 2011, it has been clarified that the provision of tailored climate information offers **potential benefits to farmers**.

*- Do you think whether the provided information was **useful** for your activities to take countermeasures or not?*

*- Do you think whether the provided information had **appropriate accuracy** of prediction or not?*



Questionnaire survey
by e-mail (Nov. 2011)
- distributed to the 154 users
- 89 replies were received.

< Regarding predicted probability of **alarming temperature** >

Introduction

3. A Pilot Project by TCC

To collect and share information on climate services provided by NMHSs as well as good practices in RA II

Capacity Development

GFCS five pillars and their links to users

Tokyo Climate Center as an RCC in RA II

➢TCC serves as a WMO Regional Climate Center in the RA II.
➢TCC supports NMHSs through data/information provision and capacity development activities.

Tokyo Climate Center (TCC)

● Provision of climate data and information via the Internet

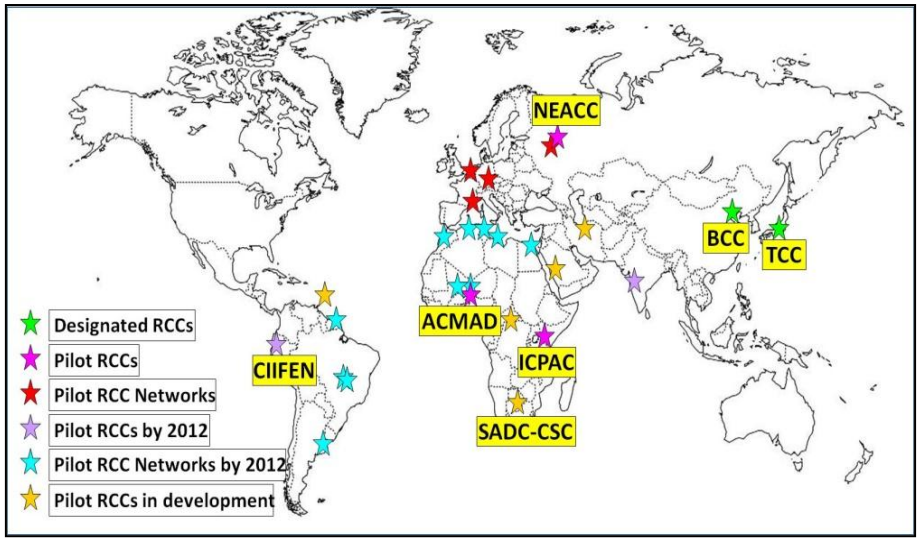
- Seasonal forecasts
- Global warming
- Report on extreme events
- Climate monitoring
- Climate system analysis
- Reanalysis data

● Capacity Development

- Training seminar
- Expert visit

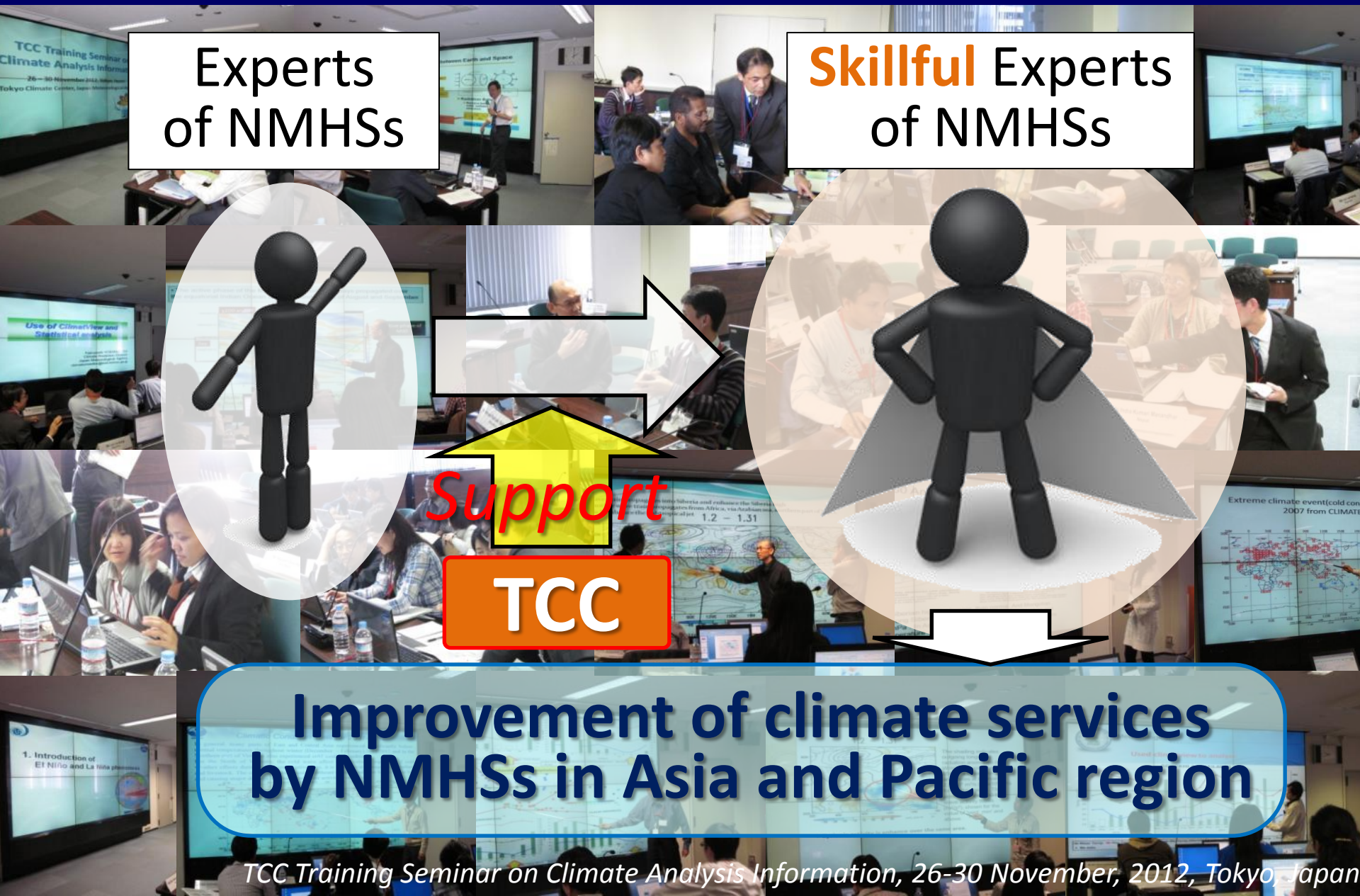
NMHSs in Asia
- Provision of climate information using TCC data based on national requirements

- Natural disaster reduction
- Food security
- Water management



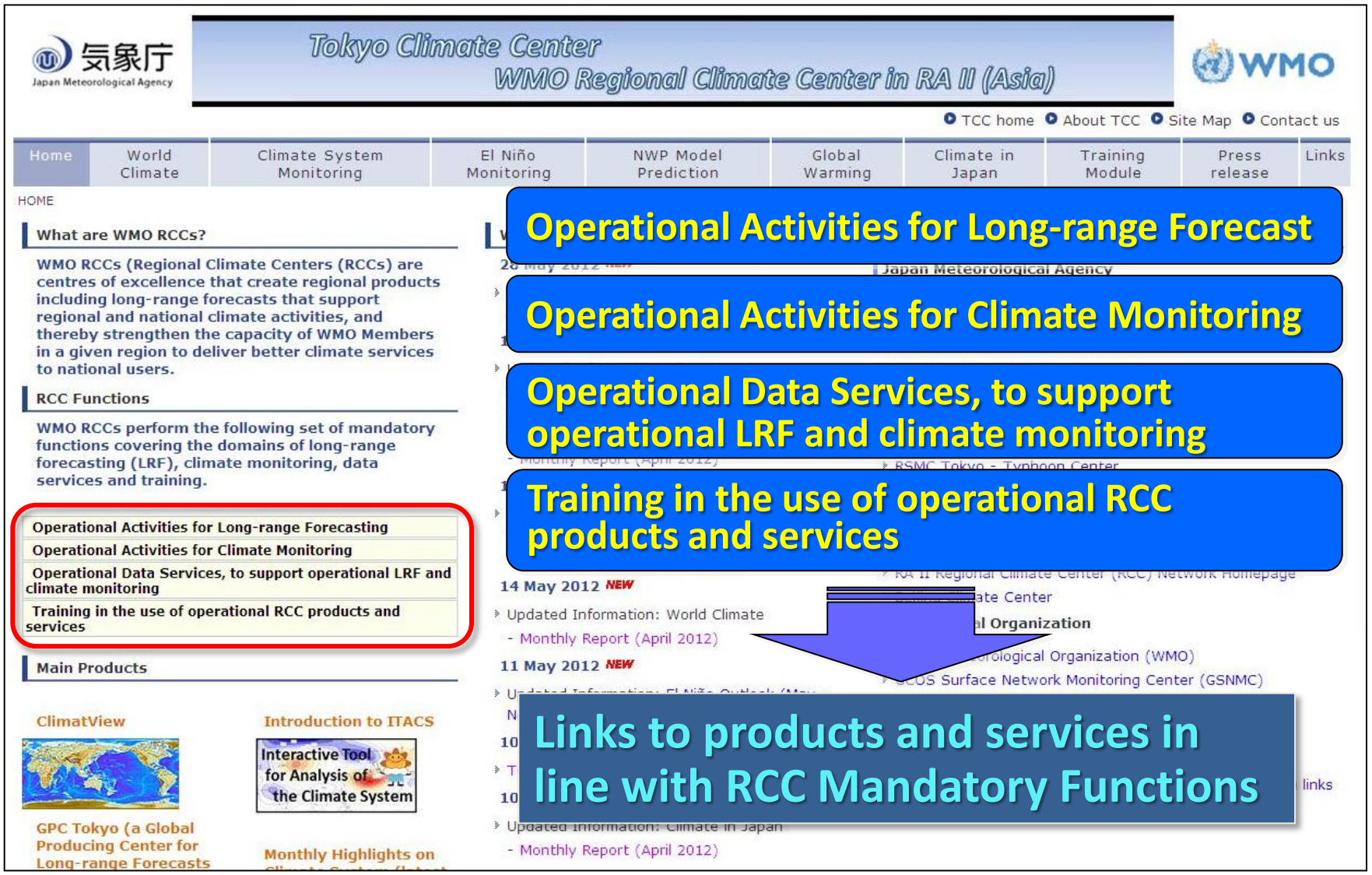
Current status of establishment of RCC
TCC and BCC were designated as RCCs in RA II in 2009.

Capacity Development by TCC

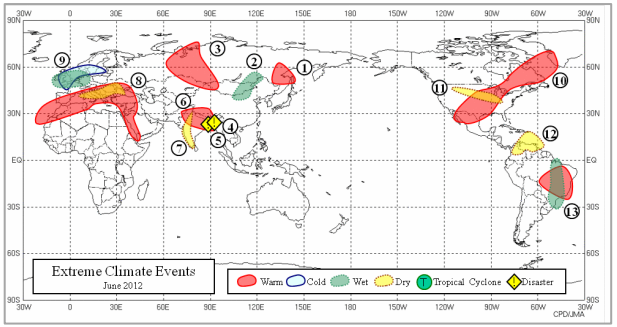


Tokyo Climate Center website

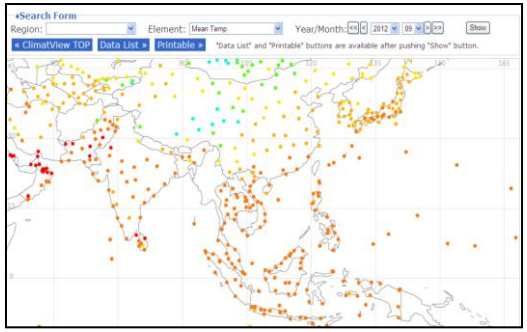
http://ds.data.jma.go.jp/tcc/tcc/index.html



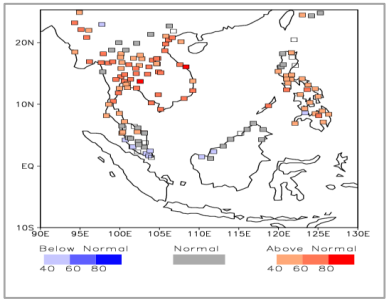
Examples of Climate information, data and products provided through the TCC website



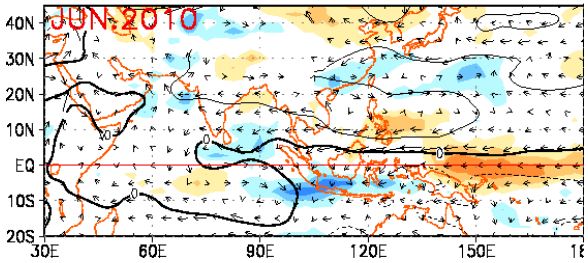
Monitoring of Extreme Climate Events



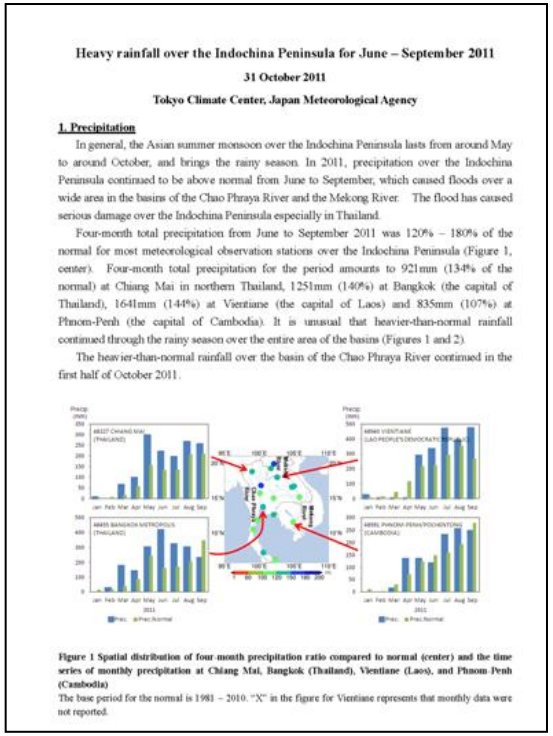
Climate database



One-month Probabilistic Forecast for Southeast Asia



Asian Monsoon Monitoring



Heavy rainfall over the Indochina Peninsula for June – September 2011

31 October 2011

Tokyo Climate Center, Japan Meteorological Agency

1. Precipitation

In general, the Asian summer monsoon over the Indochina Peninsula lasts from around May to around October, and brings the rainy season. In 2011, precipitation over the Indochina Peninsula continued to be above normal from June to September, which caused floods over a wide area in the basins of the Chao Phraya River and the Mekong River. The flood has caused serious damage over the Indochina Peninsula especially in Thailand.

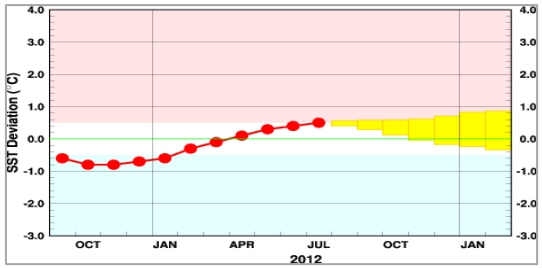
Four-month total precipitation from June to September 2011 was 120% – 180% of the normal for most meteorological observation stations over the Indochina Peninsula (Figure 1, center). Four-month total precipitation for the period amounts to 921mm (134% of the normal) at Chiang Mai in northern Thailand, 1251mm (140%) at Bangkok (the capital of Thailand), 1641mm (144%) at Vientiane (the capital of Laos) and 835mm (107%) at Phnom-Penh (the capital of Cambodia). It is unusual that heavier-than-normal rainfall continued through the rainy season over the entire area of the basins (Figures 1 and 2).

The heavier-than-normal rainfall over the basin of the Chao Phraya River continued in the first half of October 2011.

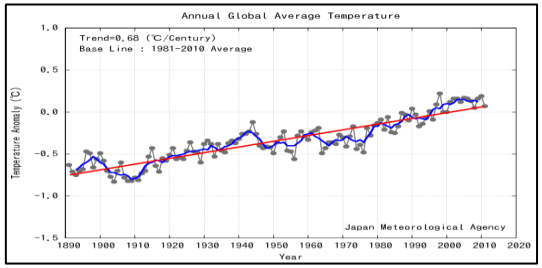
Figure 1 Spatial distribution of four-month precipitation ratio compared to normal (center) and the time series of monthly precipitation at Chiang Mai, Bangkok (Thailand), Vientiane (Laos), and Phnom Penh (Cambodia)

The base period for the normal is 1981 – 2010. "X" in the figure for Vientiane represents that monthly data were not reported.

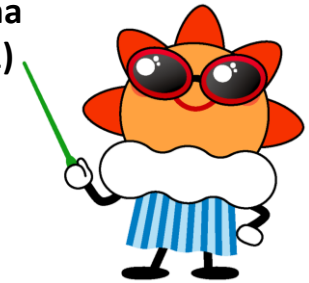
Report on extreme climate event (Heavy rainfall over the Indochina Peninsula in 2011)



El Niño outlook



Global Average Surface Temperature Anomalies



Launch of a pilot project by TCC

To collect and share information on climate services provided by NMHSs as well as good practices in RA II in the application of climate information to various fields, such as agriculture and water management.

Sharing lessons learned and best practices among NMHSs

-to develop projects and improve climate services by NMHSs
-to avoid duplication and minimize the risk of failure

Images of pilot project webpage to be developed by TCC


Thank you