Future prospect of the Platform
(expectations and needs for the platform)

1. Early Warning: rainfall, flooding, landslide
2. Climate Change Impact Assessment and Adaptation Planning
3. Economic Effect of Disasters
4. Contingency Planning

2. End to End Approach on Climate Change Adaptation

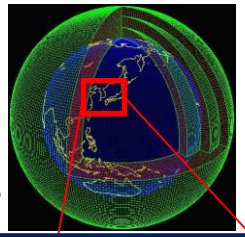
SOUSEI Program for Risk Information on Climate Change
気候変動リスク情報創生プログラム

Research on Climate Change Impact (SOUSEI Program)

SOUSEI Program

Fund: Ministry of Education, Culture, Sports, Science and Technology, Japan
Period: July 2012-March 2017
Target: 5 Asian river basins (Pampanga, Solo, Lower Mekong, Chao Phraya, Indus)

GCM



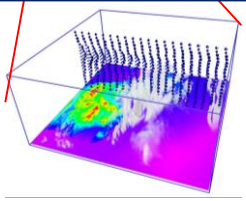
MRI-AGCM 3.2S

Climate experiment data by GCM (Global Climate Model)

Present Climate Experimental Data (1979-2003) :1 pattern

Future Climate Experimental Data (2075-2099) :4 patterns (MME, C1, C2, C3)

Regional model



Dynamic downscaling

Basin scale rainfall information

Hazard Assessment using hydrological model (IFAS / RRI/ BTOP)

Flood inundation analysis

Long-term discharge analysis with dam operation

Inundation area, depth, duration

Possible water supply volume

Damage function

Harvest yield per unit area, Gate price

Harvest yield per unit area, Gate price

Risk Assessment (Socio economic impact assessment)

Flood Risk Assessment

Agricultural economic loss, Affected population

Drought Risk Assessment

Possible irrigation area, Predicted harvest amount

2. End to End Approach on Climate Change Adaptation

Schematic of flood risk assessment for agricultural economic loss (Rice production)

SOUSEI Program for Risk Information on Climate Change
気候変動リスク情報創生プログラム

Present Climate

344.8

48-hour rainfall (mm) for 100-year return period

increased by 161 %

Future Climate

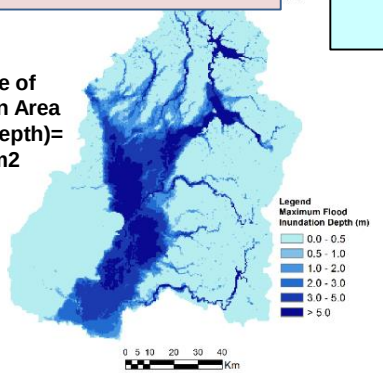
556.5

Present Climate

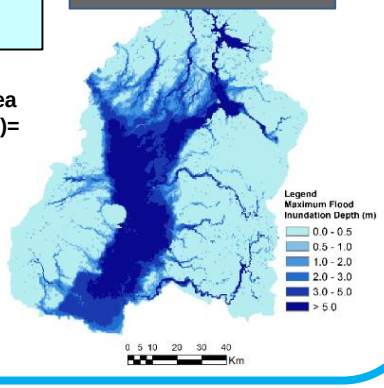
Maximum inundation Area (worst case)

Future Climate

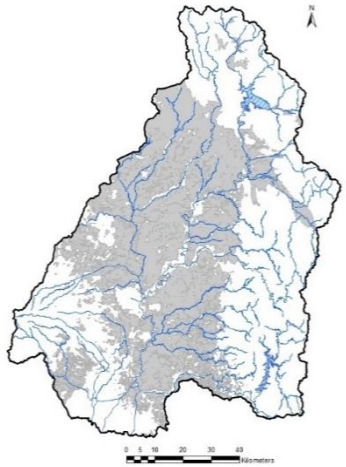
Composite of Inundation Area (>50 cm depth)= 3,661.2 km2



Composite of Inundation Area (>50 cm depth)= 4,376.6 km2



increased by 20 %



Paddy field area (Global data)

Value of farm gate price (17 Peso/kg)

Rice yield (4360 kg/ha)

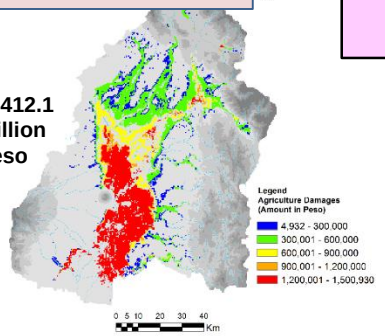
Damage function for rice production (ICHARM developed)

Present Climate

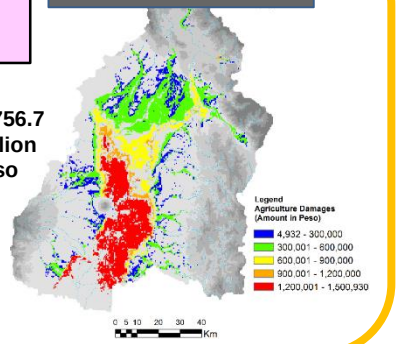
Agricultural economic loss

Future Climate

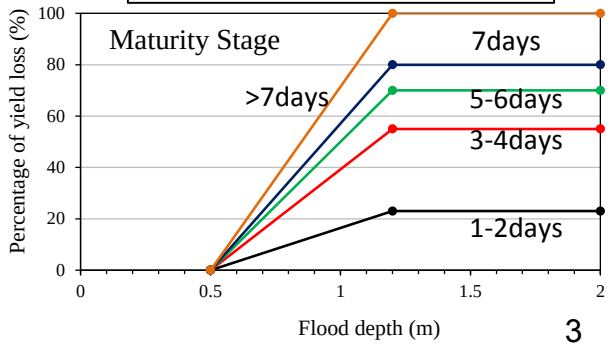
8,412.1 million Peso



8,756.7 million Peso



increased by 4 %



3. Economic Effects of Disasters

(1) Effects on Supply Side (Production)

L= Labor

Kp = Private Capital

Kg = Infrastructure

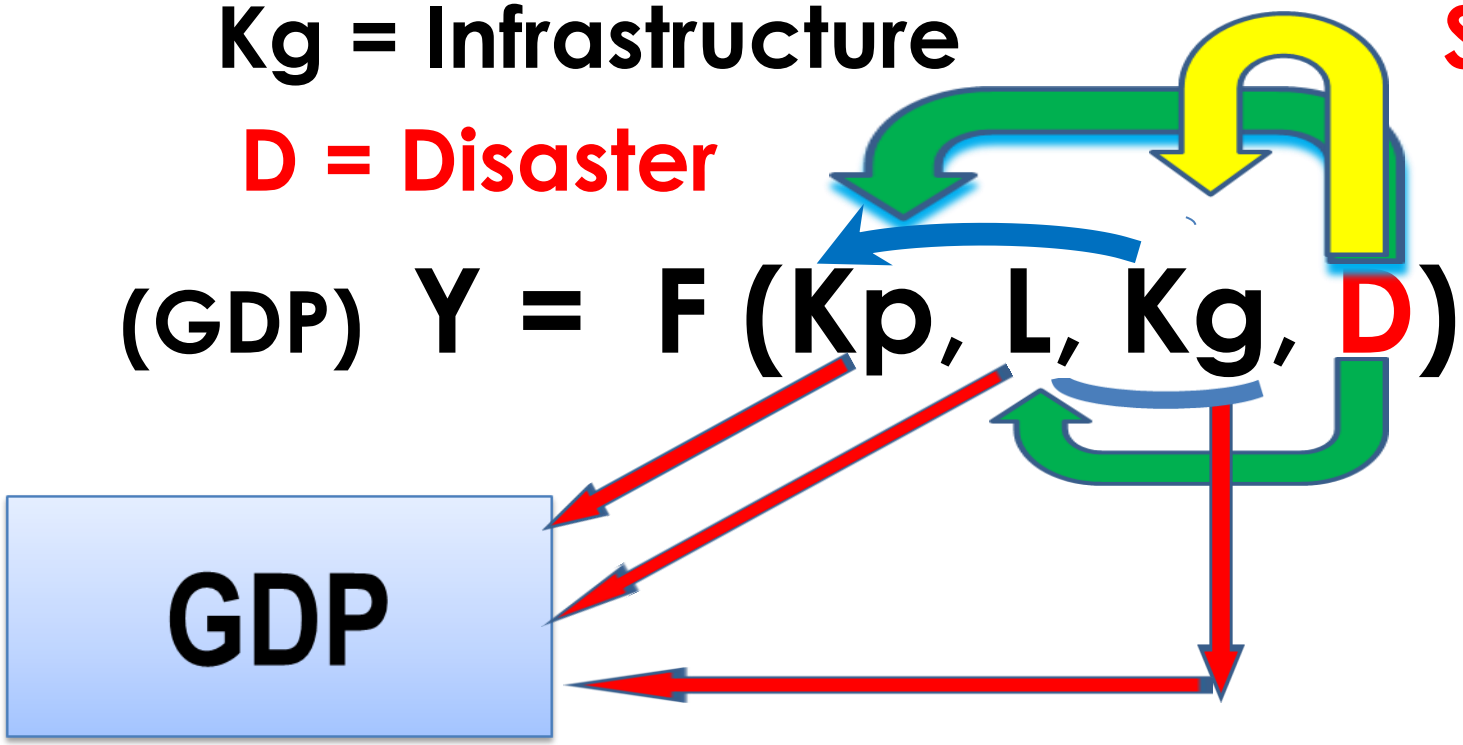
D = Disaster

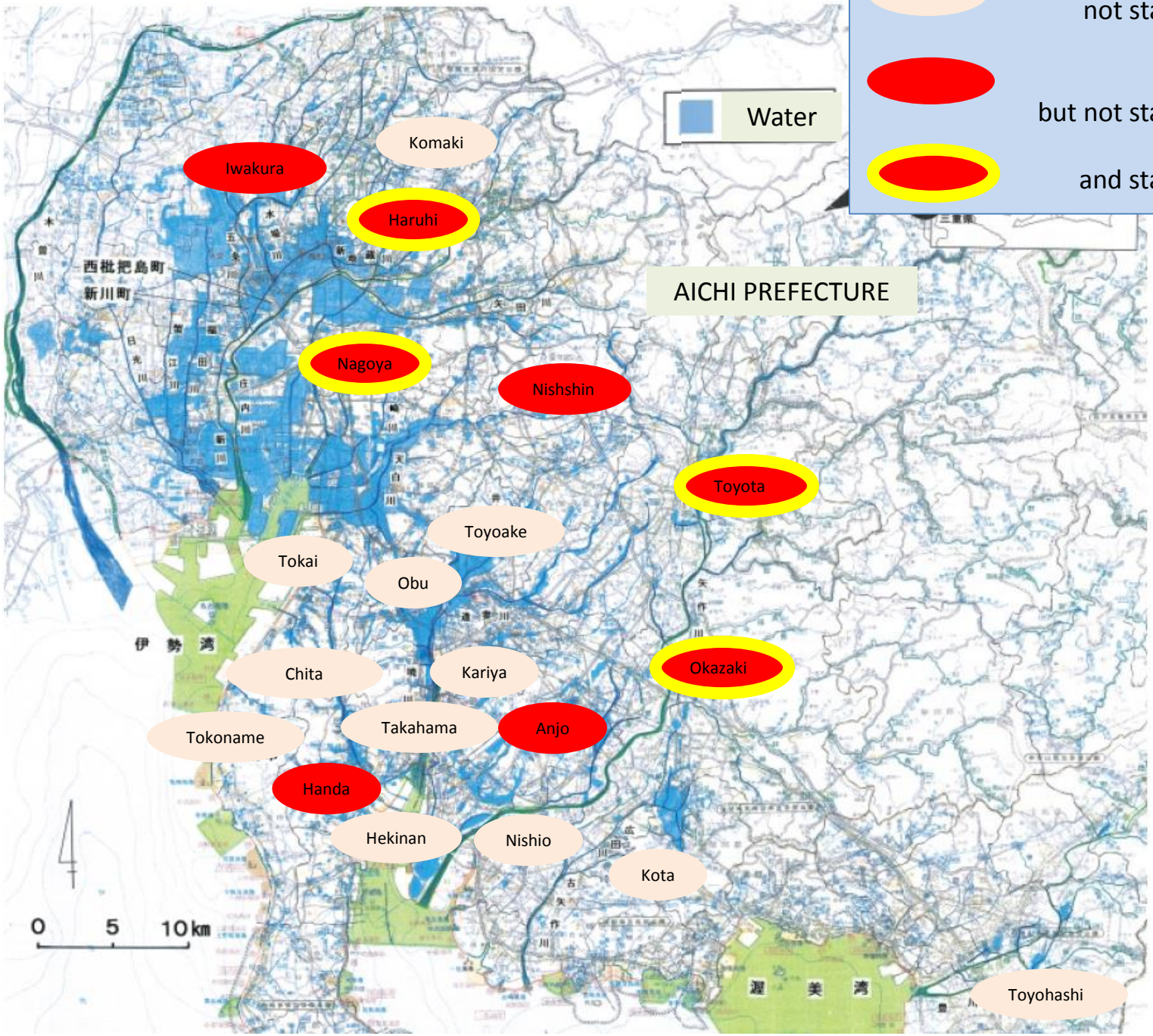
Agriculture

Manufacture

Service

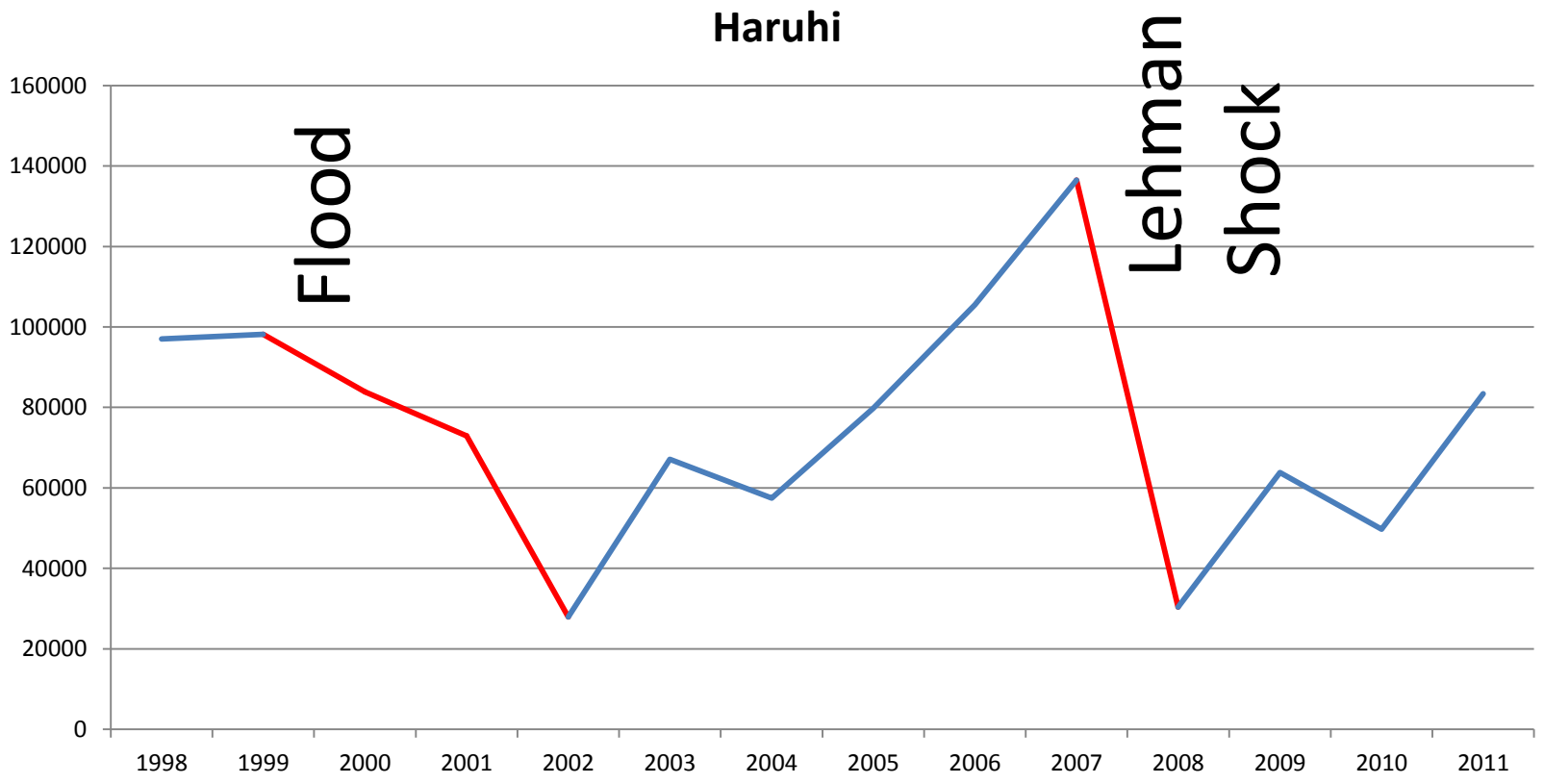
(GDP) $Y = F(Kp, L, Kg, D)$




Not "U" type dynamics,
not statistically significant
U" type dynamics,
but not statistically significant
"U" type dynamics
and statistically significant
Water
AICHI PREFECTURE
Komaki
Iwakura
Haruhi
西枇杷島町
新川町
Nagoya
Nishshin
Toyota
Toyoake
Tokai
Obu
伊勢湾
Chita
Kariya
Okazaki
Takahama
Anjo
Tokoname
Handa
Hekinan
Nishio
Kota
0 5 10 km
渥美湾
Toyohashi
1 Anjo
2 Chita
3 Handa
4 Haruhi
5 Iwakura
6 Kariya
7 Komaki
8 Kota
9 Nagoya
10 Nishio
11 Nishshin
12 Obu
13 Okazaki
14 Takahama
15 Tokai
16 Tokoname
17 Toyoake
18 Toyohashi
19 Toyota

Difference in difference estimation coefficients, mln. JPY

3 years' of decline in GDP



Flood Prevention: Impact on GDP

1, Agricultural Sector --- GDP decline (-35%)

2, Services Sector --- GDP decline (-23%)

3, Domestic Manufacturing – Small decline in GDP

4, Export Oriented Manufacturing -- Small decline

Flood Effects ← 15-20% decline in GDP in the region

Flood Impacts for about 3 years

Same Methods can be applied to various disasters

→ Need for Disaster Prevention

→ Ex Post Policy: such policies as Low interest government loans

4. Evidence-based Contingency Planning

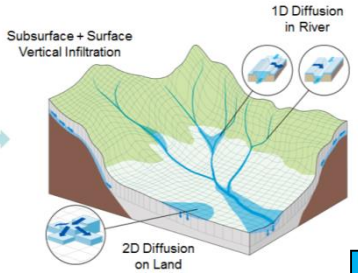
Case study in Calumpit Municipality in Pampanga River Basin in the Philippines

1. Understand Current status

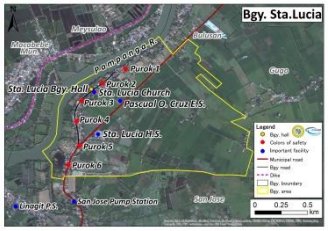
Interview Survey

Field Survey

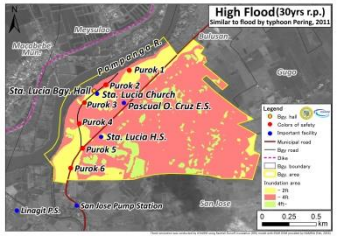
2. Identify Risk（with National and Provincial govt.）



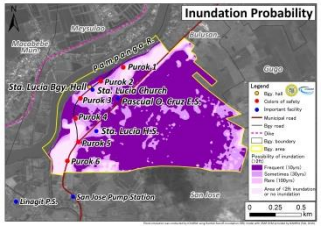
Flood Simulation by RRI Model (Use of 5m IfSar Dem data)



Resource Map



Inundation Map（30 Years）



Inundation Probability Map

Inundation Water Chart

3. Analyze Flood Impact

Workshop at Communities (July, 2015)

4. Develop Response Strategy at Communities

Workshop at Communities (Jan , 2016)

Proposal of Strategy

5. Develop and 6. Share the Plan

Final Workshop at Municipality(Feb , 2016)

Example of Community Contingency Plan

ICHARM received a Certificate of Appreciation from the Calumpit Mayor, Jessie P. De Jesus.

Damage

Data	Source of information
Casualties & missing person	
Num. of affected people	
Agricultural damage	
Housing damage	
Damage to critical infrastructure	
Direct economic loss other than agricultural loss	

Hazard

Data	Source of information
DEM (LiDAR)	
DEM (ifSAR)	
Hydromet data	
Inundation depth	
Rainfall	
River flow	
River cross section	
Tidal level	
Soil Depth, Type	
Occerance Time of Landslide	

Socio-economic

Data	Source of information
Land use	
Agriculture	
Population	
Infrastructure	
Industry	
Commerce	
Drainage facility	
Land Price	

Platform on Water-related Disasters in Philippines (PLATFORM)
Data Sharing Guidelines

PLATFORM recognizes that the societal benefits arising from its cooperative activities can be fully achieved through the sharing of data, information, knowledge, products and services among the participants in PLATFORM at least. PLATFORM also associates itself with the trend towards open data worldwide while agency policies or legislation preclude the sharing of data as Open Data. In order to set up data sharing guidelines which balance the interests of both data users and providers in the light of the above mentioned constraints, it is considered useful to divide PLATFORM data into the following two categories:

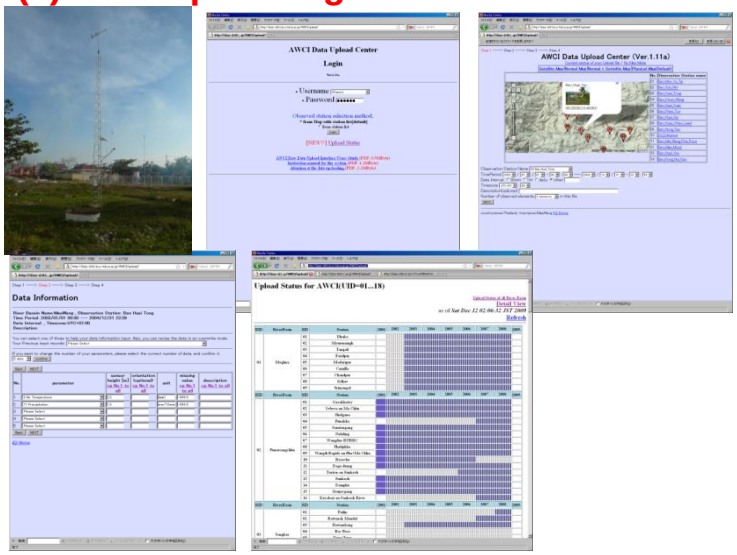
Category 1: Data, metadata and products are shared as Open Data by default.

Category 2: Data, metadata and products are shared only among the PLATFORM Participants

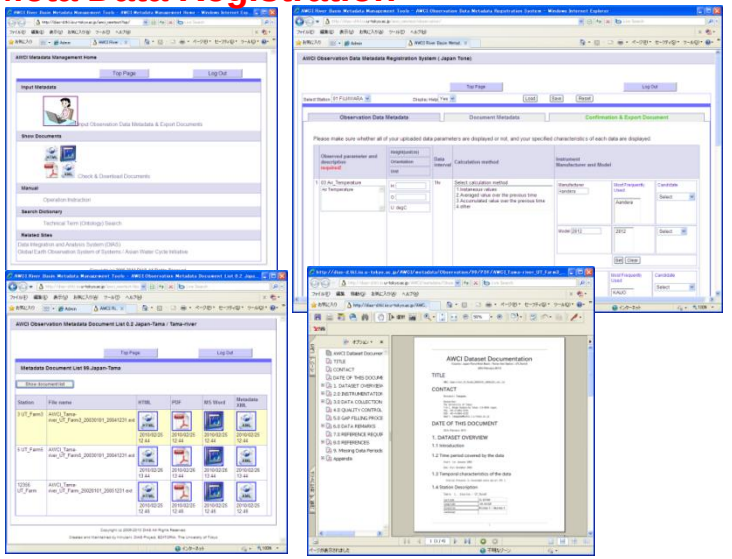
Category 3: Data, metadata and products are shared with those who get a permission from the data provider.

Components of In-situ data management

(1) Data Uploading

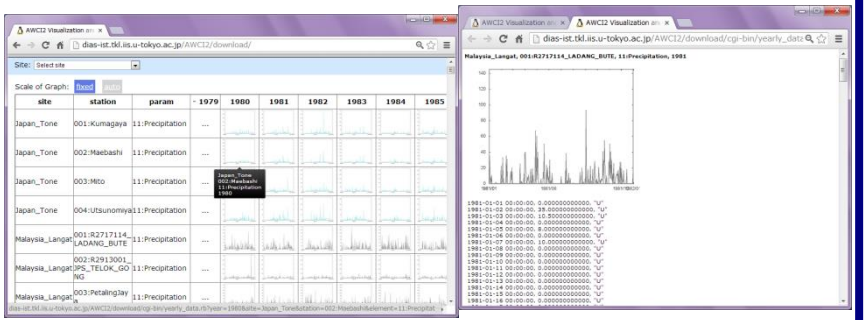


(3) Meta Data Registration

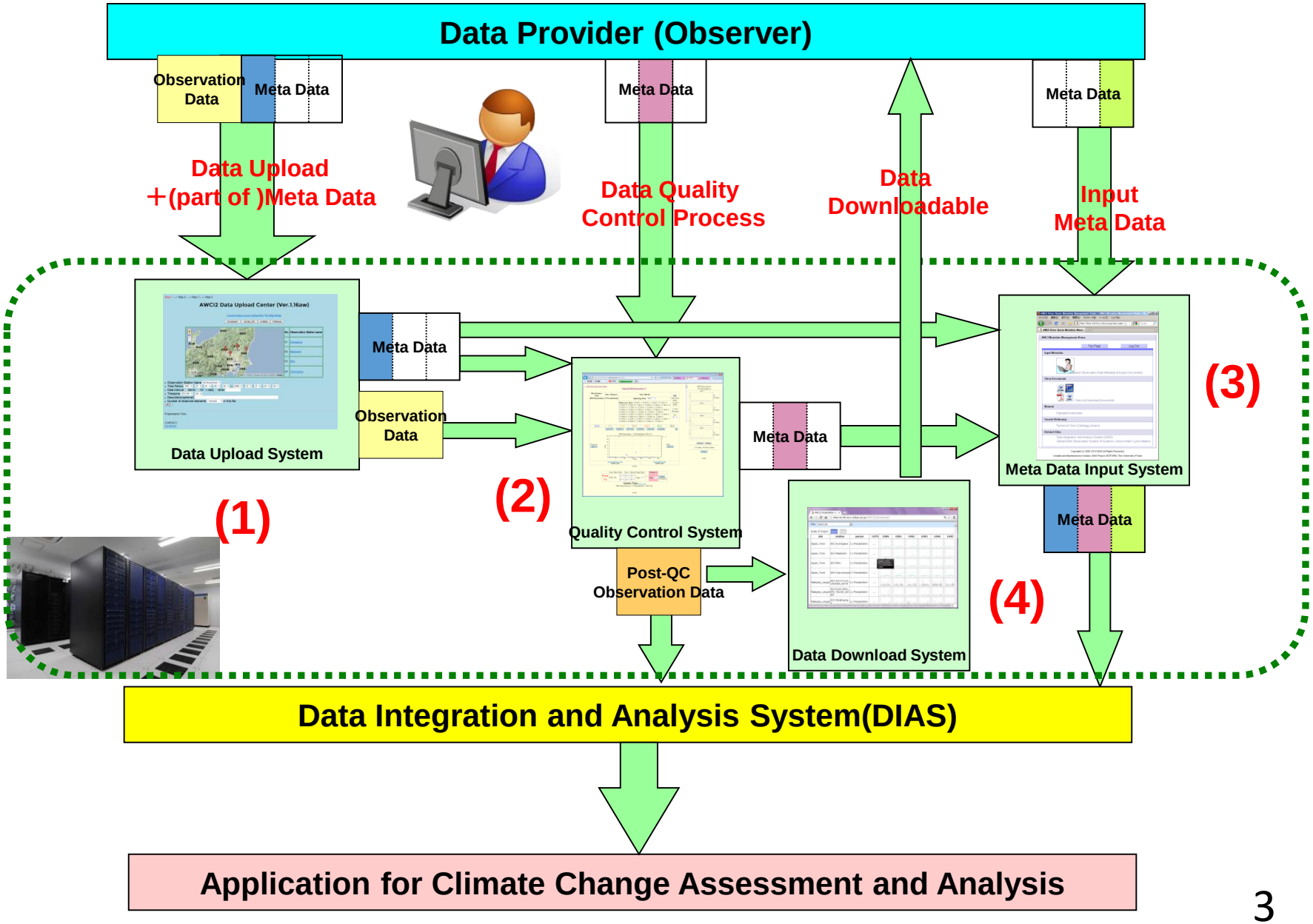


(2) Quality Control

(4) Quality Controlled own Data Downloading



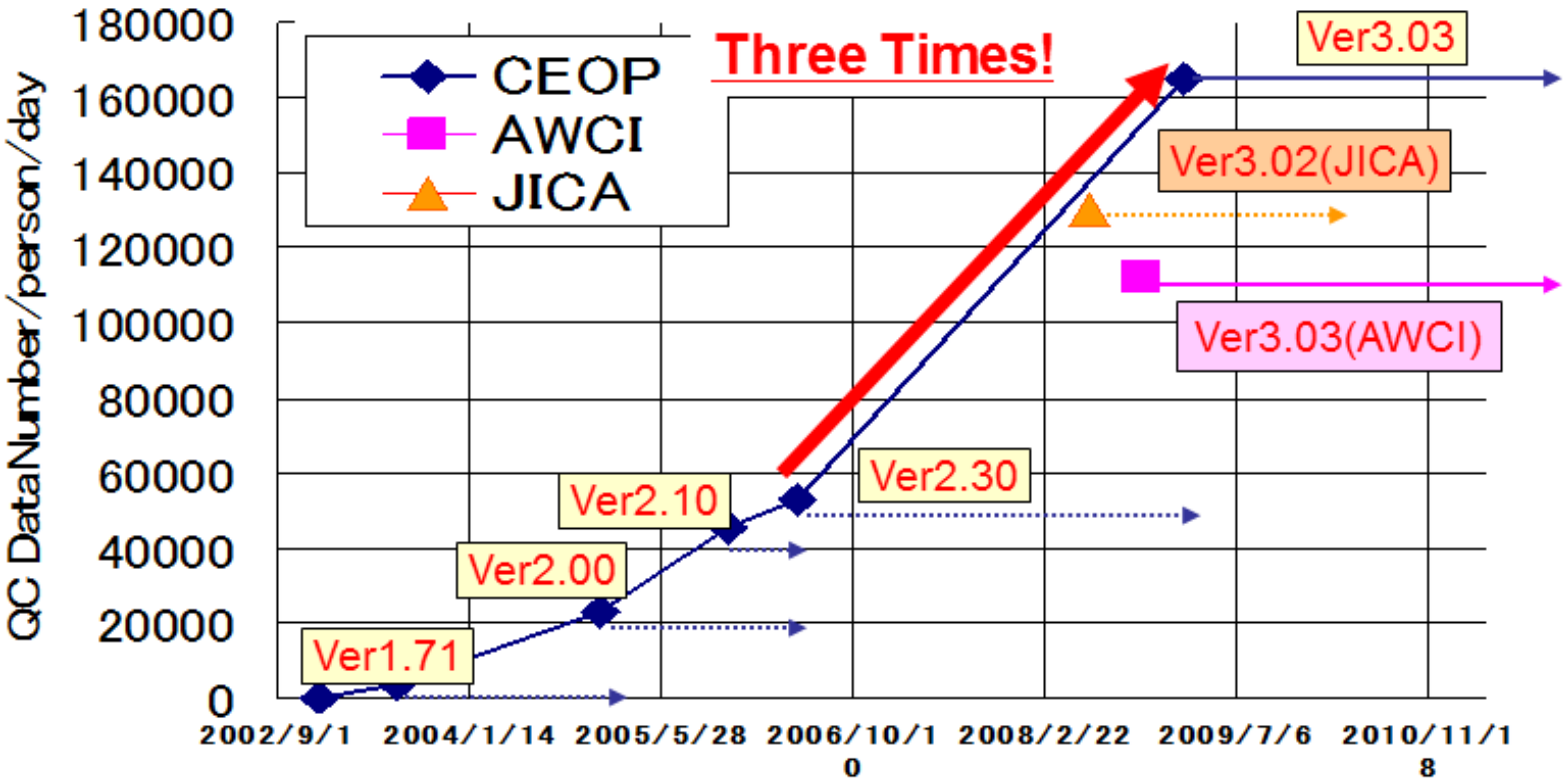
(1) Data Uploading System



Data Integration and Analysis System

a legacy for Japan's contributions to GEOSS

Efficiency data management, using DIAS data upload, QC and metadata registration



Agenda
Tuesday 18 June, 2013:
GCM Selection, Bias Correction, Downscaling

Morning:

Registration, Opening, Group Photo, Lectures:

Afternoon:

Training (hands-on): Bias correction and downscaling,
WEB-DHM forcing precipitation

Agenda
Wednesday 19 June, 2013:
WEB-DHM running for historical and future periods

Morning:

Lecture: WEB-DHM and its application for climate change impact assessment on hydrological regimes in a basin

All day:

Training (hands-on): WEB-DHM running using the precipitation data prepared on Tuesday, generating hydrological spatially distributed outputs for drought indices

Agenda
Thursday 20 June, 2013:
Drought indices, Drought lecture, Visit to DIAS in IIS

Morning:

Training (hands-on): Drought indices generation, past vs. future comparison -> assessment of climate change

Afternoon:

Visit to the IIS, Komaba Campus, DIAS computing system