Capacity Development Implementation

Srikantha Herath

Institute for Sustainability and Peace

United nations University

06 October, 2011

UNITED NATIONS UNIVERSITY
UNU-ISP

Outline

- Brief overview
- Currently available training / modules
- Newly developed training programs and modules
- Web tutorials
- Collaborative activity for capacity building

Capacity Development, Demonstration projects and Group activities

Demonstration Projects	Group Activities	Capacity Development
Analyze basin water cycle	Set up an application objective	Support implementing application

Need to integrate Research, Capacity Development and Applications

- Higher Education Research
- Capacity development programs for training a large number of competent persons.

National training programs for researchers and practitioners

Supporting Post graduate Research

Demonstration Project

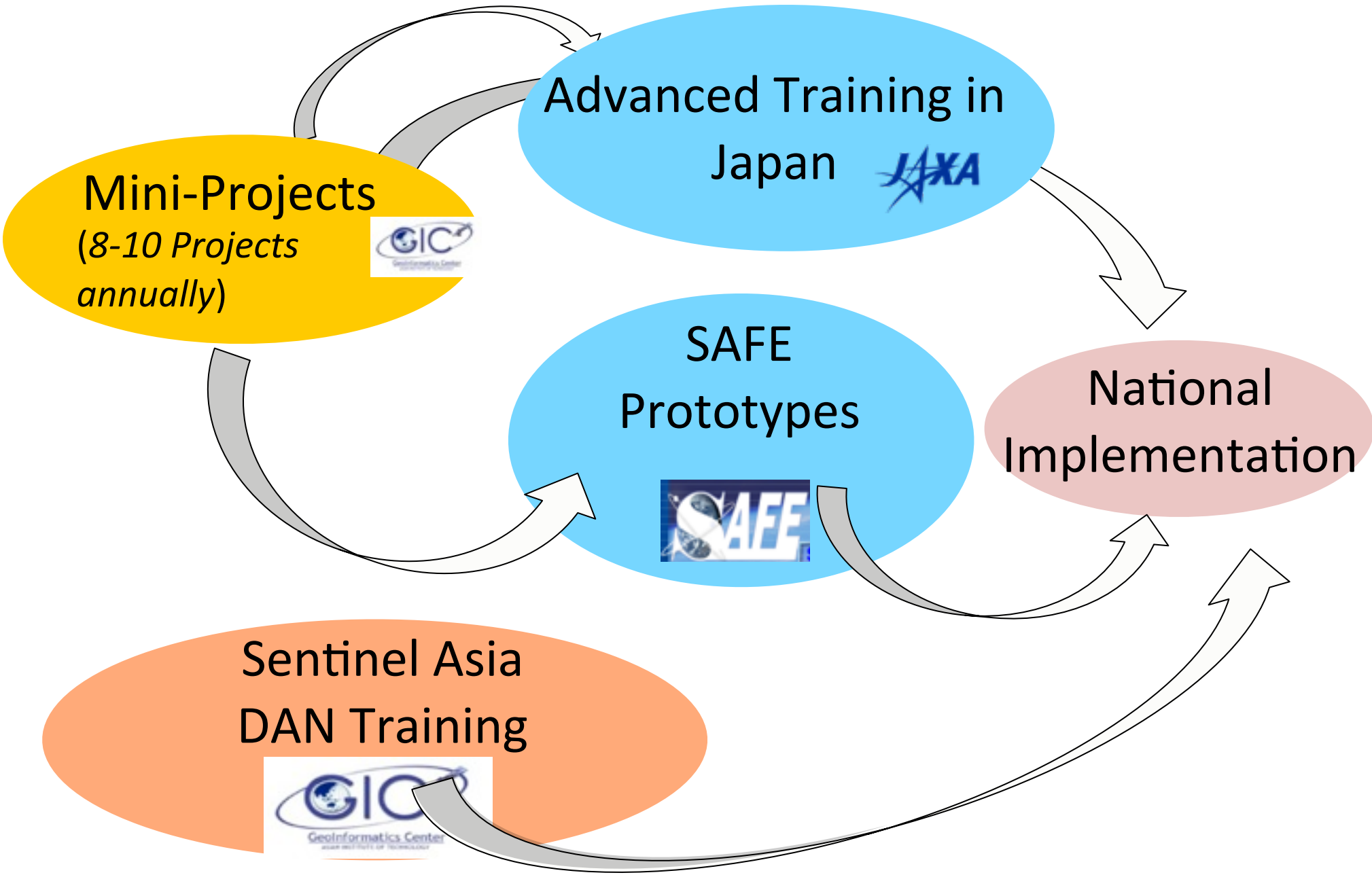
Training of trainers

Dissemination of results to policy makers

Activity Summary

ORGANIZATION	NAME OF TRAINING
ICHARM/PWRI	Hydrologic Modeling and Flood Runoff Analysis & Forecasting with IFAS
JAXA	Mini Project
	Sentinel Asia System Operating Training
University of Tokyo EDITORIA	Web-based In-situ Data Loading, Quality Control, Mata data Registration
	Distributed Hydrological Modeling
	Land Data Assimilation System (LDAS)
UNU-ISP	Rainfall Downscaling
	Flood Inundation Modeling
	Flood Loss Estimation

Composition of Training Activities of JAXA and AIT



8 Mini-Projects Selected for 2011 (Theme No.1-3)

(16 Participants from 16 Organizations of 8 Countries)

1. ***Kyrgyzstan: Bursting of Glacial Lake (2 participant)***
   - *(1) Central Asian Institute for Applied Geosciences(CAIAG)*
   - *(2) The Ministry of Mineral Resources*

2. ***Lao PDR: Detection of the Dynamics of Shifting Cultivation Area (2 participant)***
   - *(1) Center for Statistics and Information, Department of Planning, Ministry of Agriculture and Forestry*
   - *(2) Provincial Agriculture and Forestry Office of Vientiane Province*

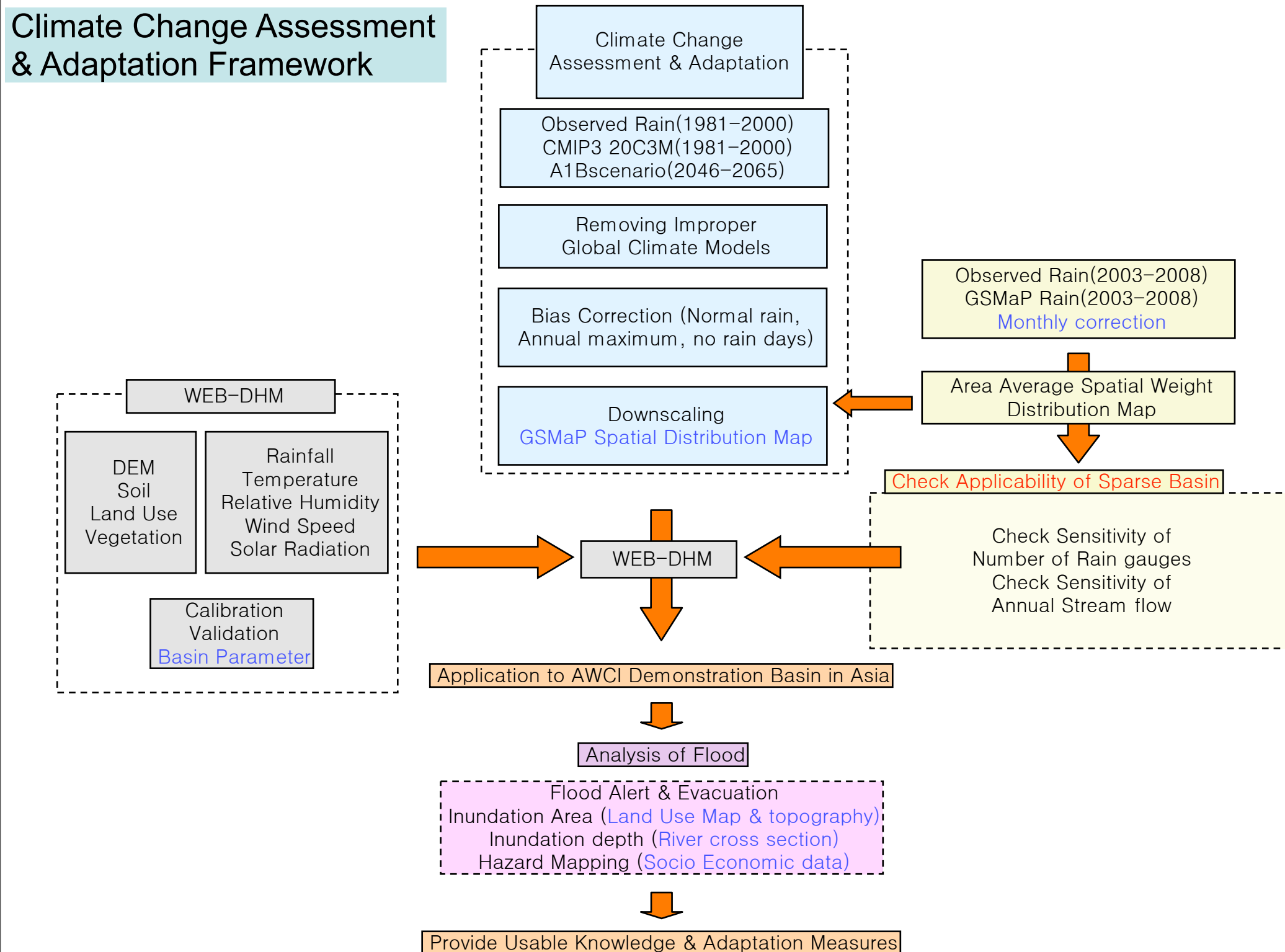
3. ***Malaysia:Change Detection of Wetland Ecosystem (2participants)***
   - *(1) Department of Fisheries, Sabah, Malaysia*
   - *(2) Department of Agriculture, Sabah, Malaysia*

How to Apply for 2012 Mini-Projects?

(2) Five Important Periods:

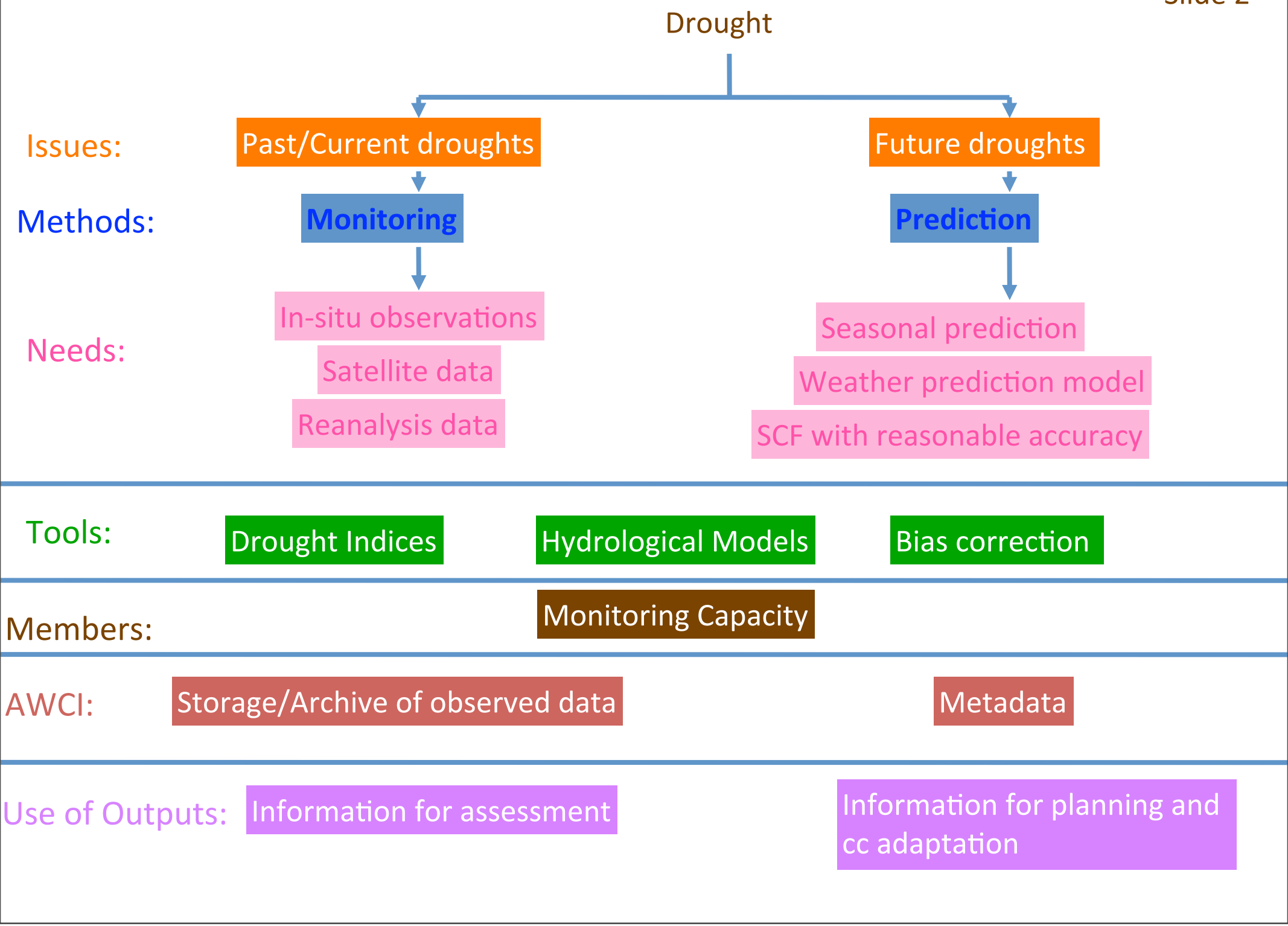
- Submission of Proposals: **January and March 2012**
- Evaluation/Selection/Notification: **May - July 2012**
- 1st Phase Training(GIC-AIT):**Aug.-Sept.2012 (4weeks)**
  Note)Consists of Project Planning Workshop/Training.
- Fieldwork: **Oct/Nov/Dec 2012 (1 week@each country)**
- 2nd Phase Training(GIC-AIT):**Jan.-Feb.2013 (4 weeks)**
  Note)Consists of Workshop for Data Analysis and Final Report Making to be submitted to JAXA.

Climate Change Assessment & Adaptation Framework



CMIP3 : Coupled Modeled Intercomparison Project Phase-3

20C3M : 20th Century Numerical Reproductive Experiment


Drought
Issues:
Past/Current droughts
Future droughts
Methods:
Monitoring
Prediction
Needs:
In-situ observations
Satellite data
Reanalysis data
Seasonal prediction
Weather prediction model
SCF with reasonable accuracy
Tools:
Drought Indices
Hydrological Models
Bias correction
Members:
Monitoring Capacity
AWCI:
Storage/Archive of observed data
Metadata
Use of Outputs:
Information for assessment
Information for planning and cc adaptation

Modeling of snow & glacier melt runoff simulations

Maheswor Shrestha
University of Tokyo

Goal: *To access impact of climate change on snow/glaciers, long term snowfall dataset is needed which is currently unavailable in many poorly gauged basins. Reanalysis dataset can be used as baseline data but they should be corrected in prior to application. For correction, firstly, we need to develop the physically based snow melt model + glacier melt model (for glaciated river basins) which can yield Snow Cover Area as the model output and then establish a method for basin scale snowfall correction. This study focus on the development of such snow and glacier melt model and application to Asian Water Cycle Initiative (AWCI) – Climate Change Assessment and Adaptation (CCAA) Basins.*

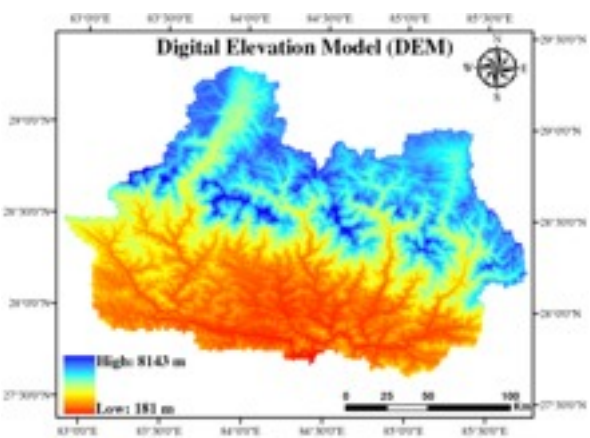
Multi layer Glacier module → **Water & Energy balance based Distributed Hydrological model** ← **Multi layer snow module**

↓

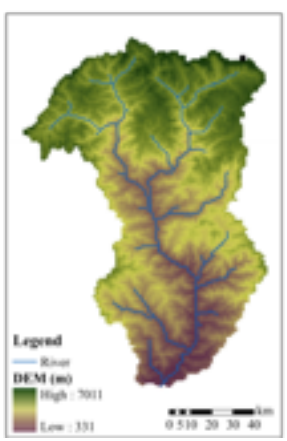
Water & Energy budget based Distributed Snow and Glacier melt model (WEB-DHM-S)

Model Development &Validation in different climates

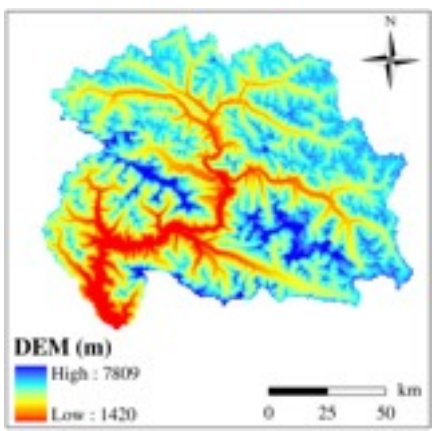
Narayani (Nepal)



Punatsangchu (Bhutan)



Hunza (Pakistan)



WEB-DHM-S model has been developed for three AWCI CCAA study basins and spatial distribution of snow/glacier cover along with snow/glacier melt runoff are simulated well with good accuracy.

UN-CECAR COURSES

Science, Impacts and Vulnerability 2 credits

1. Introduction to the Programme	7. Selecting Appropriate Future Climate Predictions
• Welcome and introductions	• Differences in model predictions
• Programme overview and philosophy	• Multi-model ensembles
• Context of the UNFCCC and IPCC	• Bias correction
	• Weather generators from climate forecasts
	8. Climate Change Impacts: Ecosystems
	• Concept of ecosystems services
	• Social, ecological and economic impacts of climate chang their interactions
	• Payment for ecosystem services and biodiversity
	9. Climate Change Impacts: Water Sector
	• Climate change impacts on the water cycle
	• Flood discharge modification from climate change
	• Cost-benefit analysis of flood risk reduction measures

University Network for Climate and Ecosystems Change Adaptation Research

Postgraduate Courses on Building Resilience to Climate Change

Spring 2011

http://isp.unu.edu/cecar

COURSE II:

Approaches to Adaptation 2 credits

1. Basic Understanding of Key Concepts	7. Comm
• Mitigation and adaptation	• Climat
• Synergies between top-down and bottom-up strategies	• CVCA p
	• Partici
	• Policy
2. Global and National Challenges	**8. Comm**
• Security issues	• Steps i
• Capacity and awareness issues	• Metho
• Policy processes and challenges	• Partici
• Problems at national and local levels	• Individ
• Local institutions	• The 'Yo progra
• Local-level climate change adaptation	
3. Mitigation and Adaptation Practices and Resilience (Urban Areas)	**9. Econo**
• Introduction: drivers of urban growth	• Basic e

http://cecar.unu.edu/courses/

UNU-ISP Courses and Training

UNU-ISP

Navigation

Home
Courses

Login

Username
Password
Login
Lost password?

Online users

(last 10 minutes)
None

Related UNU Sites

United Nations University (UNU)

University Network for Climate and Ecosystems Adaptation Research (UN-CECAR)

UNU Institute for Sustainability and Peace (UNU-ISP)

Global Change and Sustainability Section, UNU-ISP

UNU's Our World 2.0 - more than just a webmagazine

UNU Videos!

Watch UNU videos featuring interviews, experts and more on our YouTube channel.

Visit our video portal for event webcasts:

UNU Video Portal

Spring 2011 UN-CECAR Building Resilience to Climate Change Course: students

Welcome to the UNU-ISP / UN-CECAR online learning site.

This site contains postgraduate courses, as well as training modules and programmes for professionals.This is also the main delivery platform for educational and training programmes developed under the University Network for Climate and Ecosystems Change Adaptation Research framework....

Courses

- **Postgraduate Courses (intensive)**
  - Climate Change
  - UNU-ISP M.Sc. Core Courses
  - Ecosecuirty
- **Capacity Development (Short Term Training)**
  - Remote Sensing
  - GIS
  - Rainfall downscaling
  - Risk Assessment

Search courses: Go

Collapse all Expand all

Calendar

October 2011

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Upcoming events

There are no upcoming events

Go to calendar...

UNU-ISP postgraduate programmes consist of M.Sc. degree programme and a number of post graduate courses.

UNU-ISP was established in January 2009. UNU-ISP takes an innovative, integrated approach to sustainability — one that encompasses global change, development, peace and security. To learn more about UNU-ISP, please visit our homepage: http://isp.unu.edu

The University Network for Climate and Ecosystems Change Adaptation Research (UN-CECAR) site is hosted at the the United Nations University Institute for Sustainability and Peace (UNU-ISP), Tokyo

visit http://cecar.unu.edu/courses for details

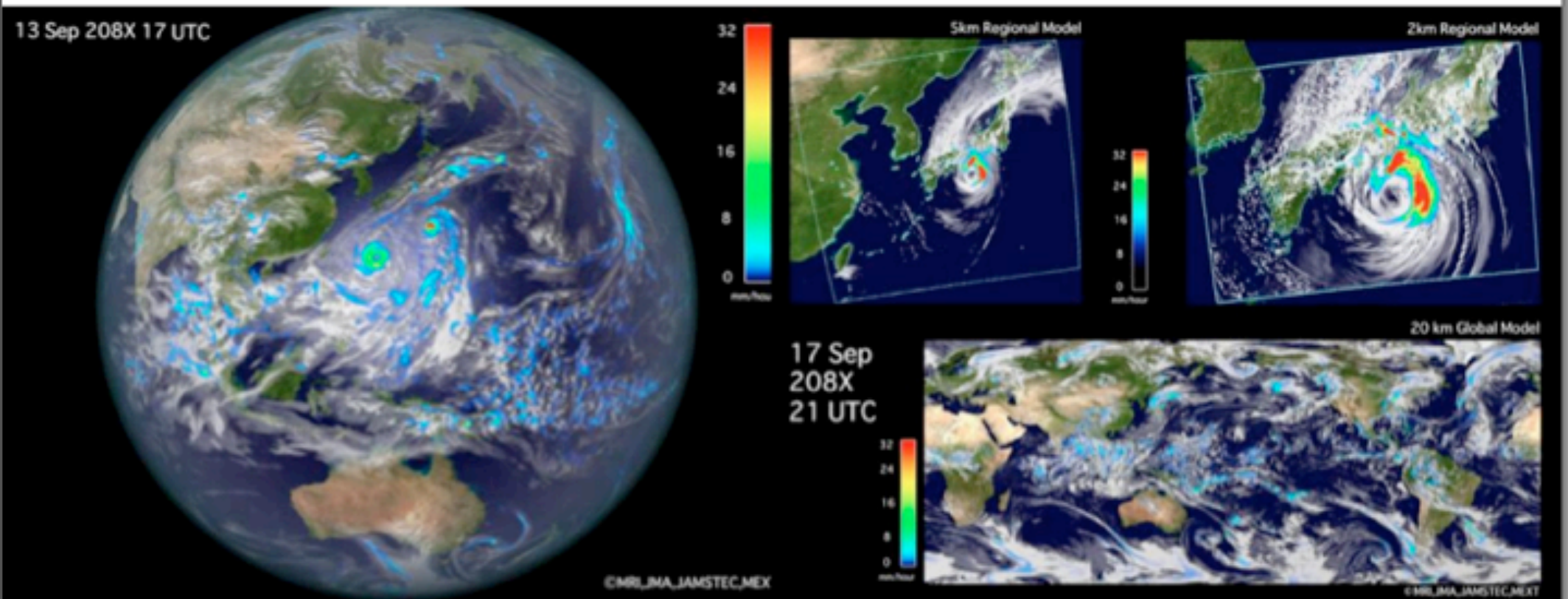
UNITED NATIONS UNIVERSITY

UNU-ISP

Institute for Sustainability and Peace

UN-CECAR

University Network for Climate and Ecosystems Change Adaptation Research



University Network for Climate and Ecosystems Change Adaptation Research

Training Programme on Climate Change Downscaling Approaches and Applications

9-14 November 2011

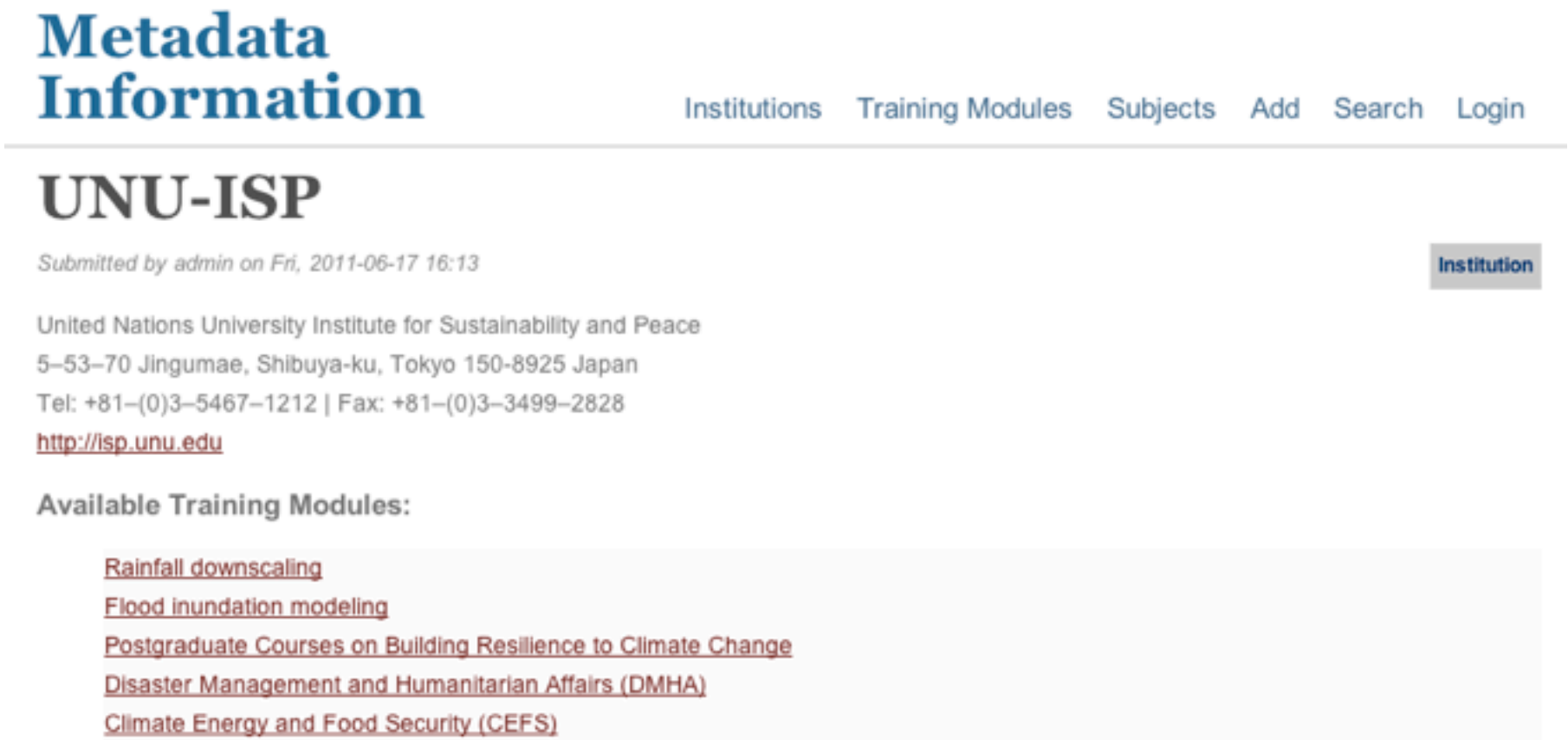
http://cecar.unu.edu

Training module details

- 4 days common
  - Climatology: IIT, Delhi
  - Dynamic Downscaling with WRFC, by NCAR, implementing University of Nebraska, USA
  - 20km Global model forecasts by MRI, Japan
  - Statistical downscaling by University of Tokyo
  - Risk Assessment and GIS (UNU, AIT, Nippon Koei)
- 2 day programmes (3)
  - Climate Extended, IDF and Extremes (UP, UNU)
  - Impact on rice production (UNU, IIT, TH, SL)
  - Flood Impacts (UNU, NK, SL, TH)
  - Communicating Results (ISET)

UNITED NATIONS UNIVERSITY
UNU-ISP

Institutions: Resource organizations



Training Modules from one Institution

Metadata Information

Institutions | Training Modules | Subjects | Add | Search | Login

UNU-ISP

Submitted by admin on Fri, 2011-06-17 16:13

Institution

United Nations University Institute for Sustainability and Peace
5–53–70 Jingumae, Shibuya-ku, Tokyo 150-8925 Japan
Tel: +81–(0)3–5467–1212 | Fax: +81–(0)3–3499–2828
http://isp.unu.edu

Available Training Modules:

- Rainfall downscaling
- Flood inundation modeling
- Postgraduate Courses on Building Resilience to Climate Change
- Disaster Management and Humanitarian Affairs (DMHA)
- Climate Energy and Food Security (CEFS)

Training Modules: Resources on topics…

Metadata Information

Institutions | Training Modules | Subjects | Add | Search | Logir

Training Module

Title	Institute Name	Subjects
Climate Energy and Food Security (CEFS)	UNU-ISP	Food Security, Climatic change, Energy
Disaster Management and Humanitarian Affairs (DMHA)	UNU-ISP	Disaster Management, Humanatarian Affairs
Flood forecasting using DHM	The University of Tokyo	Flood
Flood inundation modeling	UNU-ISP	Flood
Hydrologic modeling and flood runoff analysis & forecasting with IFAS (Integrated Flood Analysis System)	ICHARM	Flood forecasting

Detailed View of Training Modules

Metadata Information

Institutions Training Modules Subjects Add Search Login

Climate Energy and Food Security (CEFS)

UNU-ISP

Food Security, Climatic change, Energy

The aim of the course is to provide students with practical insights and up-to-date knowledge on the interconnected themes of climate, energy and food security, and to familiarise them with the extent of the challenges facing the Asia Pacific region as well as the global community and some of the possible solutions. The course will encourage students to critically discuss the science, politics and economics underpinning climate change, energy and food security, and to discuss aspects of mitigation and adaptation to climate change impacts.

Disaster Management and Humanitarian Affairs (DMHA)

UNU-ISP

Disaster Management, Humanatarian Affairs

The course offers graduate students and in-service professionals interested in disaster management and humanitarian issues a unique opportunity to learn from a diverse faculty, as well as distinguished guest lecturers from international organizations from the entire region.

http://isp.unu.edu/grad/certificate/distance/courses_dmha.html

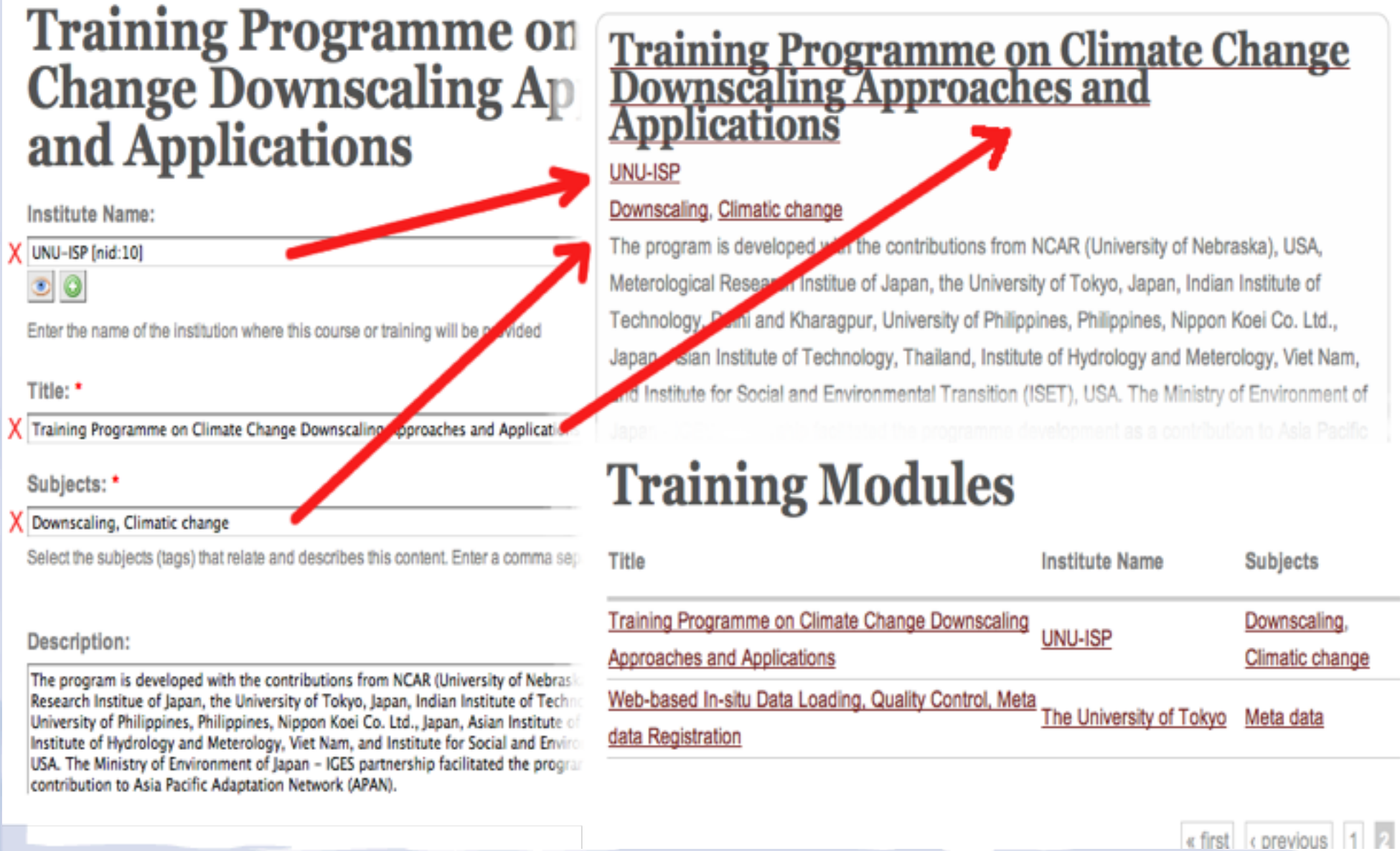
List of Training Module **Subjects**

Metadata Information

Institutions

- Climatic change (3)
- Disaster Management (2)
- Downscaling (1)
- Energy (1)
- Flood (5)
- Flood forecasting (2)
- Food Security (1)
- Humanatarian Affairs (1)
- Landslide (1)
- Meta data (1)

Example of input



For more information

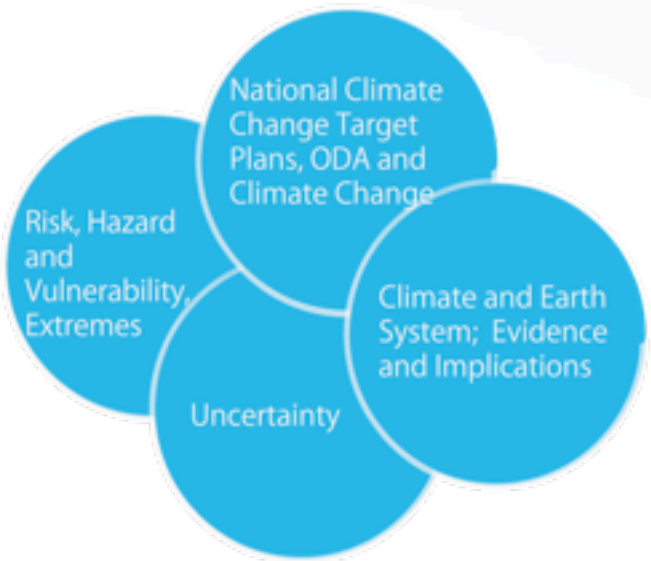
- Visit:
  - http://cecar.unu.edu/metadb/
- Create an account if you have some Training Modules to add.
- All content will get reviewed before made available to public.

Building Resilience to Climate Change

Course I and II
March, 2011

34 students from over 20 different countries

Science, impacts and vulnerability
Natural Science Focus



Approaches to adaptation
Social Science Focus

GIS and RS Training

2/28-
in UNU

311 Tohoku Earthquake

Continued at DPRI, KYOTO

3/25

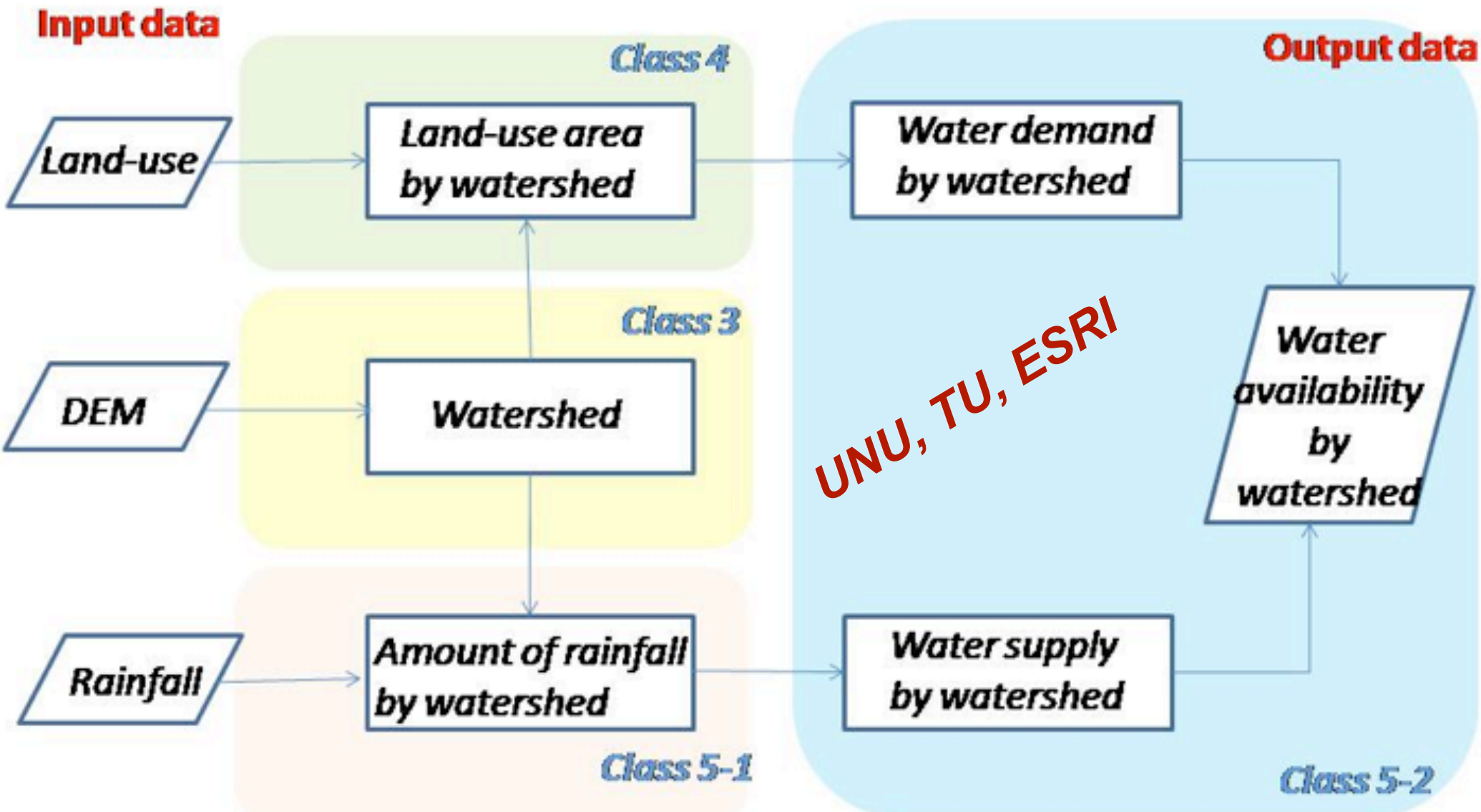
Web Based Resources

- Increasing the capacity development outreach

UNITED NATIONS UNIVERSITY
UNU-ISP

GIS (1)

Outline of class 3-5



CC Adaptation Framework

Weather downscaling and comparison with past observations

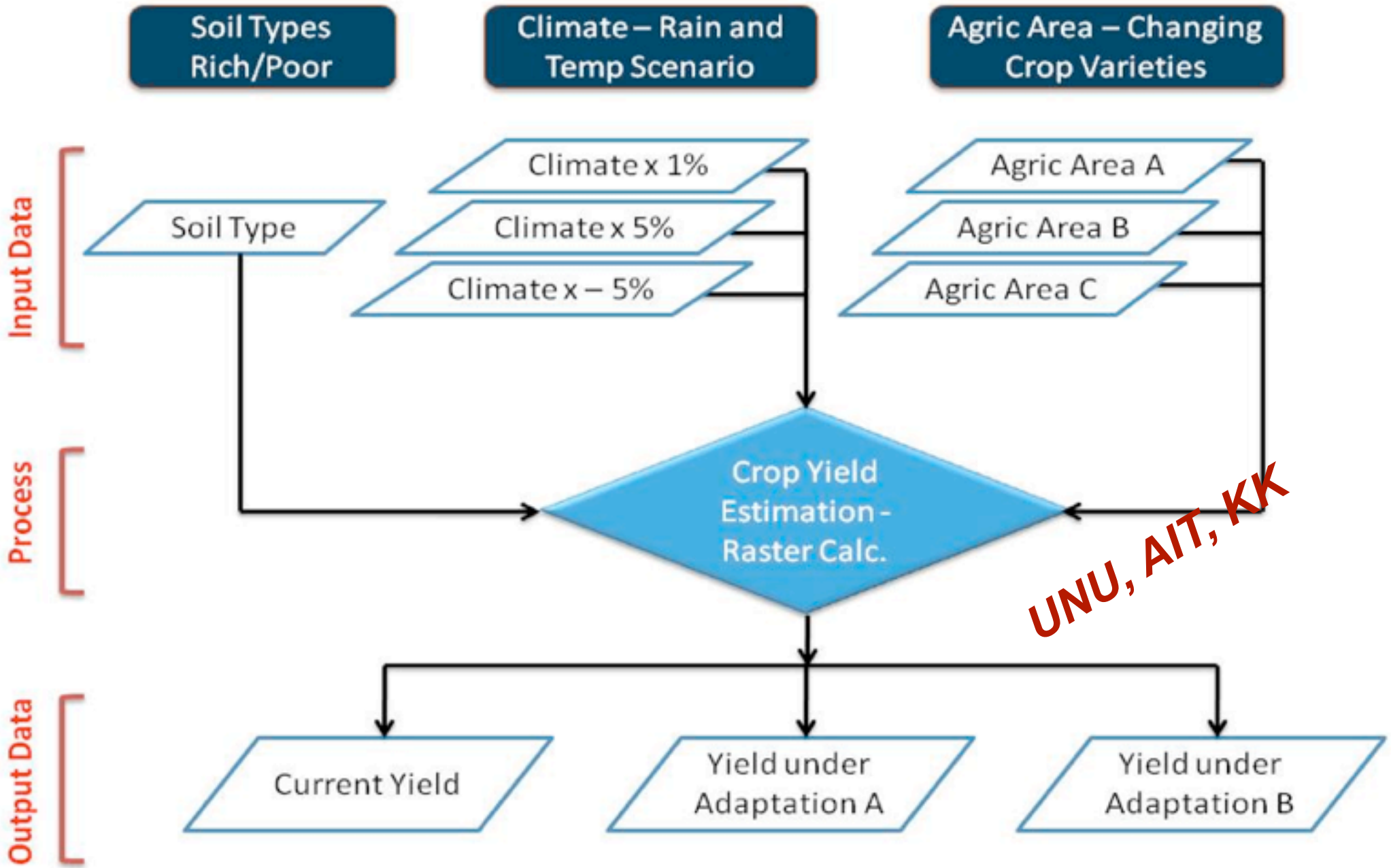
Simulation of floods/rice production calibration/validation

Future climate and impacts

Adaptation strategies

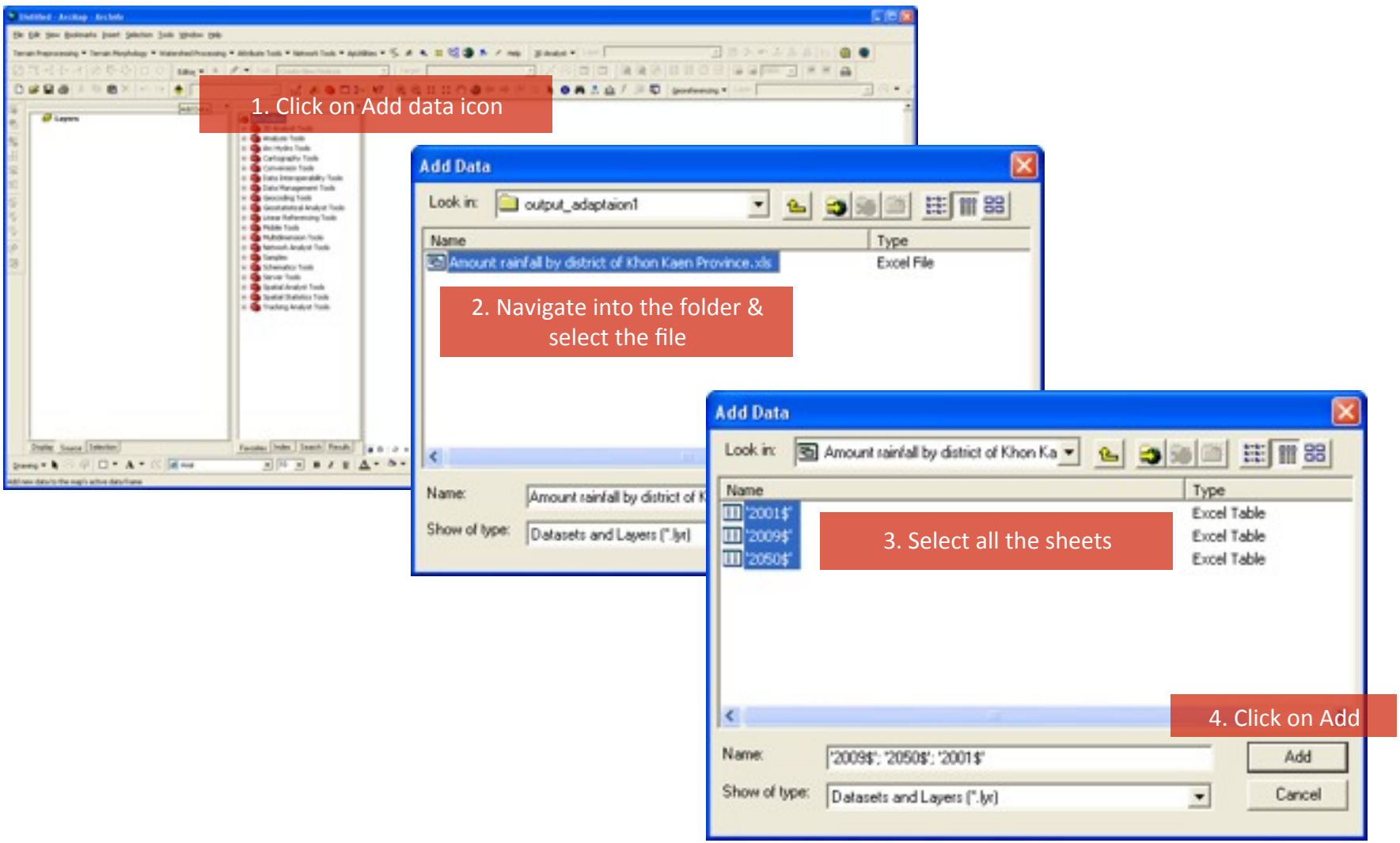
UNITED NATIONS UNIVERSITY
UNU-ISP

GIS (2)

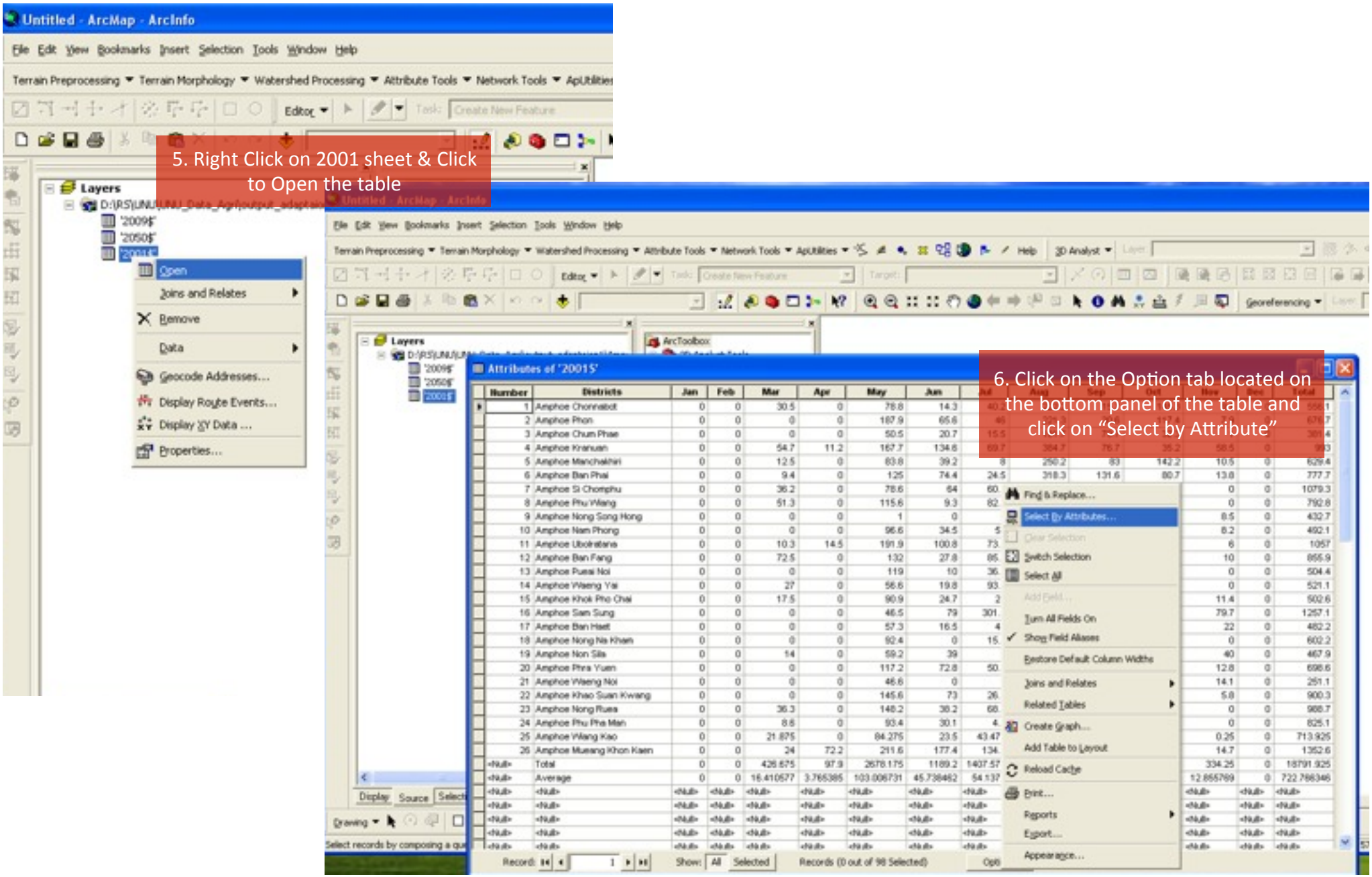

Soil Types Rich/Poor
Climate – Rain and Temp Scenario
Agric Area – Changing Crop Varieties
Input Data
Soil Type
Climate x 1%
Climate x 5%
Climate x – 5%
Agric Area A
Agric Area B
Agric Area C
Process
Crop Yield Estimation - Raster Calc.
UNU, AIT, KK
Output Data
Current Yield
Yield under Adaptation A
Yield under Adaptation B

Identify extreme drought areas

- Add Amount rainfall by district of Khon Kaen Province.xls file into Arc GIS



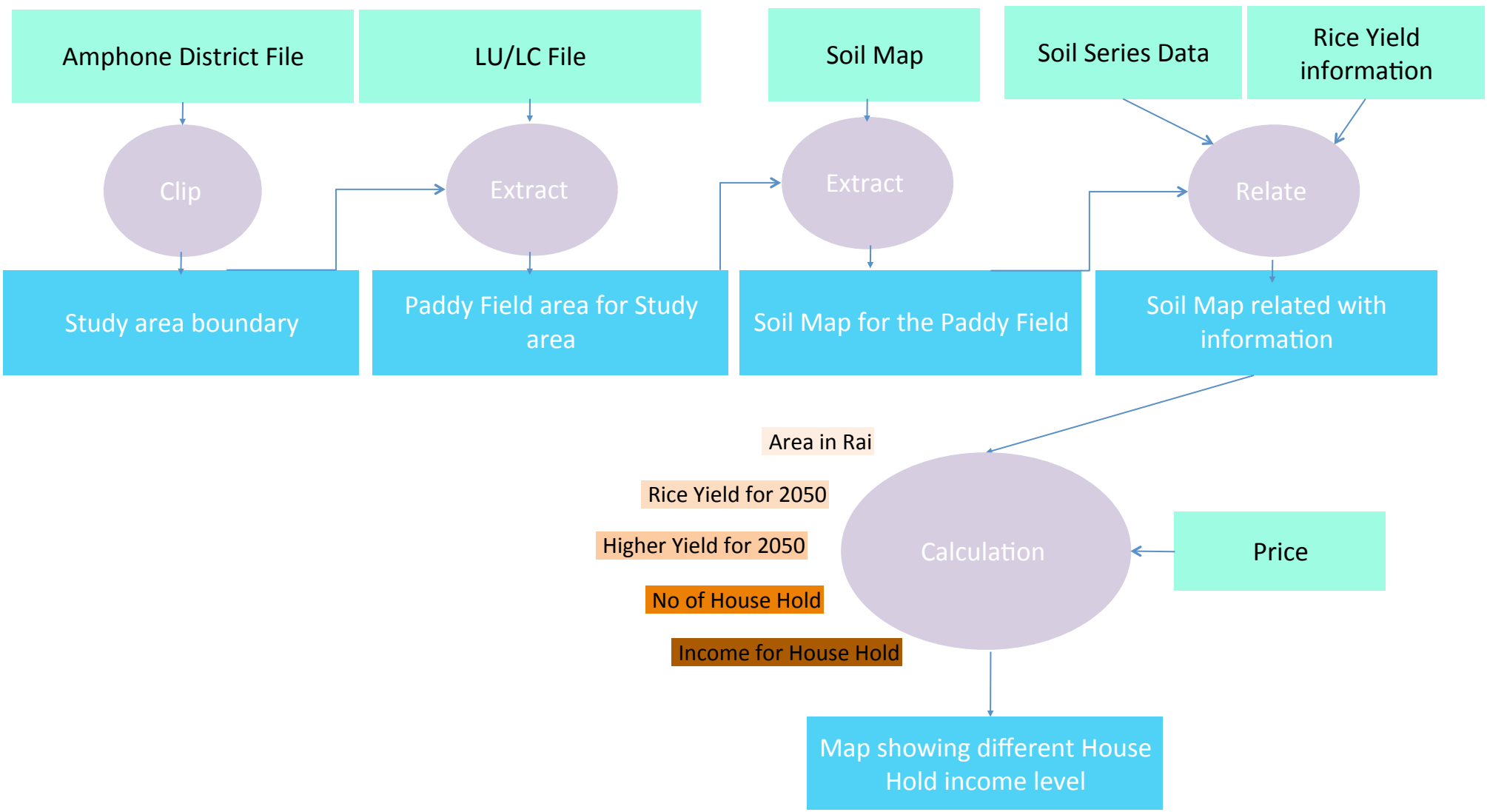
Identify extreme drought areas



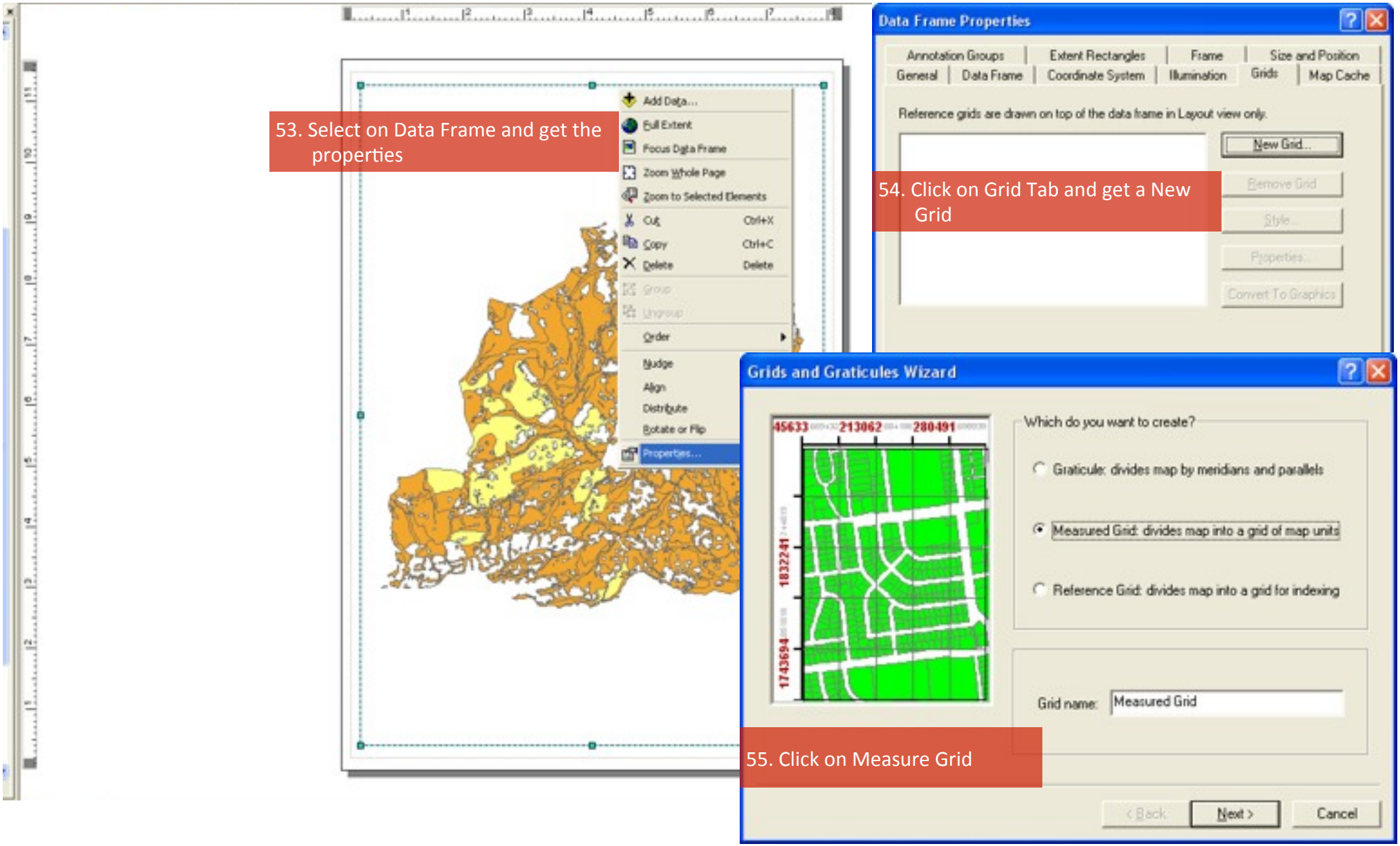
No Adaptation: Farm income from mono-rice variety

(only KDML105/ RD6/ Suphanburi/ Sanpatong/ Chainat)

- Methodology

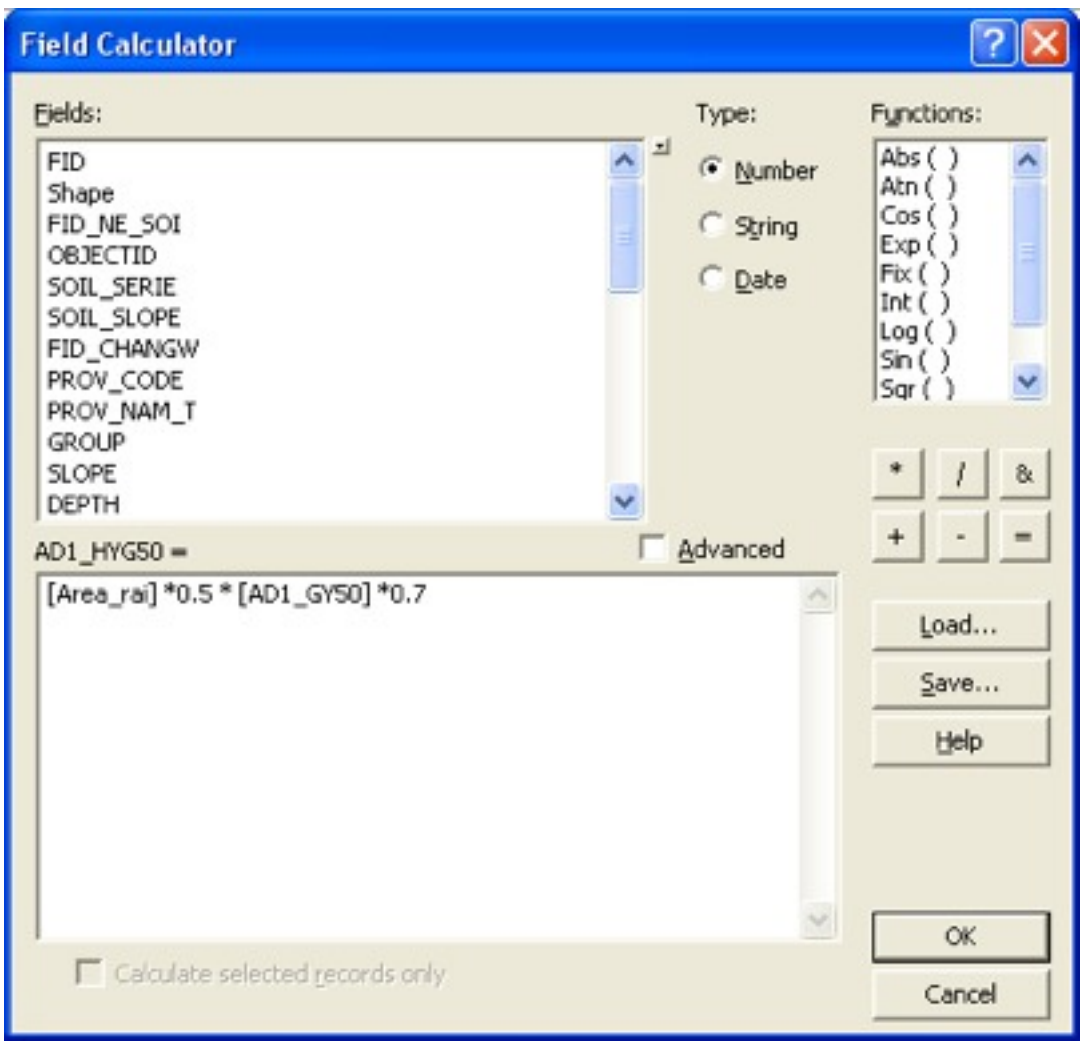


No Adaptation



Adaptation 1: Farm income from planting of one glutinous rice and one non-glutinous rice

- This time when calculating High Yield , both rice verities need to be considerd
- Add new field to calculate High Yield for Glutinous for 2050. name as AD1_HYG50, type is float
- Y= Area*0.5*C_RD6*0.7
- Calculate the value for High Yield for non-Glutinous for 205



AD1_NGY50	AD1_GY50	AD1_HYNG50	AD1_HYG50
297	428.39999	64.142097	92.520103
297	428.39999	5289.1602	7629.21
297	428.39999	37359	53887.5
297	428.39999	1484.1	2140.7
297	428.39999	4048.72	5839.9702
297	428.39999	196087	282841
297	428.39999	47904.5	69098.703
297	428.39999	179347	258695
297	428.39999	16252.3	23442.801
297	428.39999	59622.199	86000.398
297	428.39999	130155	187738
322.12799	271.87201	127675	107756
322.12799	271.87201	133584	112726
322.12799	271.87201	222375	187682
322.12799	271.87201	352621	297608
297	428.39999	122422	176585
297	428.39999	164845	237777
297	428.39999	347953	501895
297	428.39999	18628	26869.4
297	428.39999	412.83701	595.48602
297	428.39999	1329.3101	1917.4399
297	428.39999	568.15601	819.52197
297	428.39999	1508.9399	2176.53
297	428.39999	64674.5	93288.102
297	428.39999	170345	245710
297	428.39999	337143	486304
297	428.39999	10731.1	15478.8
297	428.39999	24938.199	35971.5
297	428.39999	6519.5801	9404
322.12799	271.87201	53544.398	45190.801
322.12799	271.87201	53544.398	45190.801

Establishment of JAXA's E-Tutorial Site in Dec.2009 for introducing E-Learning Materials

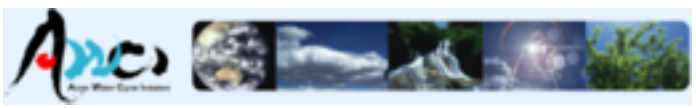
JAXA Web Tutorial using Past Trainings in Field of RS/GIS

http://web-tutorials.tksc.jaxa.jp/index.html

E-Learning Materials:

(1) Mini-Projects

(2) ALOS Pilot Projects



Key Player:
Dr.Koike of UT

http://monsoon.t.u-tokyo.ac.jp/AWCI/index.htm

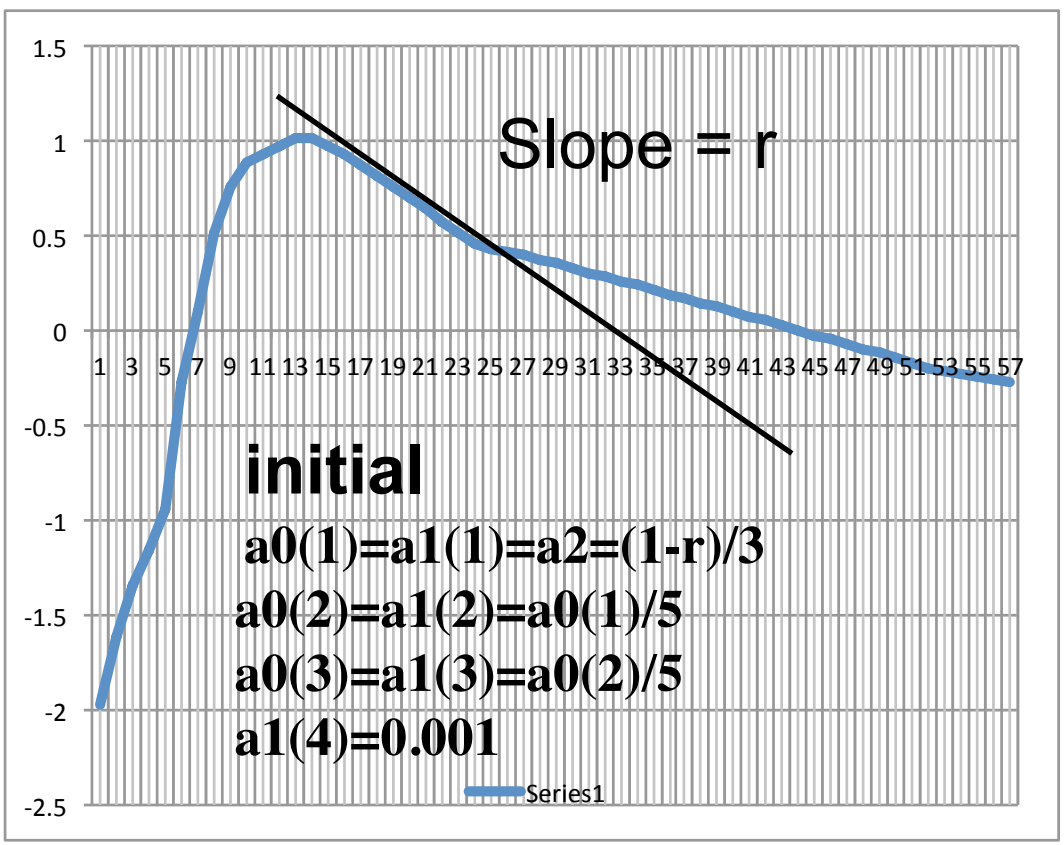
©AWCI

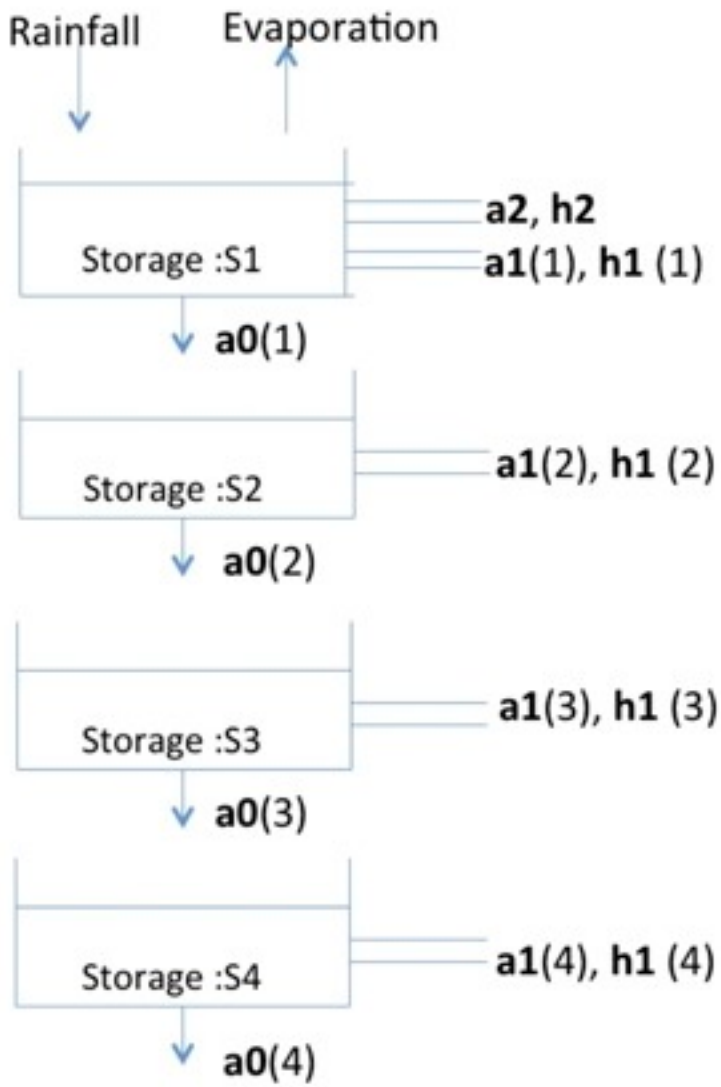
Web Tutorial

- Web based learning through application
- Components
  - Theory, Methodology
  - Case study
  - Step by Step guidance using web based modeling
  - Try an assignment
- Proposed Applications
  - GIS
  - Hydrological modeling
  - Flood forecasting

Sample Application - Tank Model

- Explanation of model and the calibration method

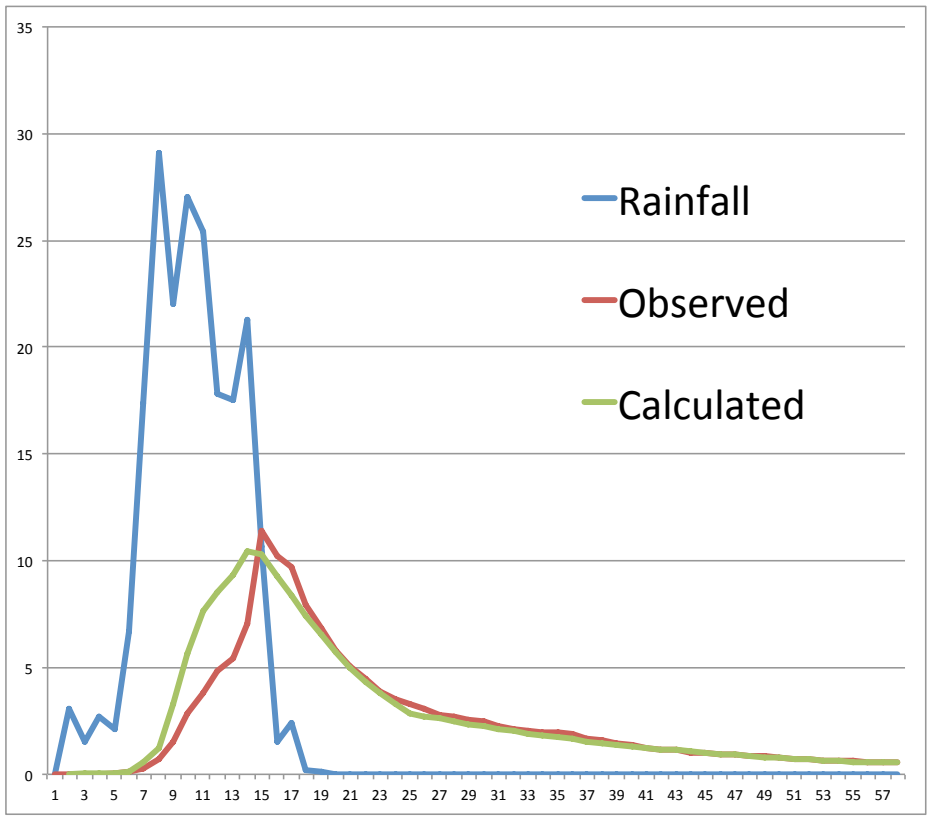




UNITED NATIONS UNIVERSITY
UNU-ISP

Tank sample - 2

- Upload time series
- Carry out simulation in the server
- Calibrate and Simulate
- Keep a collection of simulations in the server



Web system

UNITED NATIONS UNIVERSITY
UNU-ISP

Way forward

- Volunteers for testing modules and take part in module development
  - Please contact Dr. Yi Wang for details.
- Developing the common calendar
- Joint application project with capacity development components
  - Based on WEB
  - With Roving Seminars

Thank You.

UNITED NATIONS UNIVERSITY
UNU-ISP