



AWCI Activity Reports on Climate Change Working Group

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Review of CC Working Group Activities

□ 2nd GEOSS/AWCI ICG & 1st AWCI/APN Joint Workshop (Tokyo, April 2008)

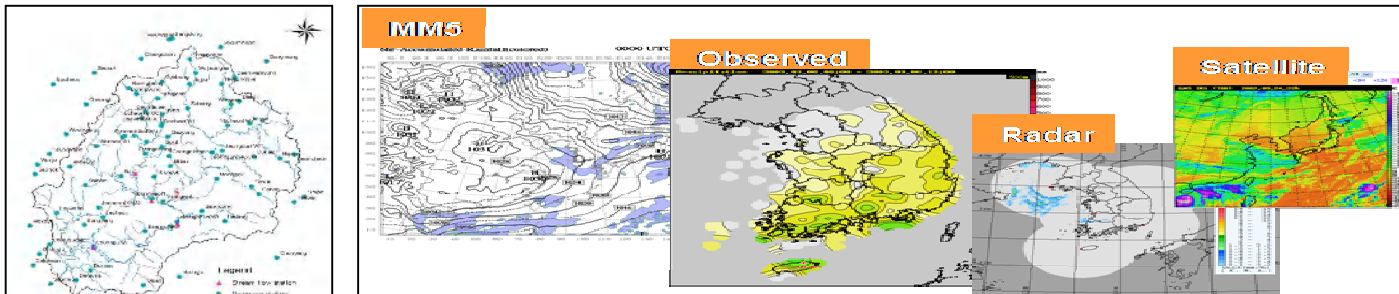
➤ Introduced climate change impact assessments & adaptation strategies on Korean water resources

- **Scientific findings (national level) for the climate change evidence**

- Performance of scientific researches (e.g., 21st century frontier project)
- Based on the climate change impact assessment, various structural/nonstructural adaptation strategies are considered

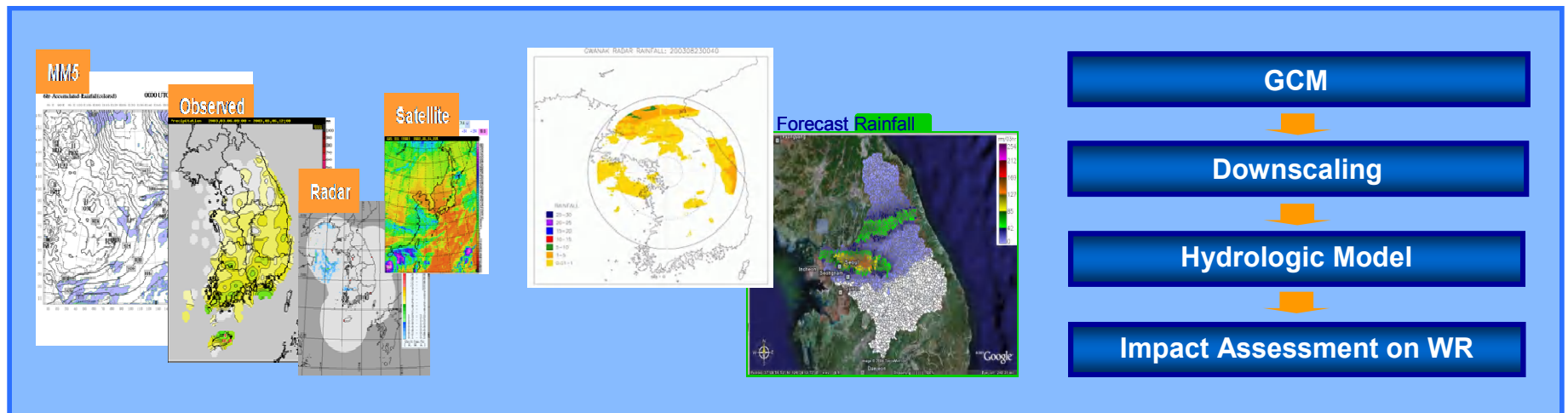
- **Another implementation planning for climate change on water sectors**

- Link with GEOSS/AWCI for the Korean demonstration project
- Three targeted issues for demonstration project and capacity building program
 - > Use of satellite and numerical data for developing flood management techniques
 - > Use of short- and long-term weather forecast information for water resources application
 - > Climate change impact and vulnerability assessment on water resources



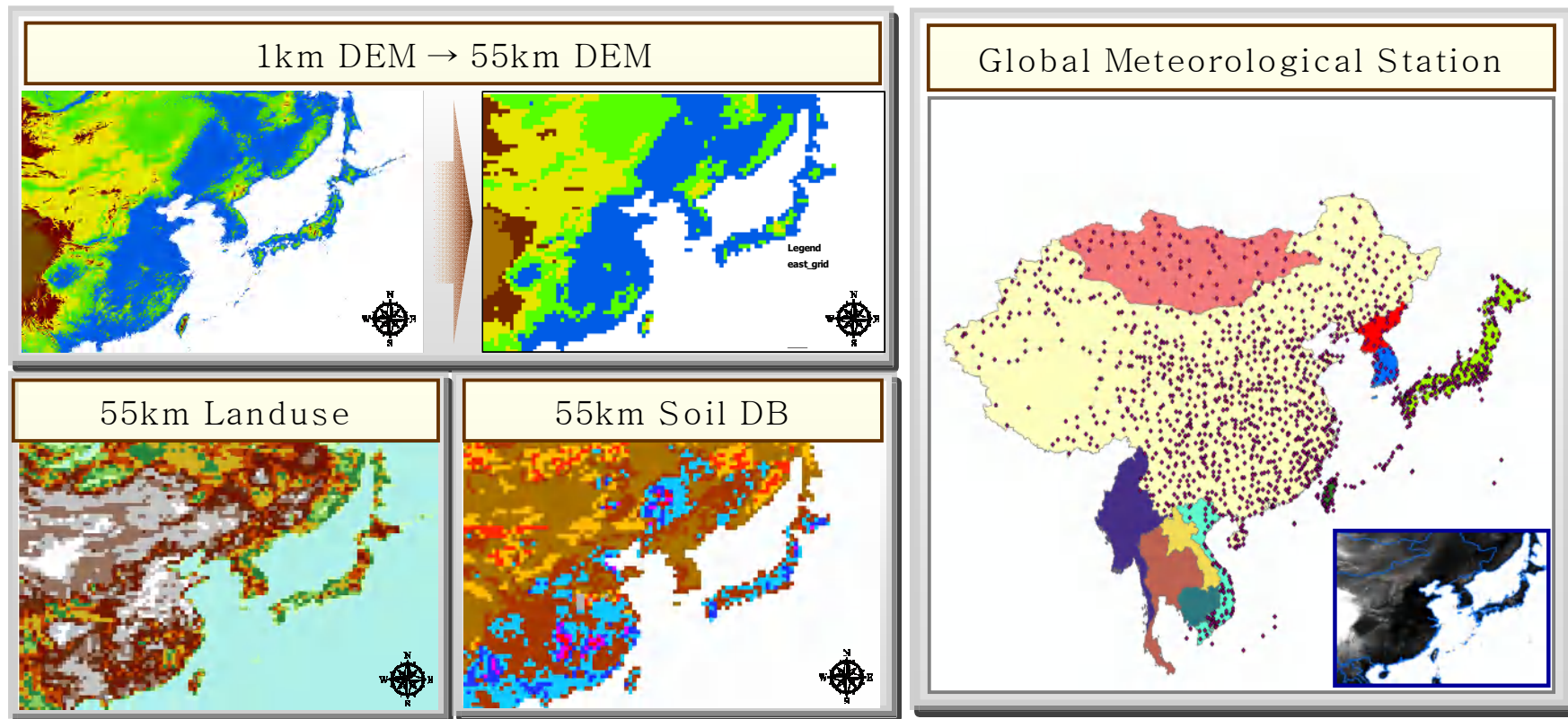
□ 3rd GEOSS/AWCI ICG Meeting & 4th APHW-AWCI Symposium (Beijing, Nov. 2008)

- Introduced **climate change impact assessment on water resources** over the AWCI Korean demonstration basin
- Proposed **a method to reduce the uncertainties of climate change impact assessment**



□ 5th Meeting of the GEOSS/AWCI ICG (Tokyo, Dec. 2009)

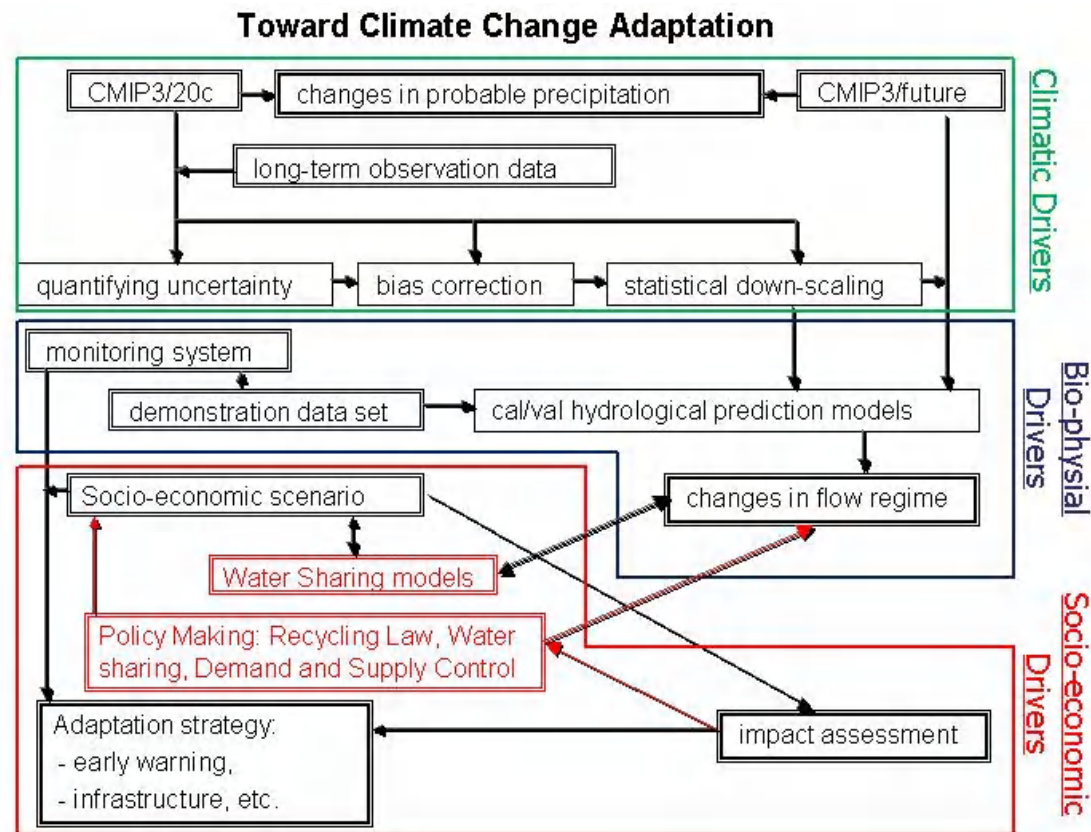
- Issued the **importance of local hydrologic data** for global climate change on water resources
- Discussed the **necessity of developing global hydrologic models**



Model constructions over AWCI domain with global data

□ 6th Meeting of the GEOSS/AWCI ICG (Bali, Mar. 2010)

- Proposed activities focusing on CC impact assessment in 3 specific areas including flood, drought, and snow and glacier phenomena



Flowchart of an implementation plan toward assessing impacts of climate change and preparing adaptation strategy – resulting version from breakout group discussions.

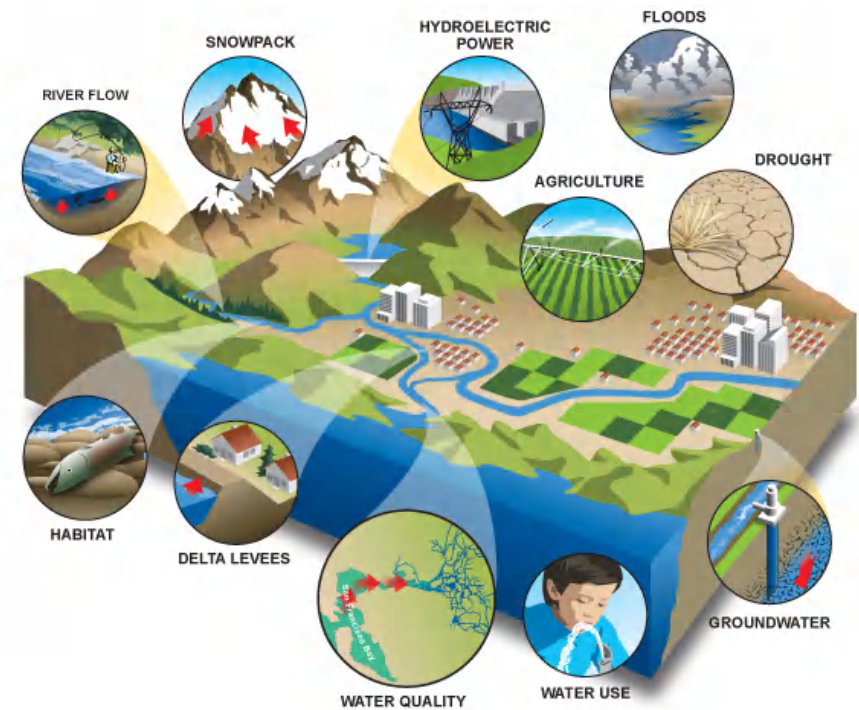
APN Proposal Approved in 2010

Title of project

- **Climate change impact assessment on the Asia-Pacific water resources under GEOSS/AWCI**

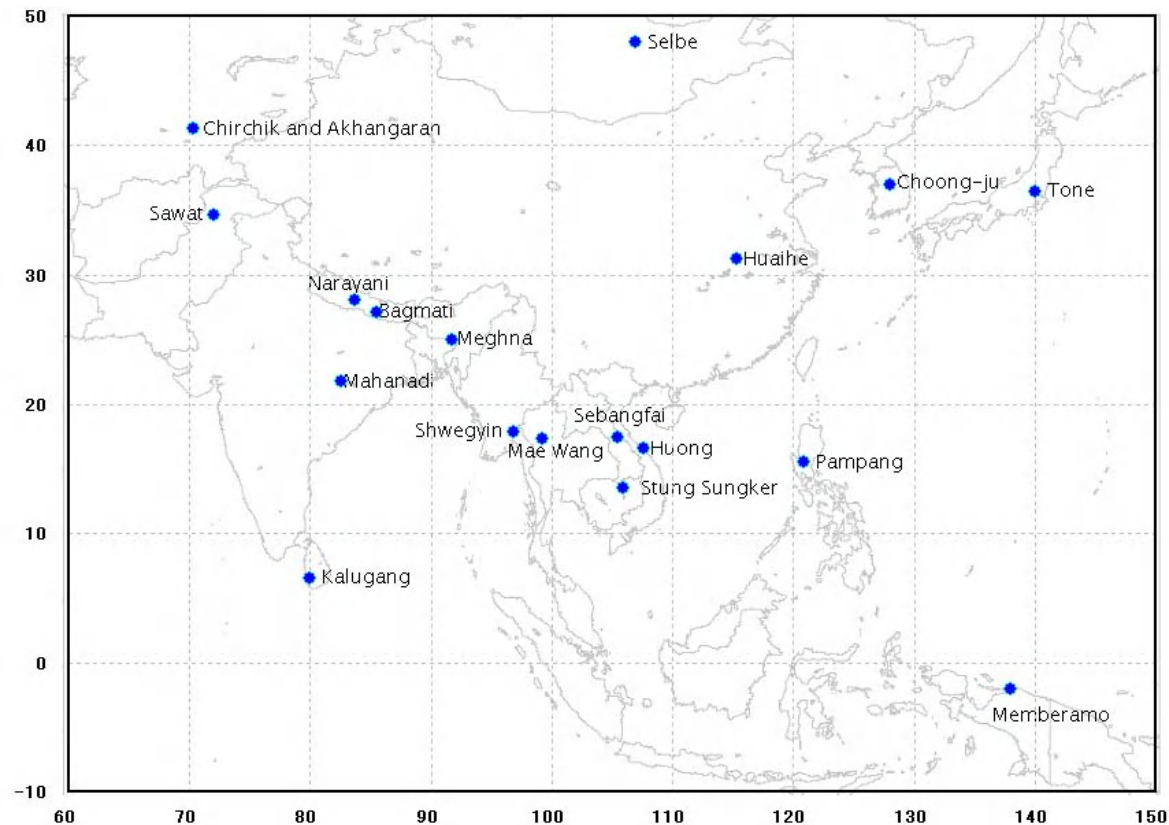
Motivations of this study

- **Asia monsoon** plays an important role on global water cycle
 - Provides substantial rainfall and water resources
 - Provides many benefits, but causes serious water-related disasters
- **Various reasons for the disasters**, but the current climate change makes difficult to manage them

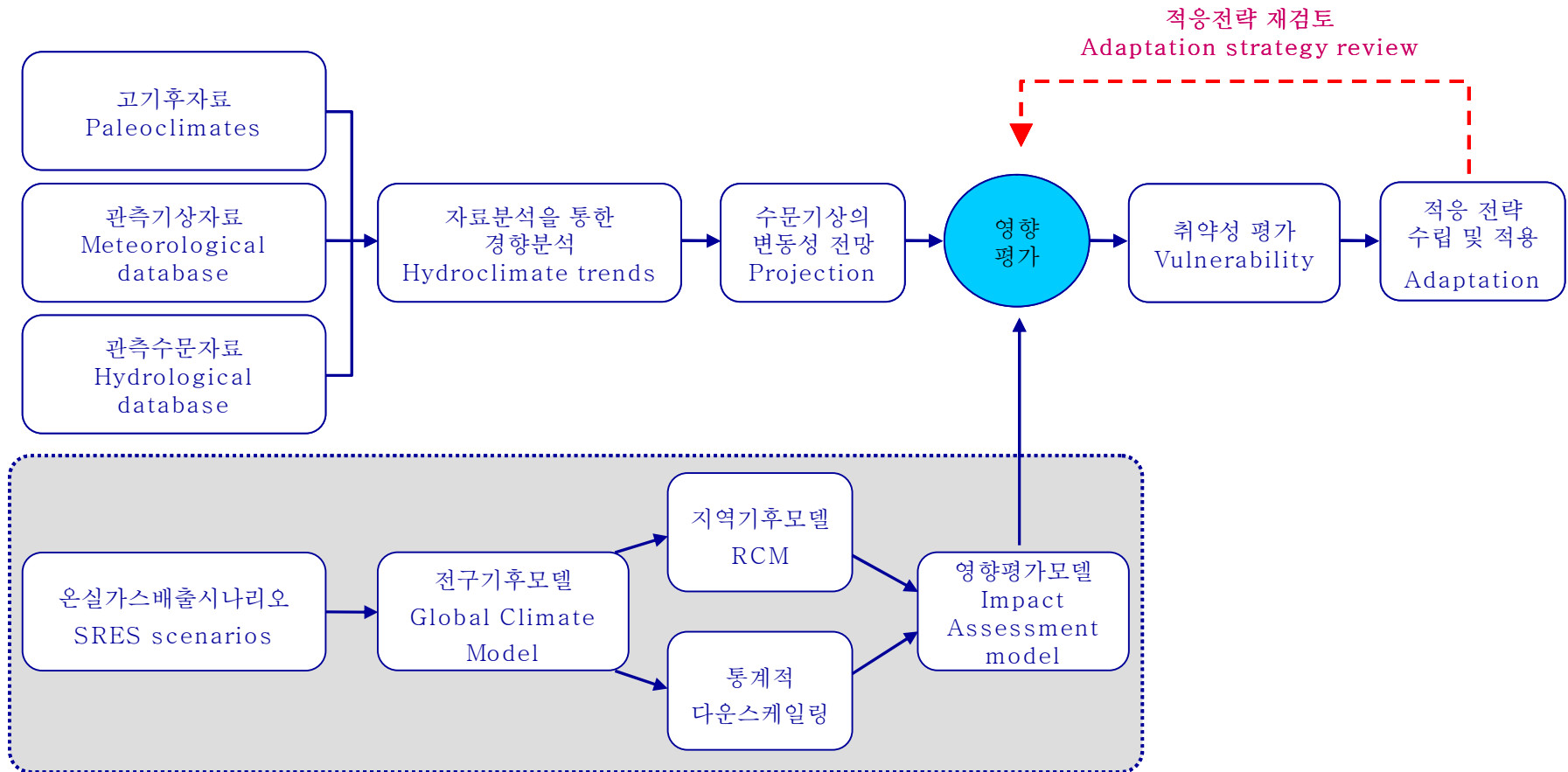


□ The objectives

- To evaluate the climate change impact assessments on water resources over the Asia-pacific regions joining GEOS/AWCI
- To promote the capacity building for climate change impact assessment technology



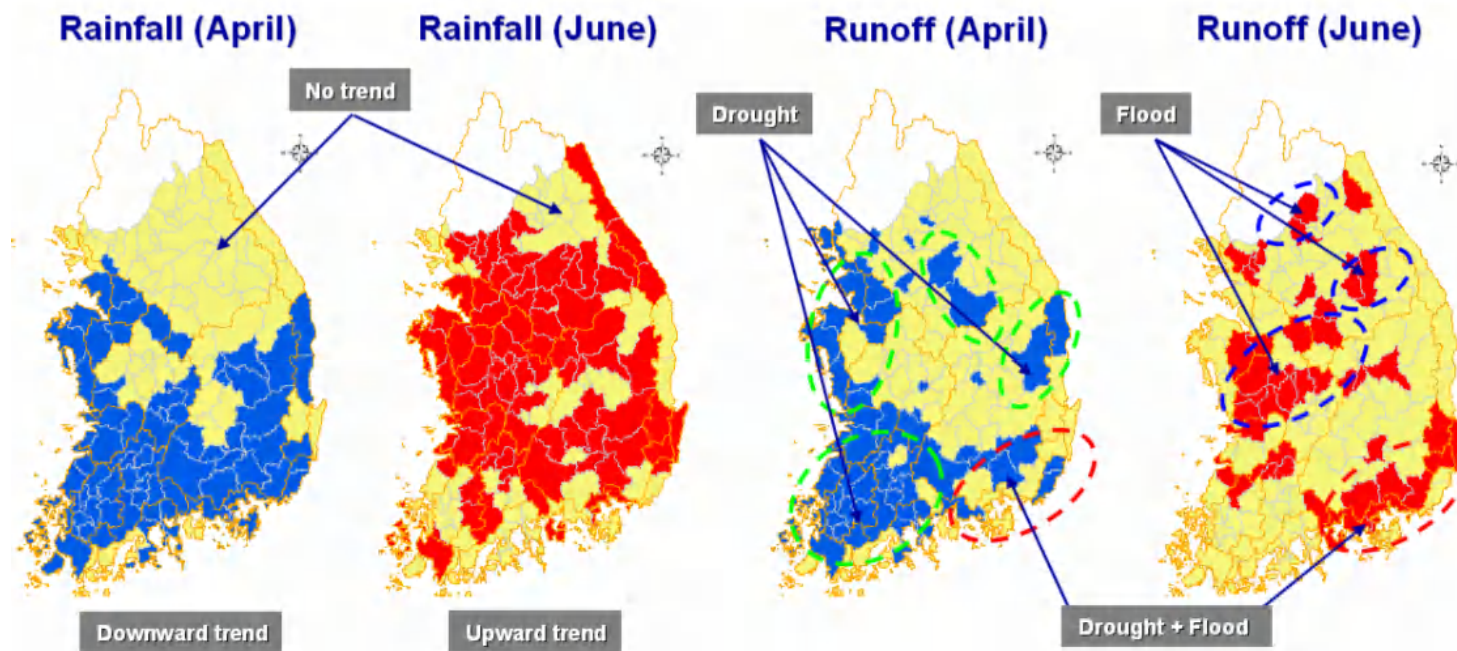
□ Approaching methods



General procedure for **CC impact and vulnerability assessment** on water resources

■ Tasks for the First Year (2010-2011)

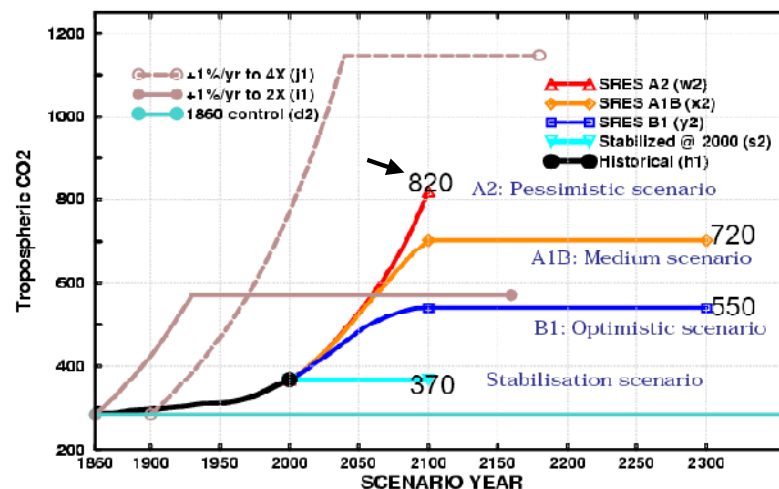
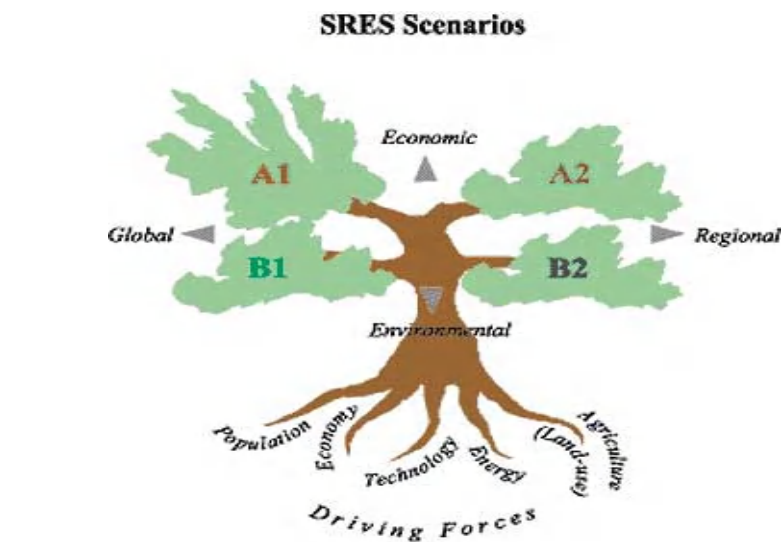
- Analyze the past historical observation data to detect some climate change trends over GEOS/AWCI
- Use Linear regression method, Mann-Kendall Test, Moran's I Spatial Autocorrelation method



Spatial trend according to Mann-Kendall test for P and Q

■ Tasks for the Second Year (2010-2012)

- Simulations of climate and water resources under the future greenhouse gas emission scenarios



Climate Projection (CMIP3/20c/future)

Dynamical/Statistical Downscaling

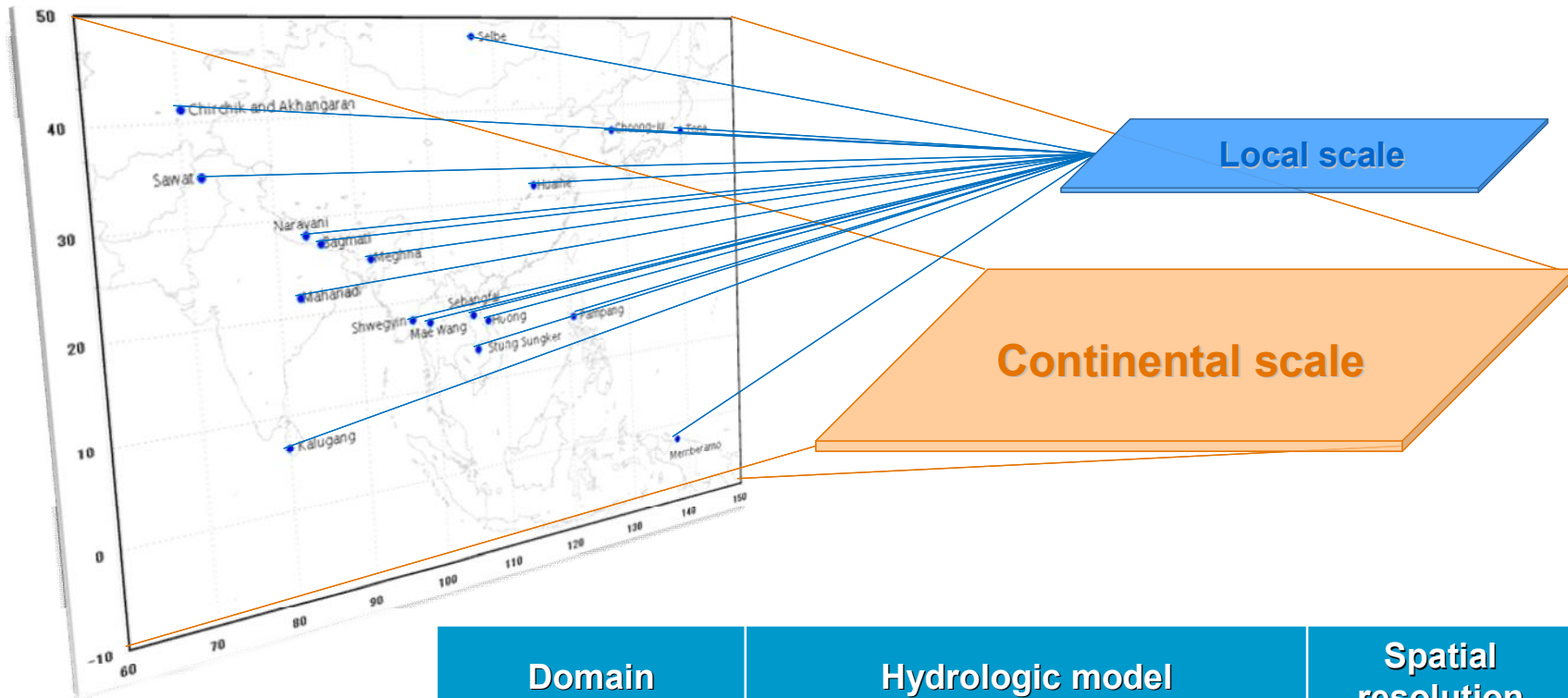
Stochastic Method (Weather Generator)

Impact Assessment Hydrologic model

Impact Assessment on Water Resources

Sensitivity analysis on Water Resources

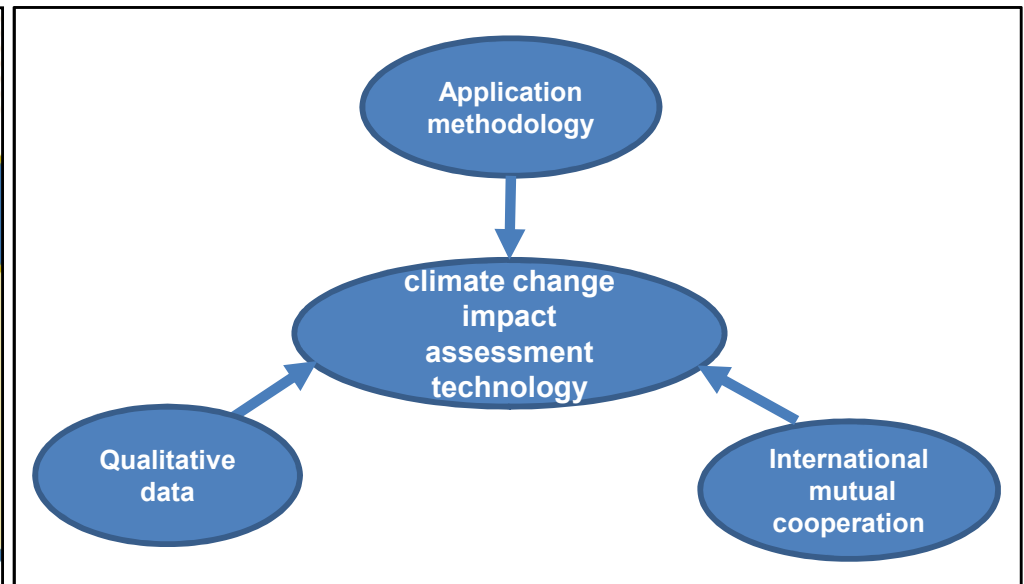
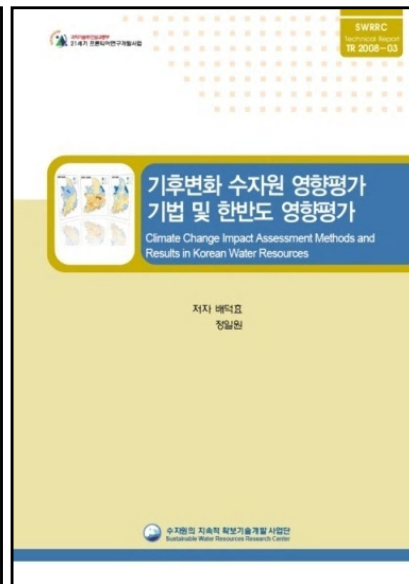
➤ **Selection of hydrologic models** depends on **area scale** and **model performance**



Domain	Hydrologic model	Spatial resolution
Local scale	DBHM, PRMS, SLURP, SWAT, VIC	100m-20km
Continental scale	VIC	20-50km

Expected Outcomes

- Technical report and scientific paper on the **recent trends of hydrologic and climate variables** over the Asia-Pacific regions(1st Year)
- Technical report and scientific paper on **climate change impact assessment on water resources** over the Asia-Pacific regions under GEOSS/AWCI frame work (2nd Year)
- **Capacity building** for hydrologic impact assessment of climate change (1st & 2nd Years)



□ Timeline of project

Time	Project activities
2010.10	<ul style="list-style-type: none"> • Discuss project outlines
2011.10 - 2011.02	<ul style="list-style-type: none"> • Data collection and quality control • Preliminary application of the data
2011.03	<ul style="list-style-type: none"> • Discuss each country's output
2011.04 - 2011.06	<ul style="list-style-type: none"> • Additional data collection and quality control • Trends and regression analysis of the data
2011.07 - 2011.09	<ul style="list-style-type: none"> • Comparative analysis of each country's output • Write a technical report for first year • Write a scientific manuscript
2010.11	<ul style="list-style-type: none"> • Discuss project outlines for second year • Training and set up the methodology for climate change impact assessments on water resources
2011.11 - 2012.01	<ul style="list-style-type: none"> • Future climate change scenarios with downscaled fine resolution covering the Asia-pacific experimental watershed regions
2011.01 - 2012.03	<ul style="list-style-type: none"> • Rainfall-runoff model calibration/verification over all the study regions • Application of hydrologic model for obtaining future climate change impact assessment on water resources
2012.04 - 2012.06	<ul style="list-style-type: none"> • Review the each country's output and recalibration
2012.07 - 2012.09	<ul style="list-style-type: none"> • Write a technical report for second year • Write a scientific manuscript • Derive future collaborative research activities
2012.09	<ul style="list-style-type: none"> • Comparative analysis of each country's output

For more detail, refer to <http://monsoon.t.u-tokyo.ac.jp/AWCI/projects.htm#change>



Budget and duration of the project

- **Amount requested from the APN for 2010/11: US\$ 84,000/2 years**
- **Duration of the project: 2 years**
- **Funding secured from other sources: US\$ 84,000/2 years (to be secured only in 2010 at this moment)**

Main use of APN funding

- **Task team meeting/workshop**
 - **Technical support for research work**
 - **Communications (Teleconference)**
 - **Report and publications**
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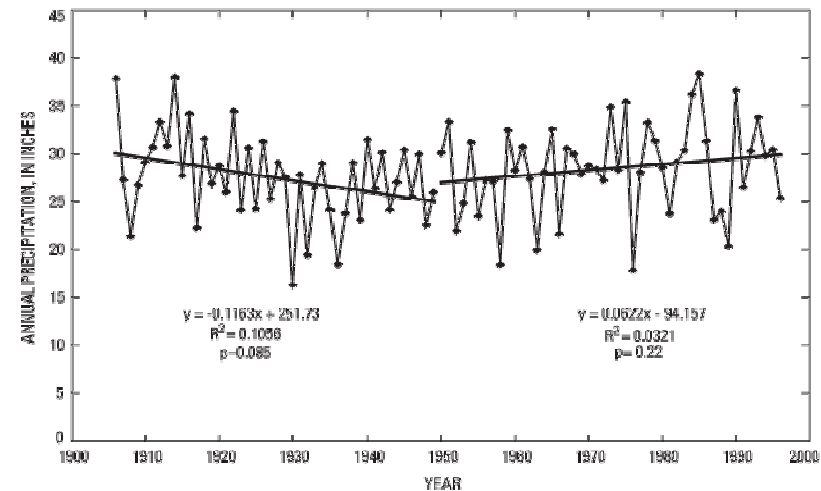
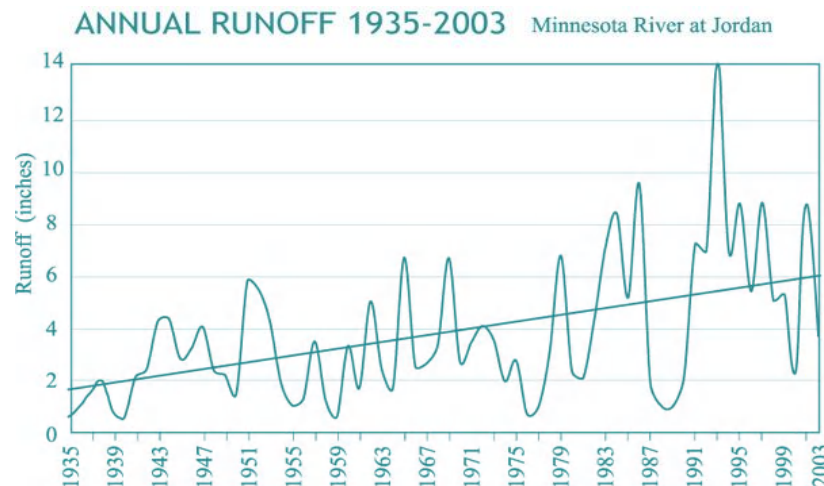
On-going and Future Plan to be taken

- Organize project working groups**
 - All ICG members can be joined for this working group
 - **Two or three working groups** are considered including data collection and quality control, data analysis, hydrologic modeling with downscaling scheme
 - **Scientific advising/supporting team** will be necessary

- Data collection and quality control for this WG**
 - **The data stored on Data Integration and Analysis System (DIAS)** will be used for each country's demonstration basin
 - Long-term data, especially **long-term daily T, P and Q** and hourly data even short periods are necessary

□ Preliminary analysis for the 1st & 2nd year tasks

- The project requires the time series of long-term data (normally more than 20-30 years)
- CC working group expects each country will provide their data in **the first period** from 10-2010 to 12-2010 for the preliminary analysis
- Mann-Kendall test, linear regression and other analysis are performed to detect the climate change variability before next meeting
- Additional data will be provided in **the second period** from 04-2011 to 06-2011 for the 1st and 2nd year tasks



Thank you

