

United Nations University Activities

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*Environment and Sustainable Development
Programme*

UNITED NATIONS UNIVERSITY

Asian Water Cycle Symposium
The University of Tokyo, Tokyo, Japan

9-10 January 2007



UNU WORLDWIDE



- HQ in Tokyo
 - Environment and sustainable Development
 - Peace and Governance
- 13 UNU Centers world wide
- Financed by voluntary contributions - host countries and research grants

ESD Programme

- UNU's Environment and sustainable Development (ESD) Programme focuses on **the interactions between human activities and the natural environment**, and their implications for *sustainable development*.
- Method
 - Cover basic issues of environment and natural resources management for human survival
 - Adopt a multi-disciplinary approach
 - Make use of international networks involving developing countries
 - Disseminate to different parts of the UN System

Sample Programs

- Coastal Hydrosphere project
- Risk Management
 - Flood Risk management
- Basin Water Cycle
 - Sri Lanka
 - Mekong Basin
- Capacity Building
 - Post graduate research support
 - Low cost system development

Concluding Remarks

To meet global challenges,

- Sustainable solutions to environmental challenges should be **studied and developed** at each **locality**, supported by **global experiences and technological advances**.
- Fostering post graduate research and supporting inter-disciplinary studies are effective in achieving this.

Coastal Hydrosphere Project (11 c)

6 Governmental Institutes (G) & 5 Universities (U)

Phase I (1996-1999)

Pesticide contamination
in soil and foods

Phase II (1999-2002)

Endocrine Disrupting
Chemicals

Phase III (2002-2005)

Pesticide-origin POPs in
water, soil and sediments

Phase IV (2005-2008)

POPs in aquatic
organisms

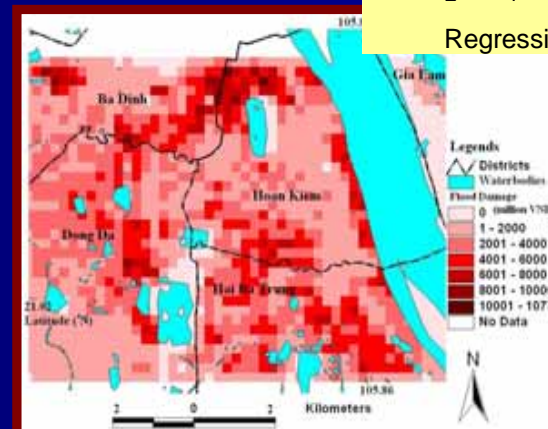
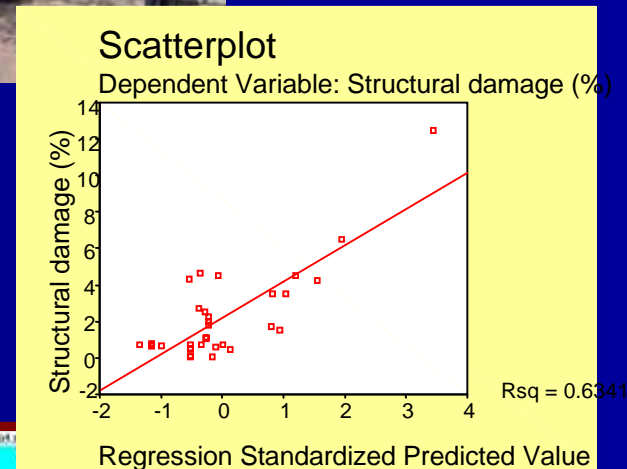


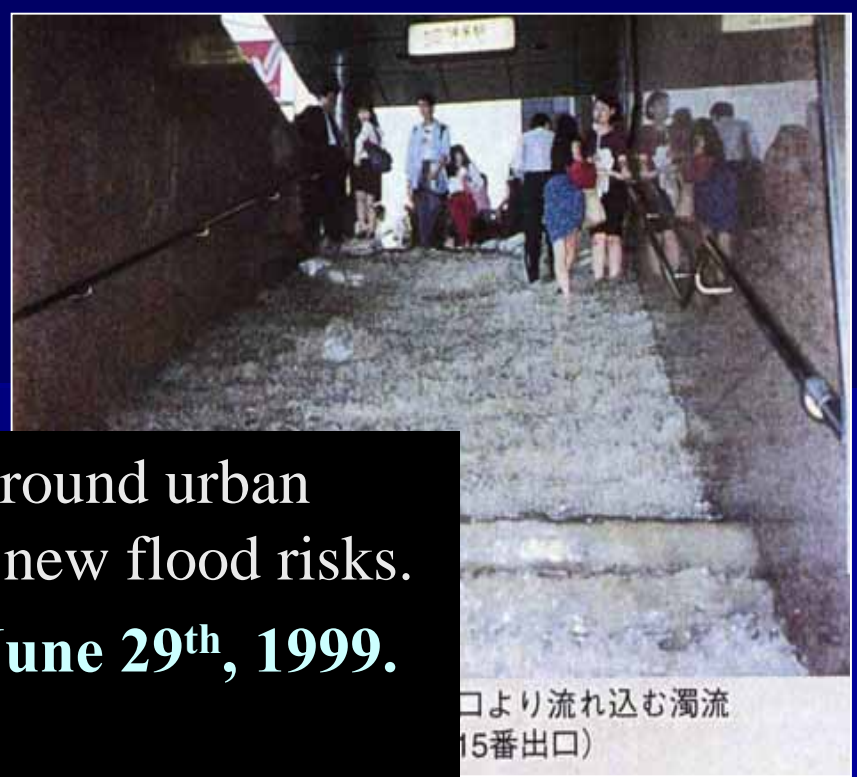
Risk Management

- The UNU-ESD program focus on sudden-onset catastrophic disasters, which require both “hard” and “soft” elements to reduce losses.
- Current infrastructure development focus on the event magnitude in terms of probability of occurrence. The designs should rather focus on disaster impacts.
- Three programs are currently under way.
 - Catastrophic flood risk assessment in the Asia Pacific region
 - Urban flood risks with focus on infrastructure (underground developments)
 - Hazard and risk maps for Tsunami affected areas

Implementation

- Research and methodology development is carried out by UNU scholars in partnership with post graduate institutes, national research institutes of different countries and operational government agencies.
- 13 country program in catastrophic flood risk assessment
- Impacts from the worst possible flood





The recent underground urban expansion creates new flood risks.
Fukuoka flood: June 29th, 1999.

口より流れ込む濁流
(15番出口)



China -
July 10



Safety of Underground space

- Number of entrances for water to go in – 25
- Some public places have space for water to spread
- Private UG Spaces with a single entrance are at the highest risk.

- How can we warn effectively underground space users and evacuate them safely?
- How should we consider multi-hazards? Floods and Fires require different mitigation approaches
- Understanding the vulnerability of public facilities is important in developing disaster resilient cities.





Safety of Underground space

Salient features:

- Grid size: 20m
- With DEM and DSM
- Period: June 29, 1999:01.00 – 24:00 hrs.
- Rainfall data: 10 min. interval
- Number of entrances for water to go in – 25

■ 1999

- Maximum hourly rainfall is 77 mm/hr, total rainfall is 164mm.
- Subway was suspended for about 3.5 hours. :Water into subway is estimated about 2,000m³

■ 2003

- Heavy rain in upstream of Fukuoka.104mm/hr at Dazaifu, less than 20mm/hr in Fukuoka
- Subway stopped at 19th, resumed completely at 20th.:Water into subway estimated about 10,000m³



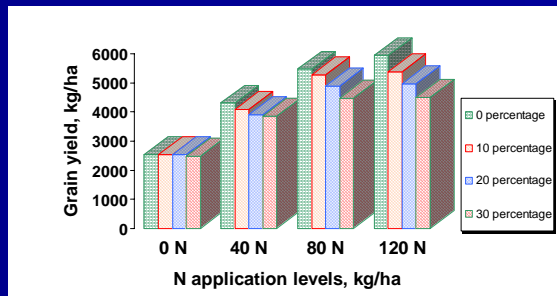
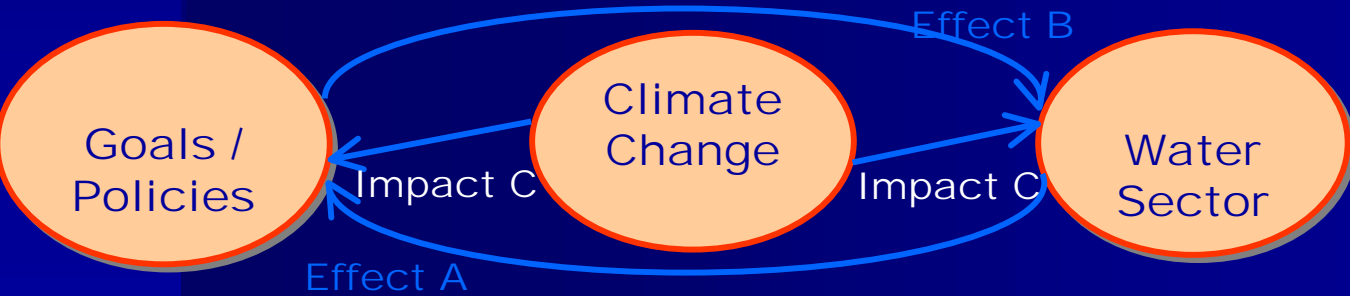
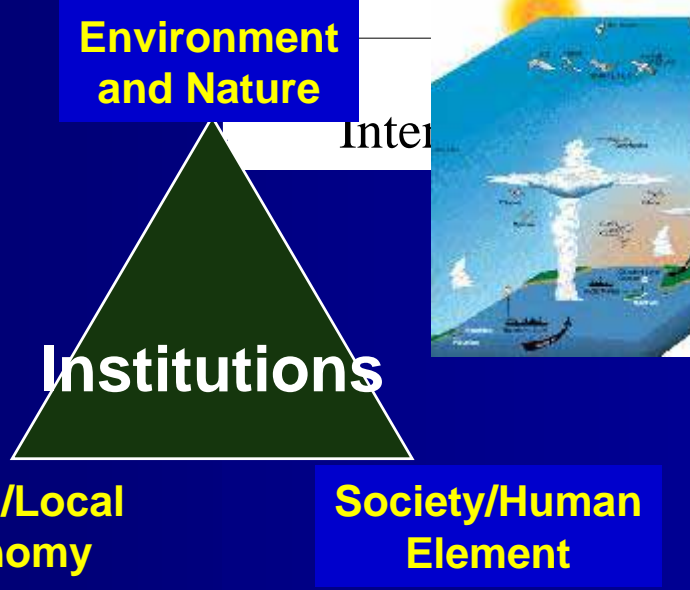
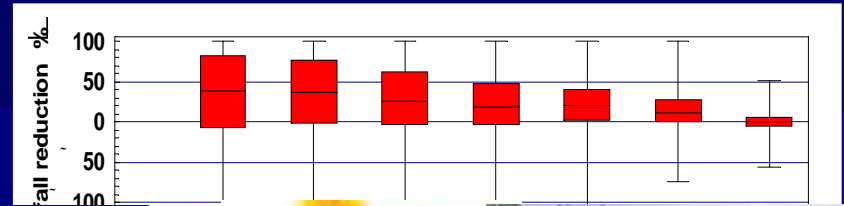
Impacts of Reduction of Rainfall due to Atmospheric Brown Cloud Sri Lanka

sample of WED-AIM

Water using sectors

Development goals

Vulnerability, Impacts & Adaptation (VIA) in Water Using Sectors							
	(1)	(2)	(3)	(4)		Row Totals (With CC)	
	Agriculture	Hydro Power	Water for Humans (Esp. Poor)	Water for Bio- & Eco-logical Res.			
(S)	Status (No CC impacts)*	-1	0	-1	-1		-3
(S1)	Status (+CC Impacts =>)**	-2	-1	-3	-2		-8
Dev. Goals/Policies (+CC Impacts)							
(A)	Growth	-2	-1	-3	-2		-8
(B)	Poverty alleviation	-3	-1	-3	-1		-8
(C)	Food Security	-2	-1	0	-1		-4
(D)	Employment	-2	0	-1	-1		-4
(E)	Trade & Globalisation	-1	-1	0	-1		-3
(F)	Budget Deficit Reduction	-1	-1	-1	-1		-4
(G)	Privatisation	0	0	0	-1		-1
Column Totals (With CC)		-11	-5	-8	-8		-26



Research Forum for Mekong Basin

- Mekong Basin Research Network established as a result of recommendation of the Symposium held in China, 2005 Dec with World Bank, Tsinghua University, and Yunnan University.



December 2005, China

- River ecology, disaster reduction and water supply

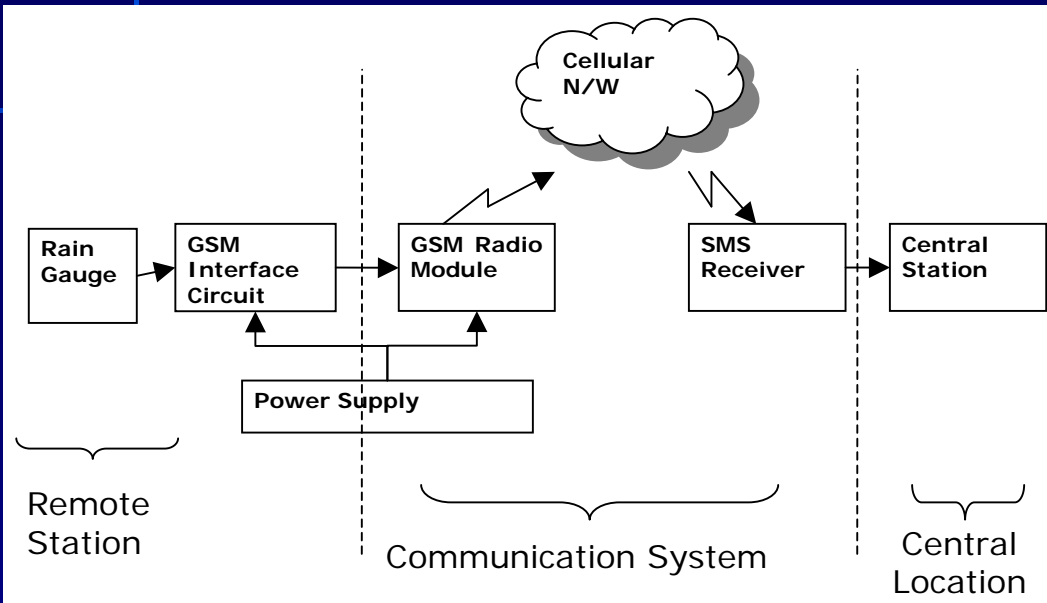


Student Research

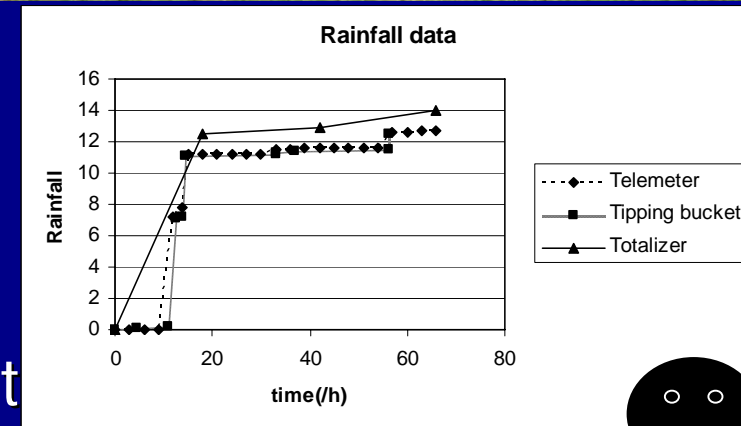
- Post graduate student program
 - Joint supervision from UNU & partner institutes
- Examples
 - Development of a low cost automated Rain gauges
 - Mekong basin studies; ecology
 - Water poverty
 - Real time rainfall forecasting



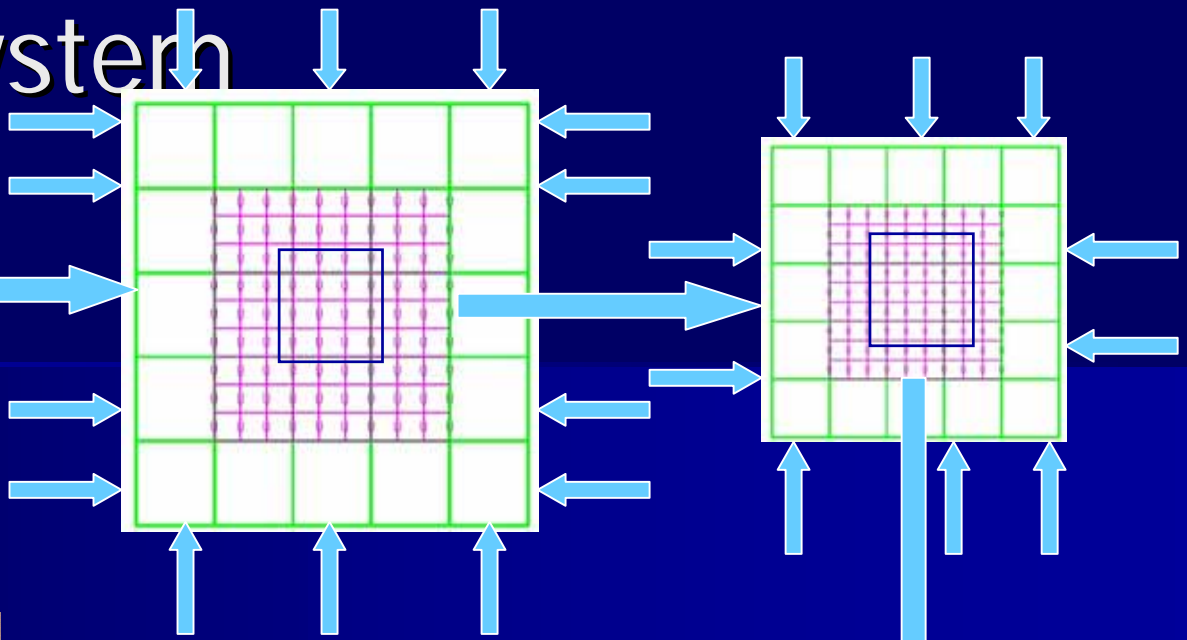
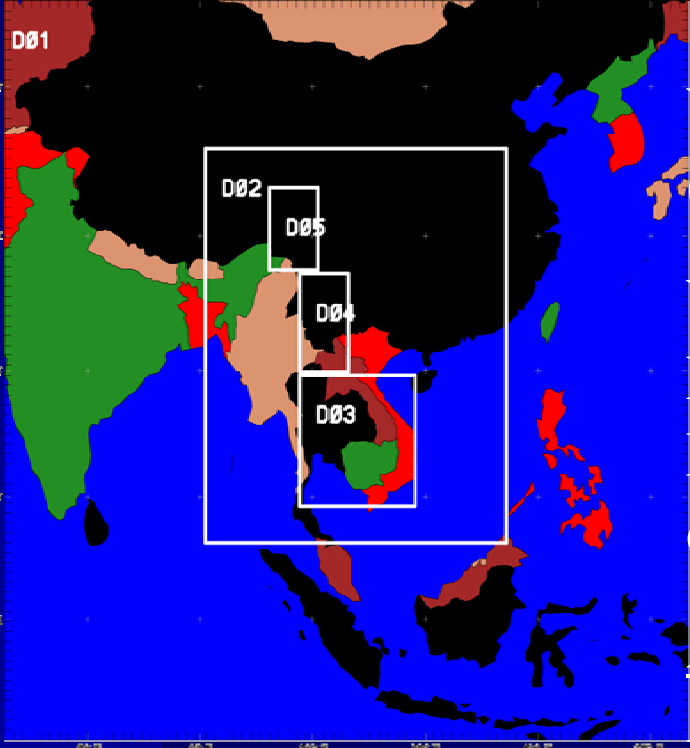
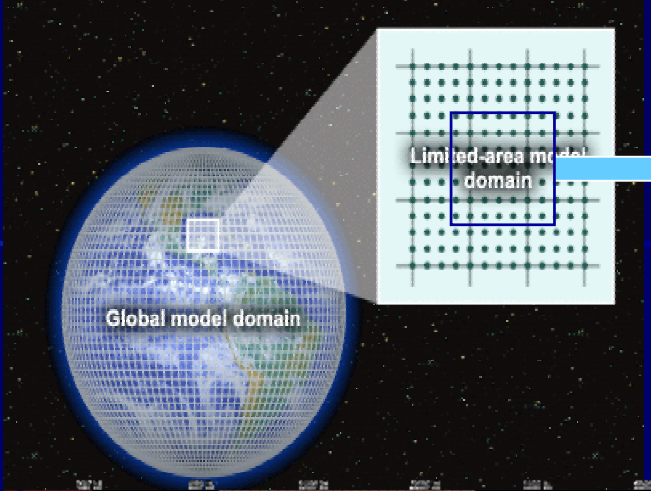
System – Adaptive, Dynamic



- Time to tips (0.1 mm) are recorded in the unit.
- Data transmitted via SMS at either fixed time interval or fixed rain accumulation level – both can be set remotely by SMS



Realtime RF system



We use the global forecast (GFS data sets)

Weather Research and Forecasting (WRF) Model of NCAR, USA used for downscaling

Automated systems

Use for scenario modelling

Hardware

Cluster Workstations

Pre-post processing
computer

High-powered workstation

DNS server

Additional
workstation

Server

Gateway/Router

Coffee

