



Introduction to Demonstration Project in Korea

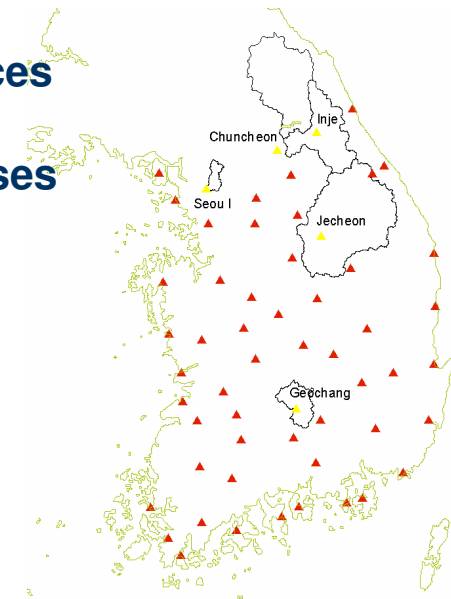
2007. 9. 9

Deg-Hyo Bae

Professor, Dept. of Civil & Env. Engrg., Sejong University, Korea

□ Several Important Issues on Hydroclimatology in Korea

- Integrated water resources planning and management
- Natural disaster prevention problems (Flooding/ Drought)
- Climate change impact assessment on water resources
- Interaction between atmosphere and surface processes
- Riverine eco-system with biodiversity within watersheds



□ Nominated River Basin: Choong-Ju Dam Basin

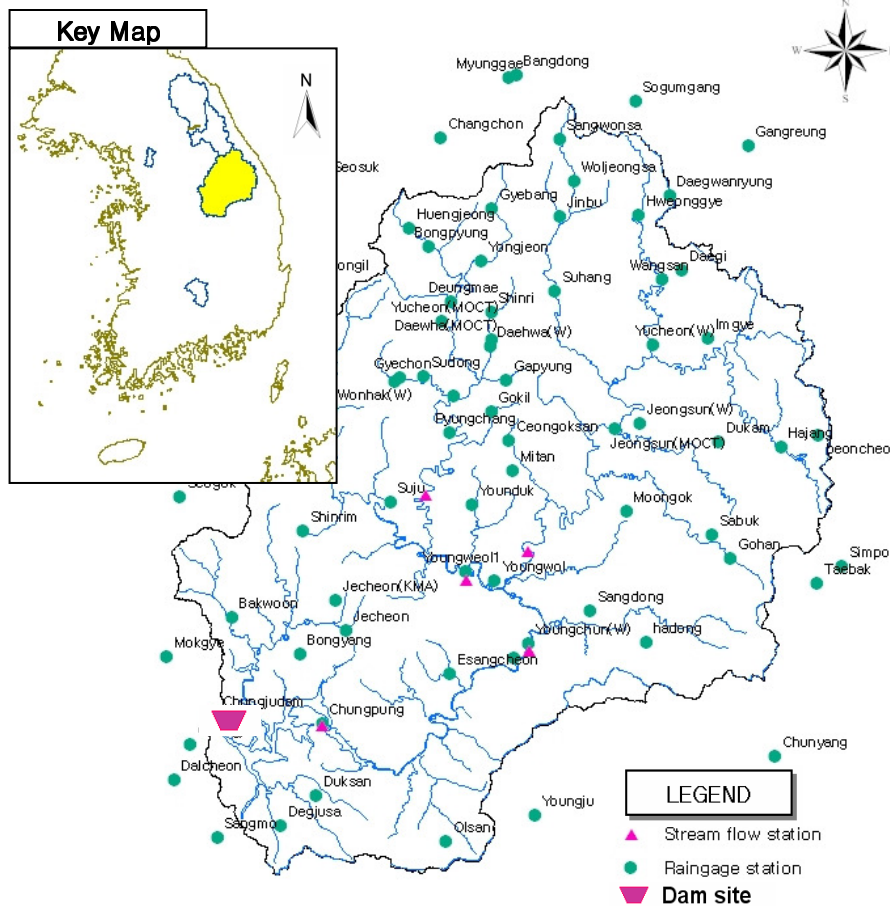


Fig. Study area of Choong Ju dam site

River Basin Information

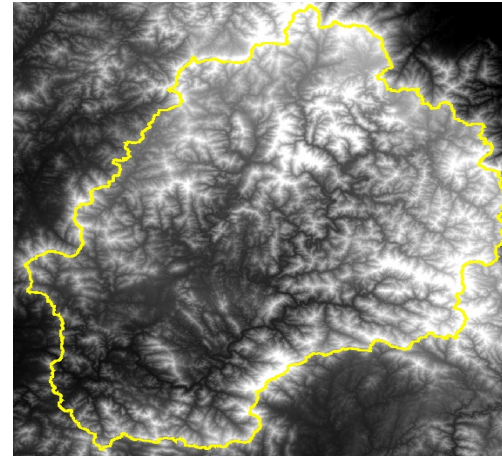
Location	App. 128°E, 37°N
Basin Areas	6662 km²
Catchment Lengths	321.9 km
Elevation	0-1561
Land Use	Mountain
Annual MAP	1149mm

Observation Systems and Data

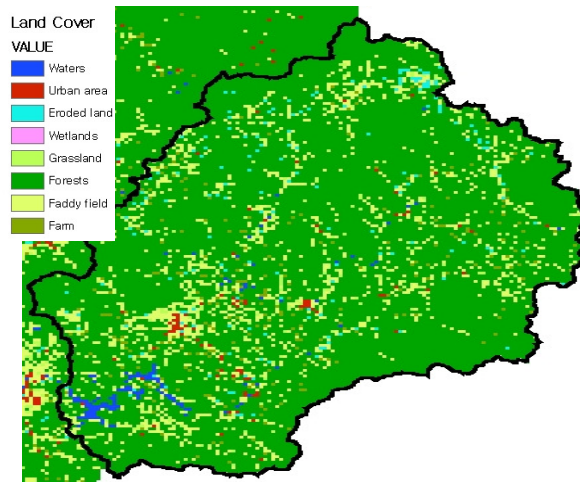
Rain gauge St.	73 (weather radar data)
Stage St.	6
Evaporation	Pan data



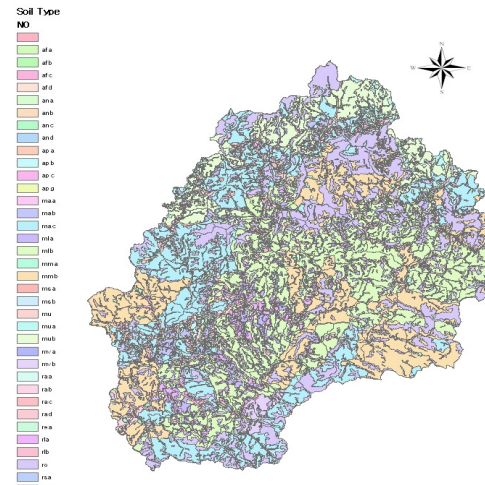
Choong-Ju Watershed



DEM



Land Cover



Soil Type

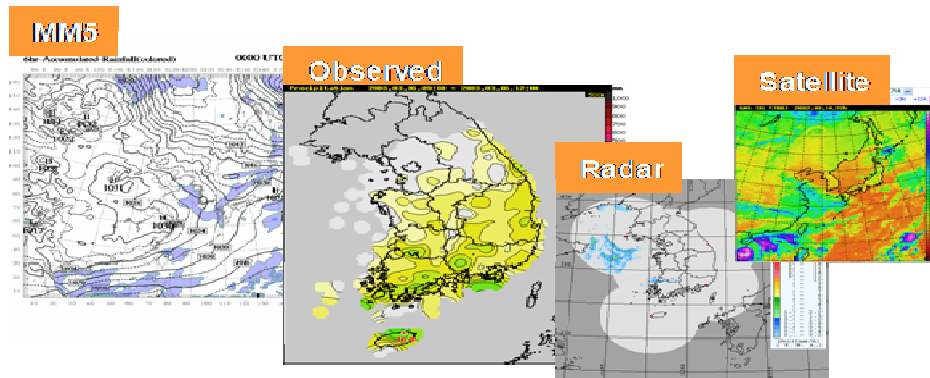
Three Targeted Issues and their Backgrounds

Water Resources Application of Short- and Long-term Weather Forecast System

*Objectives

- To develop a short- and long-term weather forecast system for the application of water resources planning and integrated basin-wide water resources management

*Method



*Major Outcomes & Future Works

- Development of downscaling techniques for connecting global-meso-hydro scale model
- Evaluation of weather forecast accuracy according to f. l. times
- Design and implementation of short- and long-term weather forecasts for water resources applications

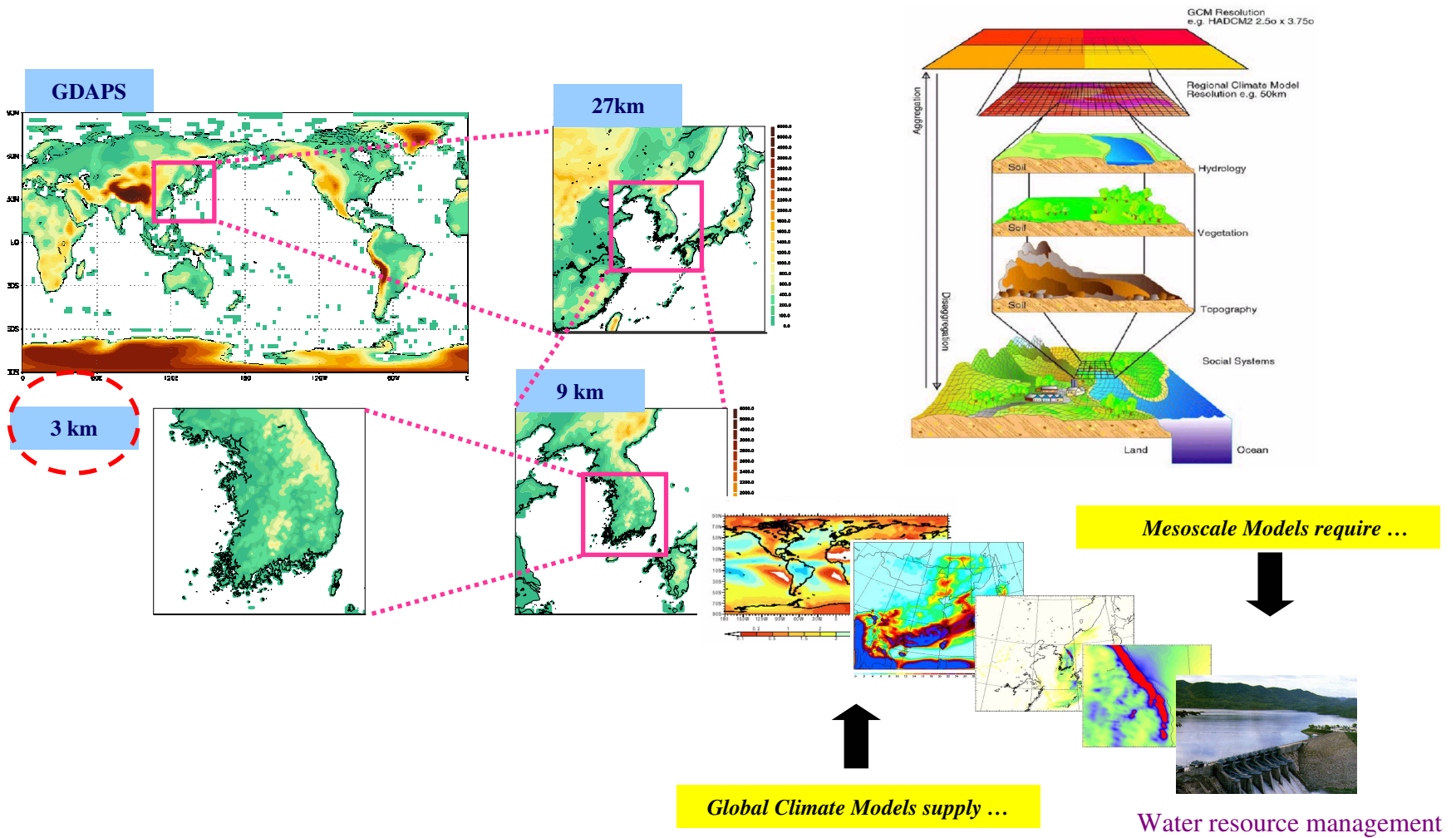


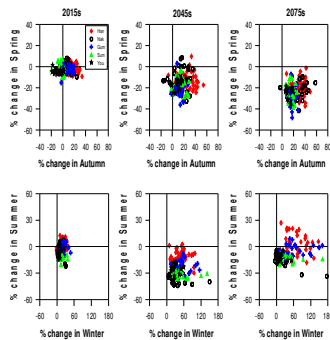
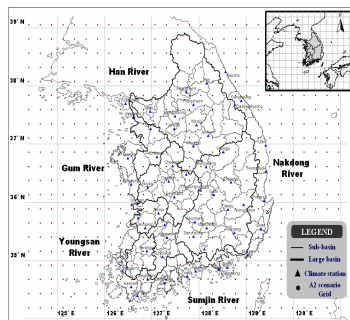
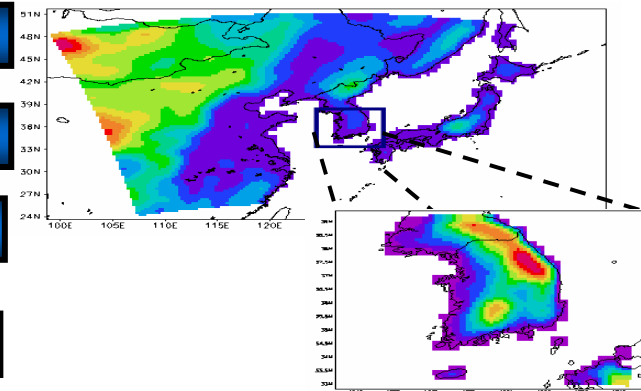
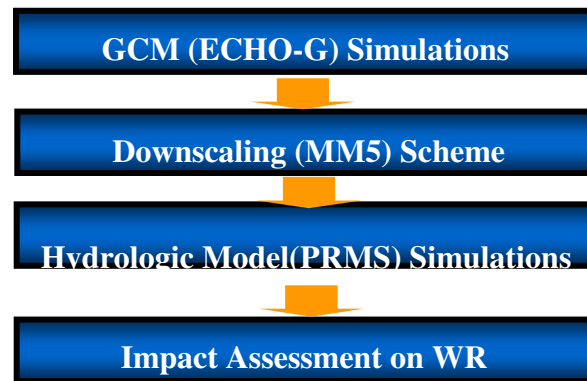
Fig. Schematic of Atmosphere-Surface Interaction Study

Climatic Change Impact & Vulnerability Assessments on Water Resources in Korean Peninsula

*Objectives

- To evaluate the climate change impact assessment on the 139 whole Korean sub-basins as the first national level investigation

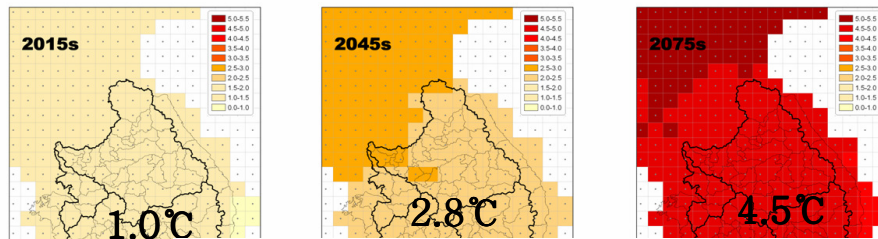
*Method



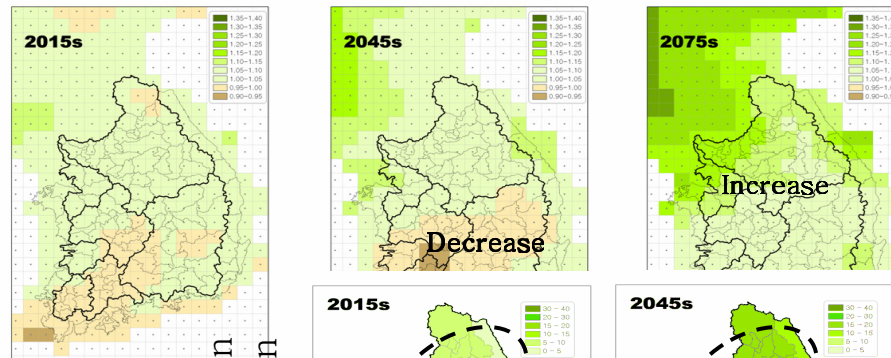
*Major Outcomes & Future Works

- Relative changes of annual mean P, T, ET and Q during the three future periods relative to the reference period
- Understanding and reducing the uncertainties of climate change and their hydrologic applications

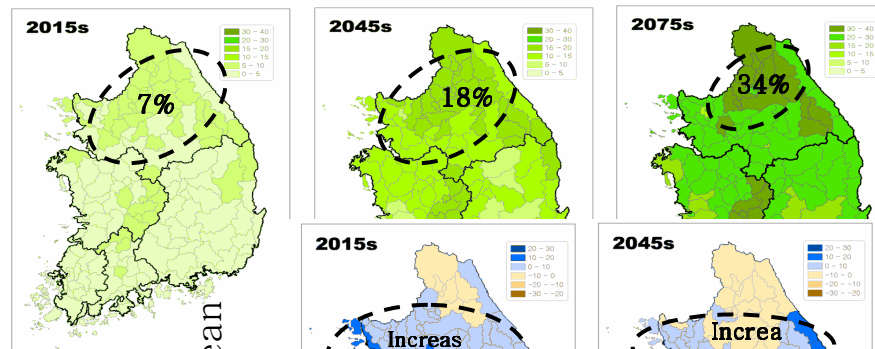
Annual mean temperature



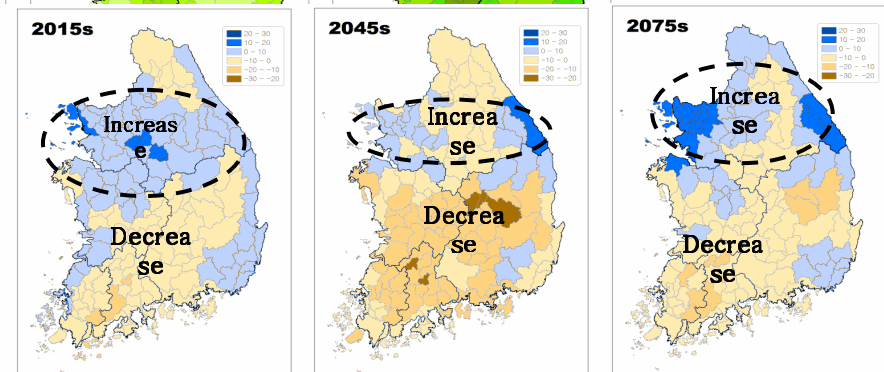
Annual mean precipitation



Annual mean Evaporation



Annual mean runoff



Relative changes of annual mean P (decimal percent), T (degree celsius), ET, Q under A2 scenario during future periods(2015s(2001-2030), 2045s(2031-2060), 2075s(2061-2090)) relative to the reference period(1971-2000)

Fig. Climatic change impact assessments on each hydro-climatic variable

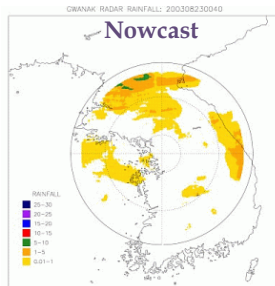
Development of Radar Rainfall & Flood Forecasting System

*Objectives

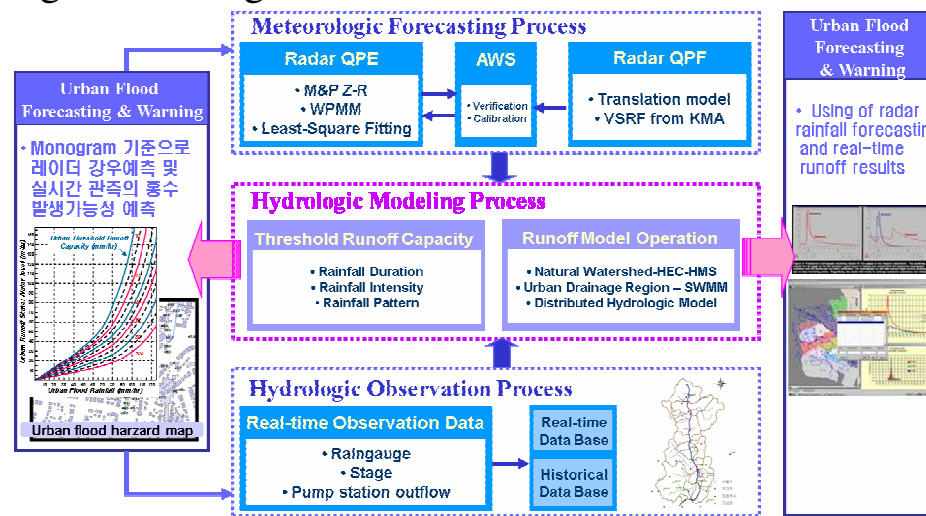
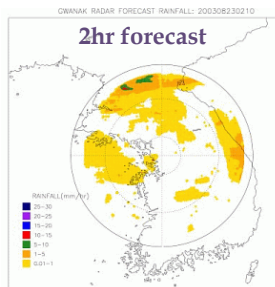
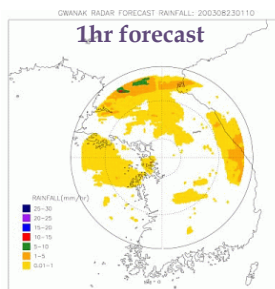
- To develop a radar rainfall and flood forecasting system for both urban and rural watersheds

*Method

- Consists of four processes: Meteorological Forecasting Process, Hydrologic Observation Process, Hydrologic Modeling Process, and Urban Flood Forecasting & Warning Process



0.5hr forecast



*Major outcomes and Future Works

- To forecast real-time radar-driven rainfalls coupled with satellite data
- To provide algorithms for real-time flood forecast

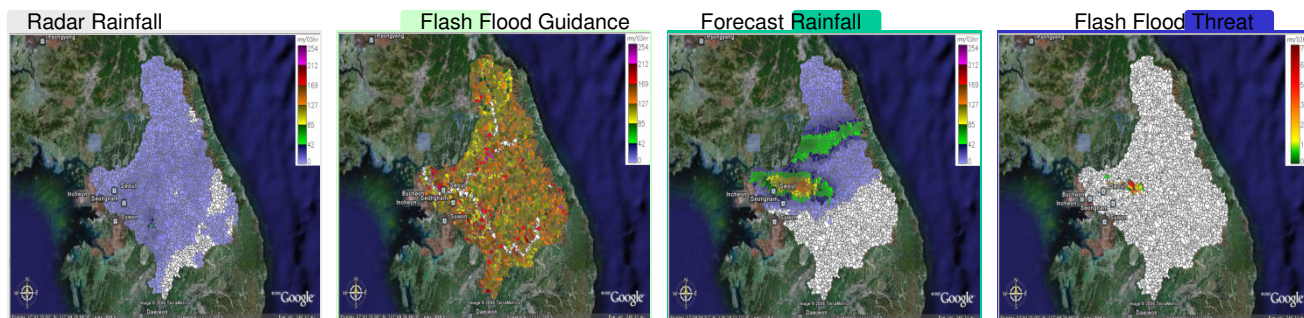
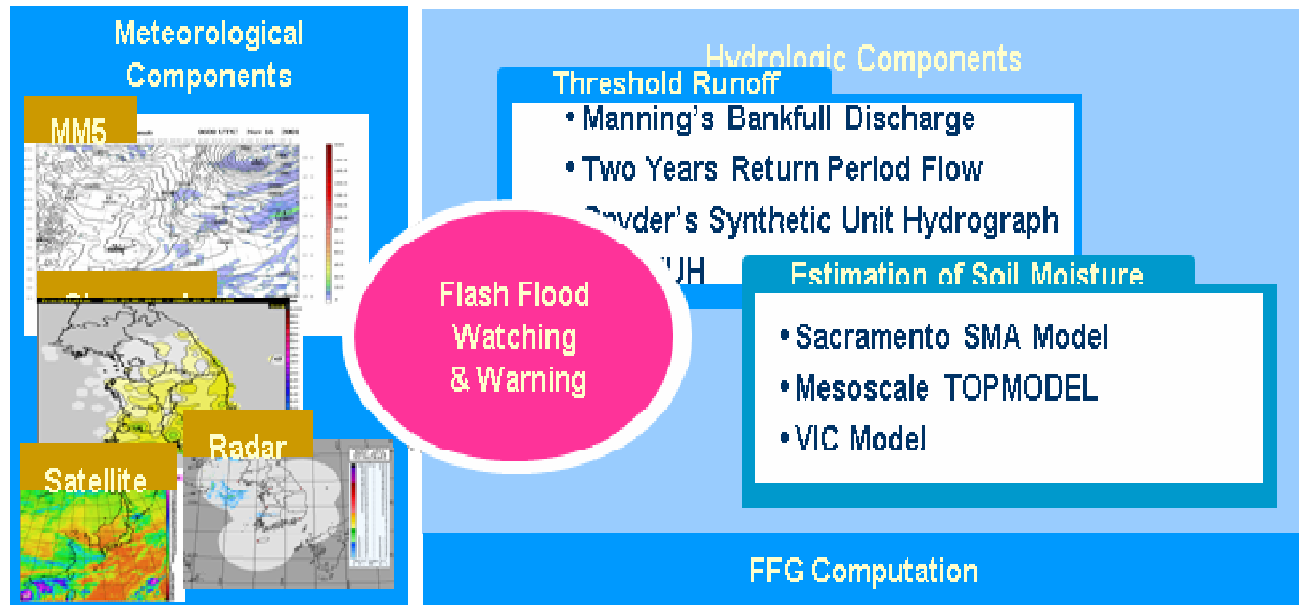


Fig. Flash flood forecasting system development