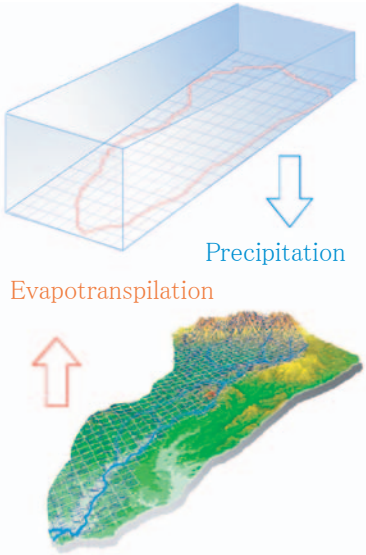
Reconstrunction of Historical Rainfall on the Basin Scale

This project is a part of the Revolutionary Research Project of the Ministry of Education, Culture, Sports, Science and Technology (MEXT) entitled as "Coexistence of People, Nature and the Earth (RR2002)".

Hydrologic Engineering Research Team
Public Works Reserch Institute

PWRI is developing a methodology to reconstruct historical rainfall over ungaged basins by applying the Integrated Regional-Scale Hydrological Atmospheric Model (IRSHAM) without relying on ground observation. IRSHAM will reconstruct past 20-year rainfall over the Mekong river basin and contribute to study of the estimation of runoff flow into the Mekong Delta (Tonle Sap) in the past.



Regional Scale Atmospheric Model
- Describe small-scale orographic rainfall
- Input worldwide available atmospheric database (Reanalysis data)

Integration

Model two-way interaction

IRSHAM
Integrated Regional Scale Hydrologic/Atmospheric Model

Land Surface Process
Model explicitly heterogeneity of land surface process

Reconstruction of temporal/spatial rainfall distribution in basins in the past without ground hydrologic data

Simulation of rainfall reconstructed by IRSHAM

Study basins: Tone River/Arakawa (Kanto District, Japan)
19,501 km^2

Applied data

Reanalysis data:NCEP/NCAR (200km, 1947-present)

DEM, Land use,Vegetation: USGS EROS (1km)

Soil:UN-FAO (0.925 km)

Comparison between ground observation (AMeDAS measurement) and reconstruction