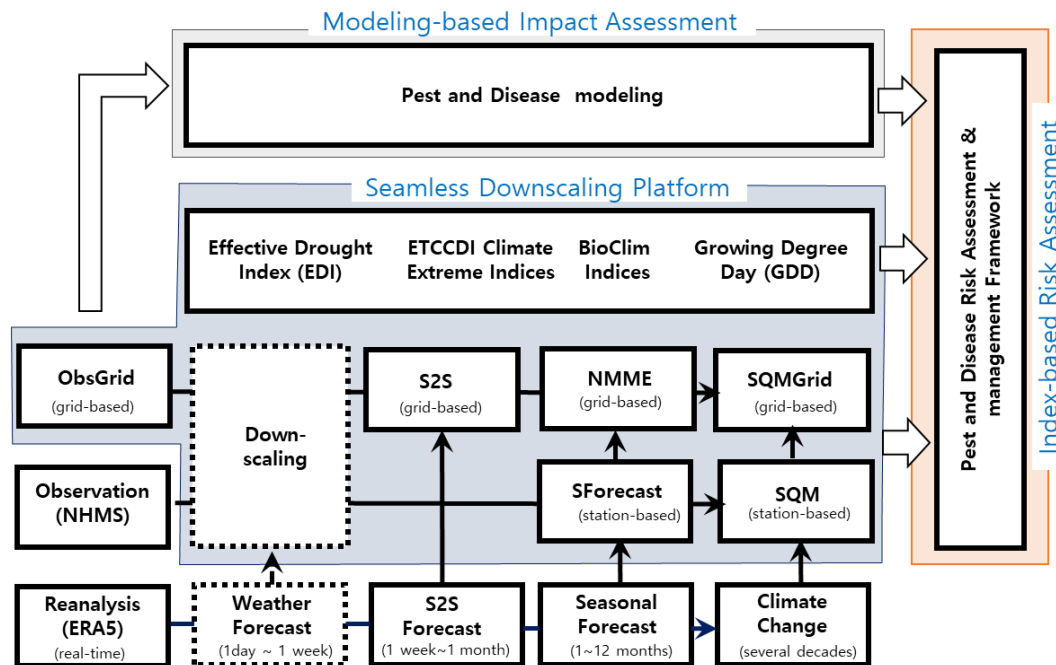


Weather & Climate Service Platform Development

- ▶ high-resolution observation-based gridded data: ObsGrid
- ▶ downscaled SSP-based climate change projection data : SQMGrid
- ▶ long-range (1-12 month) climate forecast data: NMME, SForecast
- ▶ Sub-seasonal (1week-1month) forecast data: S2S



International Application

Integrated Pest Management using Seamless Climate Information

• R-Packages

Sforecast(station-based)

- Hybrid seasonal forecasting based on APCC forecast, reanalysis, and climate indices.
- Deterministic forecast information are provided for each weather stations.

SQM

- Weather station-based statistical downscaling package for CMIP6 (SSP scenarios)

ObsGrid

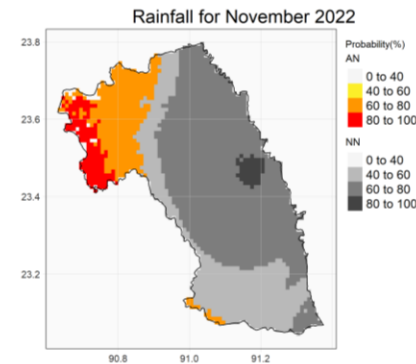
- Creating long-term grid-based observation data
- ERAS: 1979-present; 6 variables(rainfall, temperatures, Wind speed, humidity, solar radiation); 25 km resolution

SQM-Grid

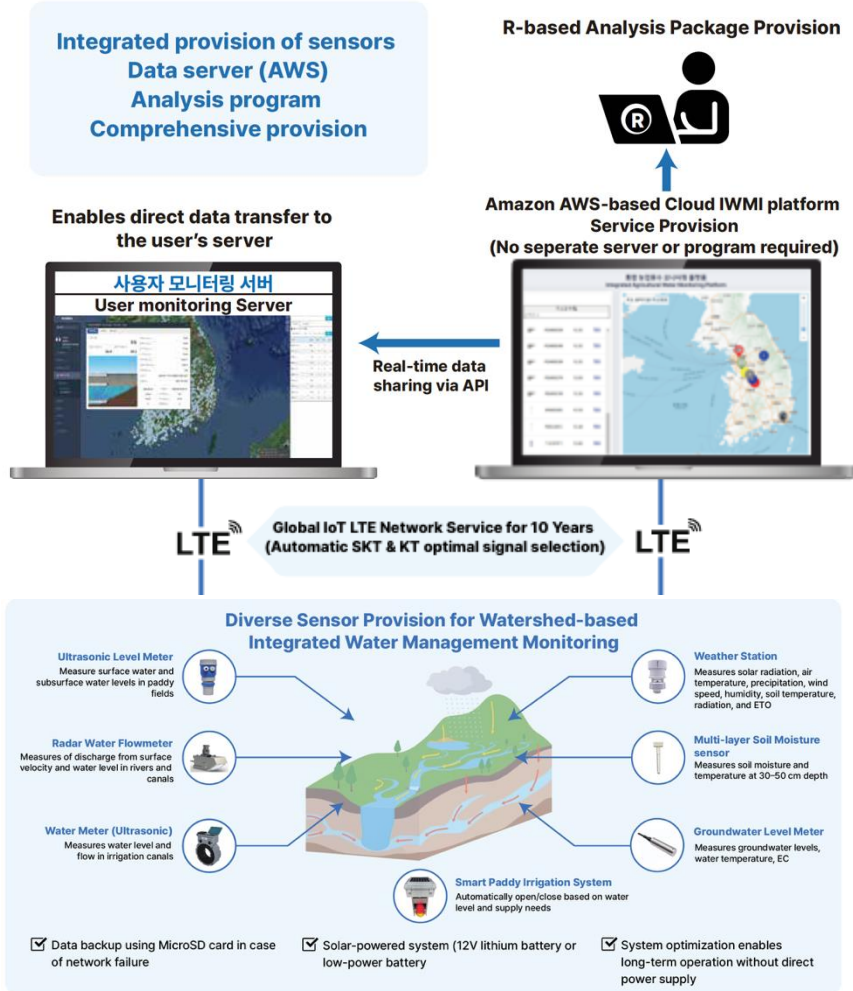
- Same downscaling method as SQM is used.
- Same GCMs, SSP scenarios, and variables as SQM
- Bias-corrected data is created based on the same resolution of ObsGrid output.
- ETCCDI and BioClim indices are calculated based on downscaled data.

NMME (grid-based)

- North American MME is used as input
- Creating downscale seasonal forecast data based on same resolution of ObsGrid output.
- Probabilistic drought (EDI) and heat wave forecast information is provided.



Real-Time Watershed Monitoring



On-site Installation

- ▶ **Monitoring Instruments:** Pipe-line flow meter (Ultrasonic), Ultrasonic level meter, Radar water flowmeter, Multi-layer soil moisture sensor, Weather station, Groundwater level meter, etc.



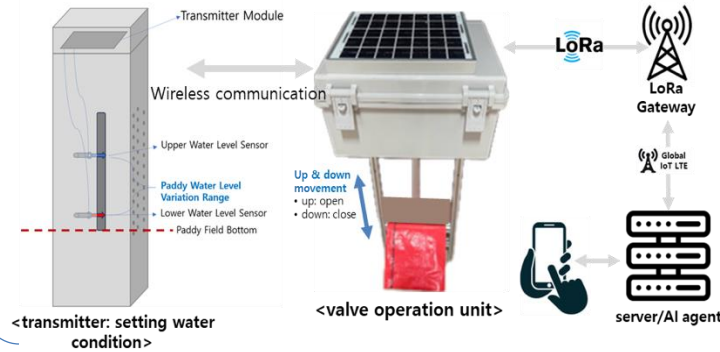
Green Technology Development and Service: Smart Paddy Irrigation System

Specifics of Agricultural Water Use

- ▶ Agriculture uses over 50% of total water resources.
- ▶ Difficulty in securing new agricultural water sources (e.g., building new reservoirs).
- ▶ The contribution of non-point source pollution to water quality issues is increasing.
- ▶ Small, scattered facilities → regional water use differences
- ▶ Difficult Water management after 2000 water fee abolition & aging farmers



Prototype



Field application

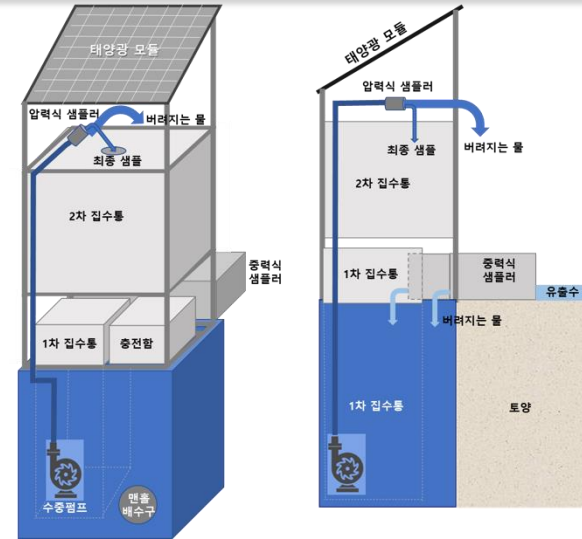


Quantification of water supply and drainage

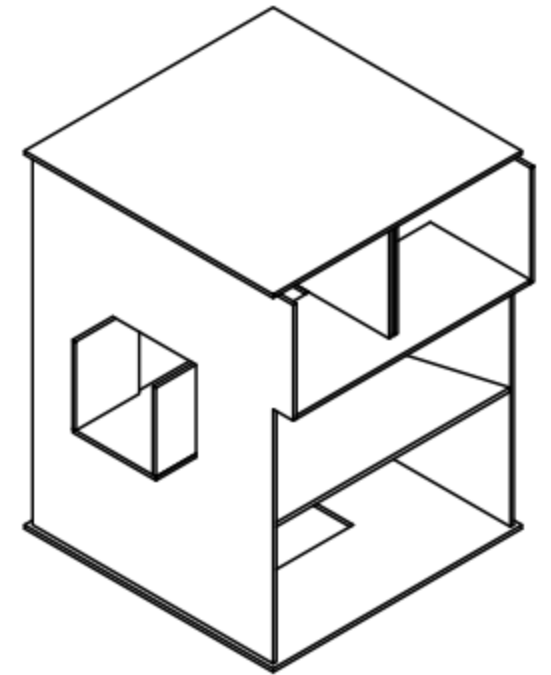
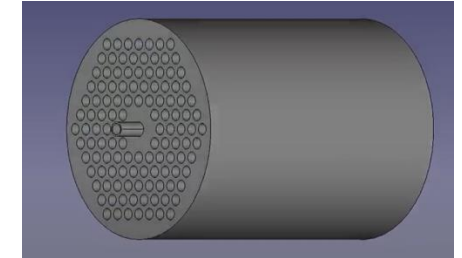
Agricultural Non-Point Source (NPS) pollution (monitoring for evaluating BMPs (Best Management Practices)



Small Scale of monitoring at Saemangeum (10mx20m)



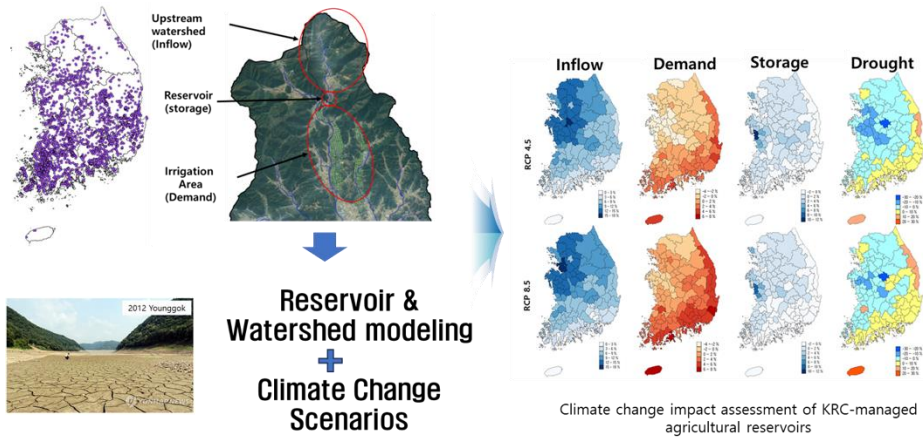
Large Scale of monitoring (100mx100m)



Small and large scale sampler

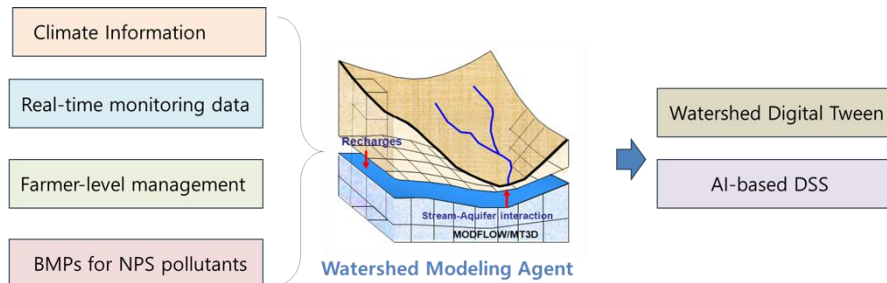
Decision making support & Capacity building

Decision Support System



AI-based Integrated Watershed Modeling & Digital Tween System

- ✓ Integration of high-resolution climate forecast, real-time monitoring, farmer-level agricultural management, and BMPs application information into watershed modeling agent



National & international cooperation and capacity-building

International Cooperation

- ✓ Participated in multiple training sessions on climate change, agricultural water use, and climate-smart agriculture under Korea Rural Community Corporation's IEEC

Capacity-building programs

- ✓ Conducted invitational training on agricultural irrigation and rural development for Lao PDR's Savannakhet

