



Japan-Philippines NEXUS Program
(Kyoto University (KyotoU) and Isabela State University (ISU))

NEXUS Skill-Up!

Advanced Workshops and Training Series under the NEXUS Philippines 3SWaRM Project

Date: July 23, 2025

Venue: Disaster Prevention Research Institute (DPRI), Kyoto University, Gokasho, Uji
City, Kyoto, Japan
(Hybrid — On-site for Japan-based participants; Online via Zoom for international
participants)

Registration Link (Training 1): <https://tinyurl.com/NEXUSSUTrain1>

Meeting Details:

Topic: Advanced Training HEC-HMS

Time: Jul 23, 2025 10:00 AM Osaka, Sapporo, Tokyo

Join Zoom Meeting:

<https://kyoto-u-edu.zoom.us/j/84393516382?pwd=nZAbMkiIW76VRT9aI0a1aLaoX8aZ8N.1>

Meeting ID: 843 9351 6382

Passcode: 035033

1. Project Background

The NEXUS Philippines Project, titled "Synergistic Strategies for Sustainable Water Resources and Dam Management under Extreme Climate Variability," is a multi-year collaborative initiative between the Disaster Prevention Research Institute (DPRI), Kyoto University, and Isabela State University (ISU), under the ASEAN–Japan Science, Technology, and Innovation Collaboration (NEXUS) Program.

The project addresses urgent challenges related to floods, droughts, dam operations, and climate change in the Cagayan River Basin, one of the most disaster-prone regions in the Philippines. Increasing typhoon intensity, rainfall variability, and water-related hazards have underscored the need for innovative tools, ensemble-based forecasting, and capacity building in integrated water resource management (IWRM).

To respond to these challenges, the NEXUS Project aims to:

- Develop advanced hydrological and AI-based models for flood and drought prediction;
- Optimize reservoir operations at Magat Dam using real-time decision support systems (DSS);
- Enhance risk communication and early warning systems; and
- Empower local stakeholders through training, forums, and knowledge transfer.

As part of its capacity-building strategy, the project organizes technical workshops, such as the NEXUS Skill UP! Training Series—to train engineers, researchers, and decision-makers in modern modeling tools for resilient, science-based water management in the Philippines.

2. Concept and Rationale

As part of its capacity-building strategy, the project is launching the “NEXUS Skill-Up!” Workshop Series—an intensive training program focused on hydrological modeling applications for disaster risk reduction. These workshops, led by international experts, are designed to equip engineers, planners, researchers, and local practitioners with practical knowledge of state-of-the-art tools, including HEC-HMS and HEC-ResSIM, applied to real-world scenarios such as the Magat Dam and flood-prone areas in the Philippines. This initiative responds to the urgent need for predictive, data-driven, and integrated approaches in managing floods and reservoirs amid climate variability and land use changes.

3. Objectives

The training series aims to:

- a) Enhance technical proficiency in using HEC-HMS and HEC-ResSIM for flood prediction and reservoir simulation
- b) Introduce machine learning techniques for accurate flood hazard mapping using real datasets
- c) Build capacity in spatial data preparation and GIS-based modeling workflows
- d) Promote cross-sector collaboration among government, academia, and local agencies
- e) Support the integration of scientific tools into local disaster and water resource planning

4. Expected Participants

- a) Civil and environmental engineers from LGUs and national agencies (e.g., DPWH, NIA, DENR, PAGASA)
- b) Researchers and graduate students in hydrology, water resources, and GIS/AI applications
- c) Planners and technical staff from river basin organizations and disaster risk reduction offices
- d) Faculty members and extension specialists from partner universities
- e) NEXUS Project collaborators and affiliated organizations in Japan and the Philippines

5. Training Line-up

Training 1: HEC-HMS & HEC-ResSIM Workshop

Title: Hydrological Modeling for Flood Prediction and Reservoir Operations

Date: July 23, 2025 (10:00 to 12:00 – Basic Training/13:00 to 16:00 – Actual Training)

Facilitators: Prof. Mohammed Abdel-Fattah and Engr. Sinh Nguyen Phuoc

Topics:

- Introduction to Hydrological Modeling
- Overview of HEC-HMS (Hydrologic Modeling System)
- Overview of HEC-ResSIM (Reservoir System Simulation)
- Real-world applications using the Magat Dam case study

Please download the training materials by scanning the QR code or accessing this link:



6. Expected Outcomes

- Strengthened the technical capacity of Philippine partners in hydrological modeling
- Locally applicable models and tools for flood forecasting and reservoir operations
- Increased integration of GIS and AI techniques into risk reduction planning
- Support toward achieving the broader NEXUS 3SWaRM vision of sustainable, resilient river systems
- Documentation and resources for future use by academic and government institutions