

A Case of Utilizing Results

Utilization of CommonMP for River Management Practices

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1. Introduction

CommonMP¹⁾ is infrastructure software for hydraulic / hydrologic analysis that can operate the analytic model (element model) for hydraulic / hydrologic analysis including rainfall run-off and flood analysis, the graph drawing tool (extension tool) for analysis results, etc. Various functions can be added to CommonMP by adding element models and extension tools. This software has been developed since fiscal 2007 and mostly completed, entering into a stage of full application to river management practices. As examples for application of CommonMP to river management practices, this paper introduces addition of the function to create a profile of river discharge capacity and to forecast inflow into a dam reservoir.

2. Example for application to river management practices

The profile of river discharge capacity (Figure 1) shows the flood discharge capacity of the channel profile at each milepost and is often used in river management practices for considering priorities in channel development, etc. Therefore, we have added the function to output discharge capacity profiles to CommonMP. Consequently, the effect of river maintenance can be immediately reflected in the discharge capacity profile by editing the channel profile with GIS attached to CommonMP, which is expected to contribute to efficiency increase in operation, etc.

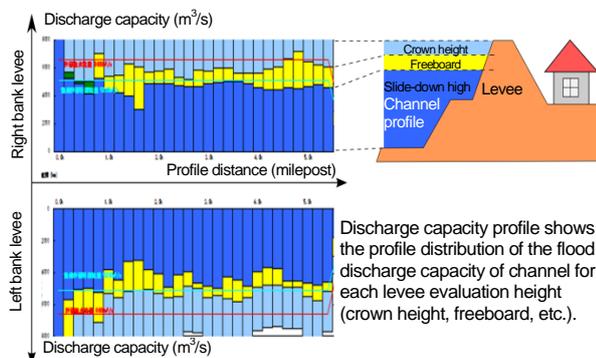


Figure 1: Discharge capacity profile

High-accuracy prediction in inflow to the dam reservoir is essential for smooth and advanced operation of the dam in the event of a flood. Accordingly, we have installed the function to predict dam inflow in CommonMP by applying the particle filter method²⁾ ahead of others, which has been studied and developed for flood prediction and expected to be introduced (Figure 2). Since the particle filter method requires high computing power, we have added the function for parallel computing to CommonMP to ensure a certain level of predictability and obtain a practical computing speed.

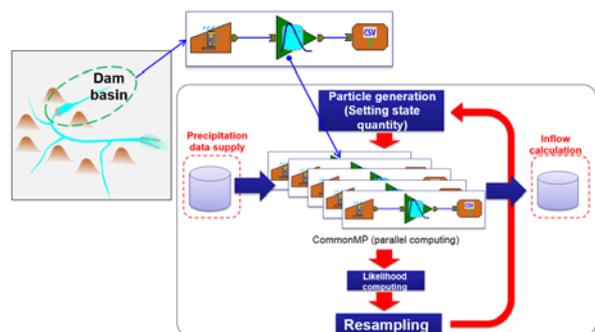


Figure 2: Inflow prediction by particle filter method

3. Future development

The NILIM has been actively holding CommonMP training seminars for the personnel of Regional Development Bureaus since fiscal 2013. We are going to disseminate the functions thus developed through such training seminars, etc. We continue to support upgrading and efficiency increase in river management practices by enhancing the efficiency of conventional methods and promoting the introduction of new technologies to on-site fields with utilization of CommonMP.

See the following for details.

- 1) CommonMP website: <http://framework.nilim.go.jp>
- 2) Yasuhito TACHIYAKAWA et al: Development of a Real-time River Stage Forecasting Method Using a Particle Filter, JSCE Collection of Papers B1 (Hydraulic engineering), Vol.67, No.4 I_511-I_516, 2011