A METHOD FOR ESTABLISHING STAGE-DISCHARGE RATING CURVE USING RAINFALL, WATER LEVEL DATA AND RUNOFF MODEL

Associate professor Takao Tamura
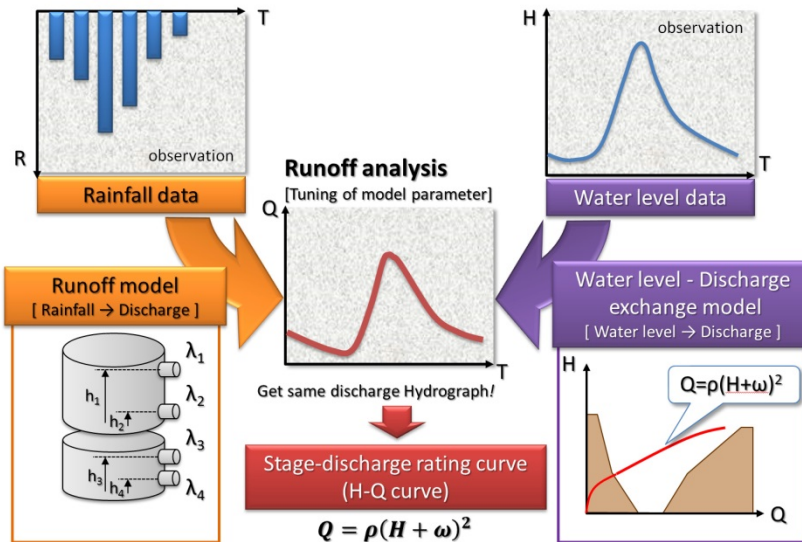
Faculty of Science and Technology
Tokushima University

Fig.1 Method of making H-Q curve by using runoff model, rainfall data, and water level data
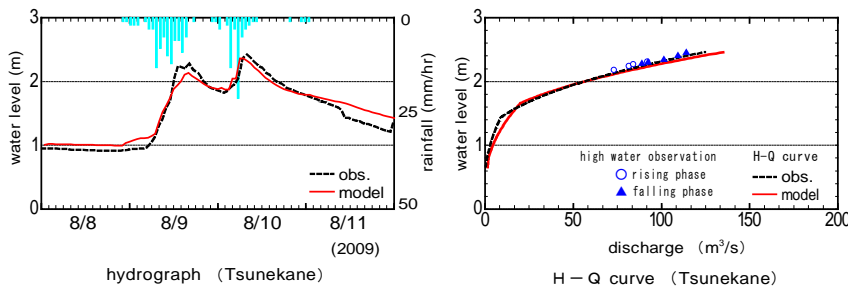
$$Q = \rho(H + \omega)^2$$

Fig.2 Comparison between H-Q curve made from runoff model and observed flow rate

Content:

  Making stage-discharge curve (H-Q curve) that uses calculating river flow rate is very time-consuming. Then, a H-Q curve making method that used the observed rainfall, the water level data, and the runoff model was developed. A quadratic function that represented the *H-Q* relation in the river channel was built into the runoff model. When the observed water level hydrographs during a flood event was reproduced by the model, the H-Q curve was established. (Fig.1)

  The method was applied to some water level and flowing quantity observation stations in Shikoku in West Japan . The established H-Q curve was compared with the H-Q curve based on the runoff observation. The error margin of the established H-Q curve and the observed was about 10% or less. (Fig.2)

  The proposed method can be used to verify and adjust the observed H-Q curve that may lead to an unsatisfied water budget of rainfall and discharge for the basin.

Keywords：*stage-discharge curve(H-Q curve), runoff model, rainfall data, water level data, water budget*

E-mail: tamura@ce.tokushima-u.ac.jp

Tel.   +81-88-656-9407

Fax: +81-88656-9407

HP : http://hydrology-lab.sakura.ne.jp/