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Recently, River Information Systems that integrate a variety of riverine information have been widely developed, driven by information technologies. The present study attempts to develop a software called HydroConnector that dynamically integrates river-based numerical modeling or post-processing with *in situ* data, based upon a data searching technique that uses a hydro web service built on top of an ODM-based database, following a CUAHSI standard. It fundamentally differs from the conventional direct access to the database for acquiring a given period of a dataset. Such a hydro web service and ODM-based database were built by utilizing existing real-time stream gaging data, and they are dynamically connected with an HPG model that estimates the stage height for an ungaged site. As a result, the newly developed HydroConnector is very intuitive for the user, due to the user-friendly GUI; it facilitates modeling processes by automatically connecting remotely located data and a specific numerical model, without further laborious data pre- and post-processing. In fact, the HPG model consists of a pre-established diagram based on simulated outputs from one-dimensional river models, such as HEC-RAS, operated for the possible flow conditions, and it is able to estimate the stage height for an ungaged site, driven by the given downstream stage height and upstream flow discharge. The HydroConnector incorporates both the web service and the HPG model, which enables the making of dynamic data pre-processing adjusted for the numerical model, and automatically operates the HPG model, to finally provide the targeted ungaged stage height.
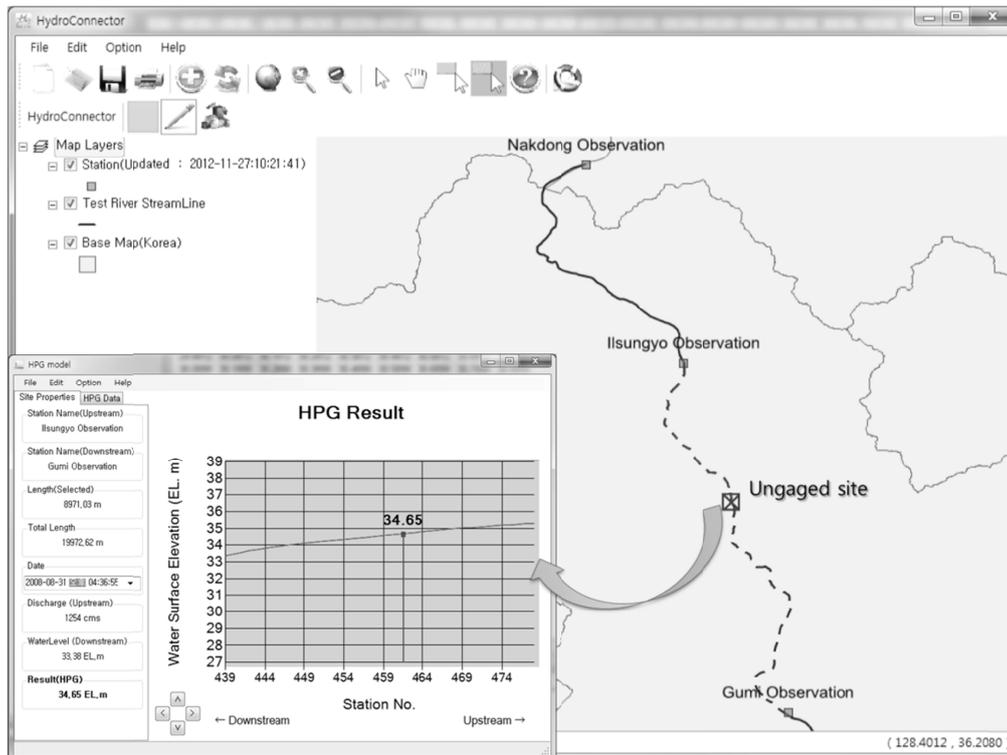
Figure 1. A resulted water surface elevation at the ungaged site and water surface profile up and down to the reach boundary from the HGP model embedded in the HydroConnector

We applied HydroConnector to estimate water surface elevation at an ungaged site and validated it based on observed gage height. Though the performance of the newly developed HydroConnector highly depends on the accuracy of HPG model, automated process to estimate water surface elevation in this study indicates a great deal of practical meaning in the river engineering driven by the recent advances in the hydroinformatics. Therefore, it is highly expected that the development and availability of integrated models such as HydroConnector would become more popular due to their ability to search required information and actively answer user's question based on analysis model built in them. The developmental experience throughout this case study with HydroConnector strongly suggests that the standardized web service and common data communication protocol provide very promising potentials for efficiently enabling the hydrologic and hydraulic communities to combine data and simulation models in dynamic and real-time manner to achieve their processing goals. Therefore, it should be also noted herein that, without even relying on the specialized platform as likely as OpenMI or GIS, the web service and WaterML techniques could be easily customized for dynamically linking numerical model for establishment of a state-of-art hydrologic process.