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Towards a publicly available, map-based regional software tool to estimate unregulated daily streamflow at ungauged rivers

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Abstract. Streamflow information is critical for addressing any number of hydrologic problems. Often, streamflow information is needed at locations that are ungauged and, therefore, have no observations on which to base water management decisions. Furthermore, there has been increasing need for daily streamflow time series to manage rivers for both human and ecological functions. To facilitate negotiation between human and ecological demands for water, this paper presents the first publicly available, map-based, regional software tool to estimate historical, unregulated, daily streamflow time series (streamflow not affected by human alteration such as dams or water withdrawals) at any user-selected ungauged river location. The map interface allows users to locate and click on a river location, which then links to a spreadsheet-based program that computes estimates of daily streamflow for the river location selected. For a demonstration region in the northeast United States, daily streamflow was, in general, shown to be reliably estimated by the software tool. Estimating the highest and lowest streamflows that occurred in the demonstration region over the period from 1960 through 2004 also was accomplished but with more difficulty and limitations. The software tool provides a general framework that can be applied to other regions for which daily streamflow estimates are needed.

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