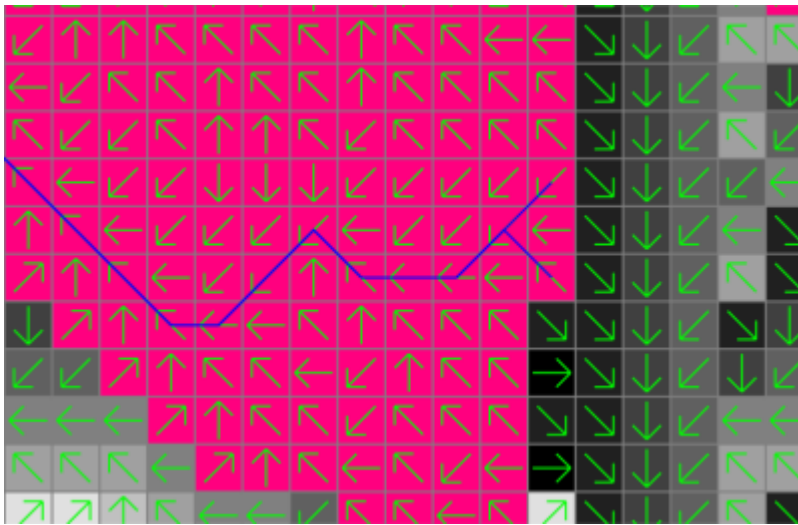


Efficient longest flow path algorithm

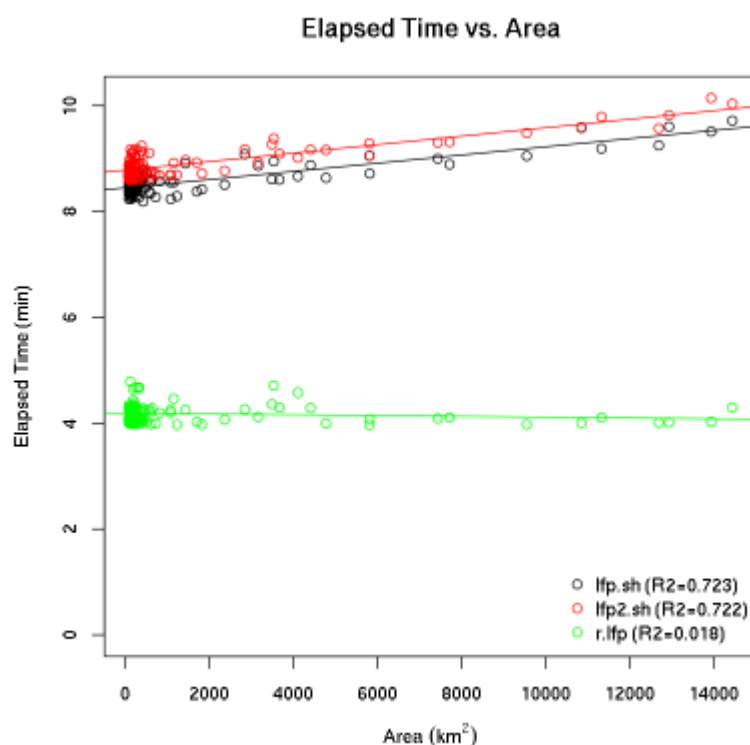


$\backslash \text{def} \backslash \text{LFP} \{ \overrightarrow{\text{LFP}} \} \text{ } \backslash \text{def} \backslash \text{FP} \{ \overrightarrow{\text{FP}} \} \text{ } \backslash \text{def} \backslash \text{FL} \{ \text{FL} \} \text{ } \backslash \text{def} \backslash \text{DFL} \{ \text{DFL} \} \text{ } \backslash \text{def} \backslash \text{UFL} \{ \text{UFL} \} \text{ } \backslash \text{def} \backslash \text{LFL} \{ \text{LFL} \} \text{ } \backslash$

A flow path $\backslash \text{FP}_i$ is a watercourse between a pair of two points i within a watershed and the longest flow path $\backslash \text{LFP}$ is defined as

$\backslash \text{LFP} \text{ in } \left\{ \backslash \text{FP}_i; \text{middle} \text{ vert}; \backslash \text{left} \backslash \text{Vert} \backslash \text{FP}_i \text{ right} \backslash \text{Vert}; \text{geq} \backslash \text{left} \backslash \text{Vert} \backslash \text{FP}_j \text{ right} \backslash \text{Vert}; \text{forall } j \text{ neq } i \text{ right} \right\} . \backslash$

The longest flow path plays an important role in hydrologic modeling, but its computation requires multi-step raster calculations for each watershed. This research project aims to improve the current process and efficiency of computing the longest flow path for a lot of watersheds.



Method	lfp.sh	lfp2.sh	r.lfp	Coming soon
Elapsed time	3h 48m	9h 8m	6h 46m	56s

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