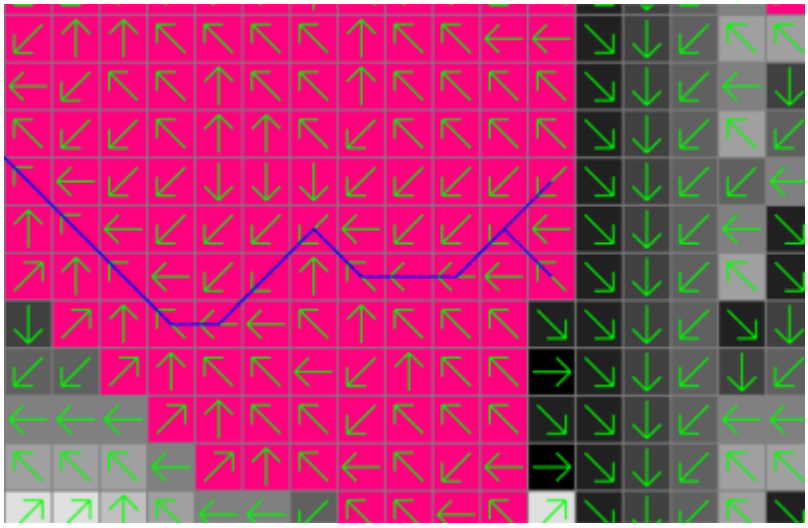
Efficient longest flow path algorithm

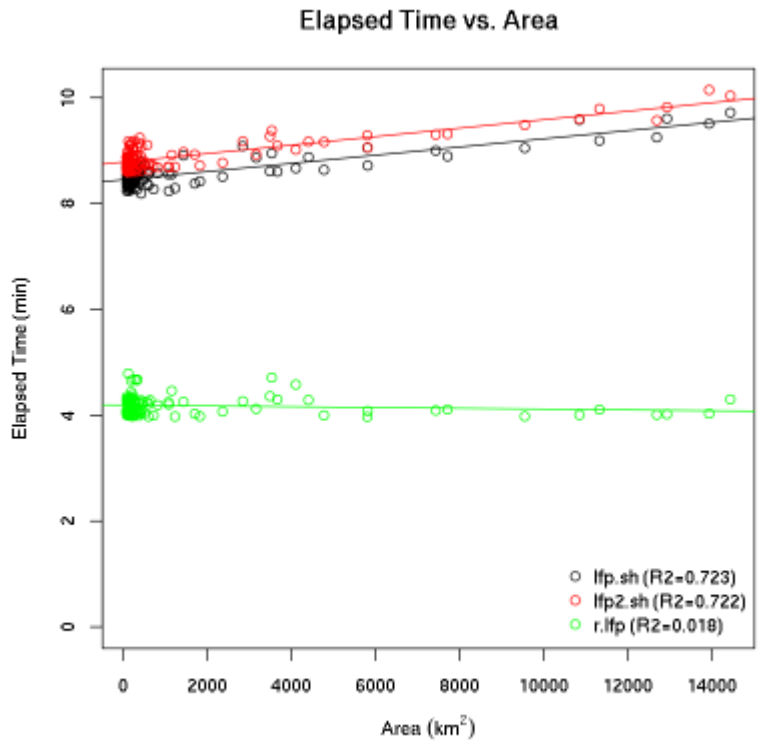


$$ \def\LFP{\overrightarrow{\text{LFP}}} \def\FP{\overrightarrow{\text{FP}}} \def\FL{\text{FL}} \def\DFL{\text{DFL}} \def\UFL{\text{UFL}} \def\LFL{\text{LFL}} $$

A flow path $\FP_i$ is a watercourse between a pair of two points i within a watershed and the longest flow path $\LFP$ is defined as

$$ \LFP\in\left\{\FP_i\;\middle\vert\;\left\lVert\FP_i\right\rVert\geq\left\lVert\FP_j\right\rVert\;\forall j\neq i\right\}. $$

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**

Project workspace