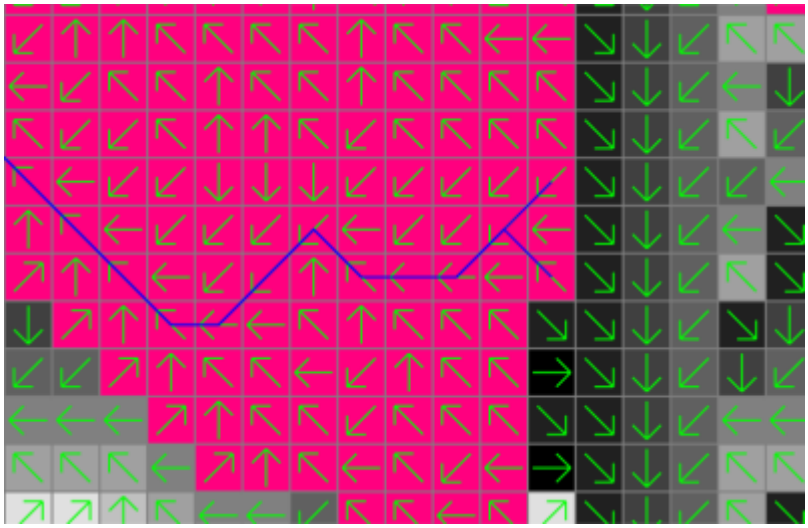
# Efficient longest flow path algorithm

Workspace

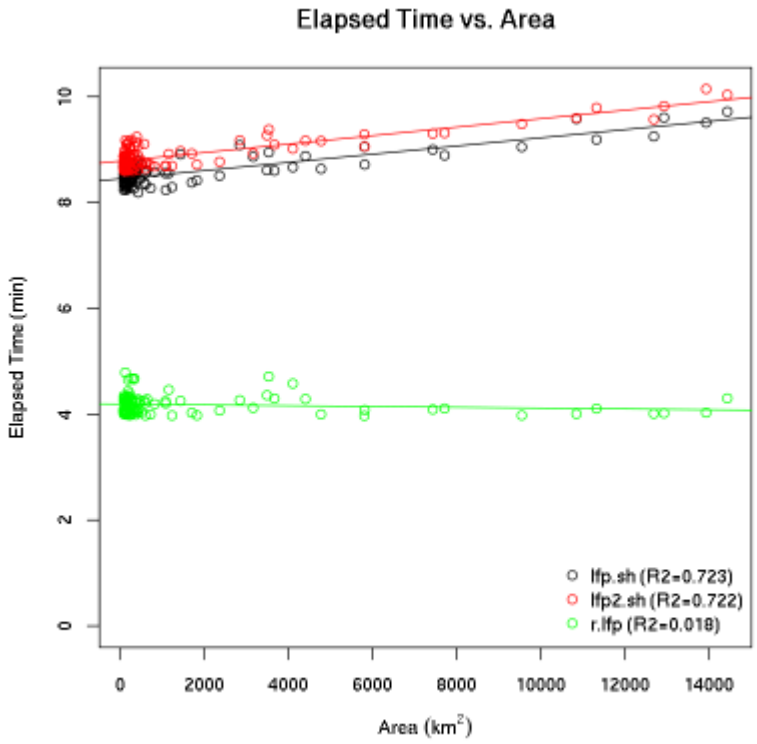


\[ \def\LFP{\overrightarrow{\text{LFP}}} \def\FP{\overrightarrow{\text{FP}}} \def\FL{\text{FL}} \def\DFL{\text{DFL}} \def\UFL{\text{UFL}} \def\LFL{\text{LFL}} \]

A flow path $\FP_i$ is the 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