

Monotonic8 is a compact software tool for assigning elevation values to stream-network vertices while maintaining consistency with digital elevation model (DEM) surfaces. Many hydrographic datasets contain incomplete or inconsistent elevation attribution, and common interpolation methods can introduce discrepancies with the underlying terrain. Monotonic8 addresses this through a reproducible workflow that samples DEM elevations directly at stream vertices and applies a downstream monotonicity constraint. The method requires a properly attributed topologically connected vector flow network with the channel lines oriented in the downhill direction so the stream network can be represented as a directed graph allowing vertices to be processed in flow order. Elevations are adjusted only where necessary to resolve local monotonicity violations while the DEM itself remains unchanged. This makes the approach straightforward to integrate into workflows where terrain integrity must be preserved. Example stream cross-sections from multiple physiographic settings demonstrate that the method resolves small local inconsistencies while retaining close agreement with ground elevations. Vertical errors relative to the DEM remain below one percent in tested cases. These examples highlight the practical effect of the algorithm without requiring changes to the elevation surface. The tool is intended for applications where vertically coherent stream networks are needed for validation, modeling, or integration with elevation-aligned datasets. By combining minimal adjustment with direct DEM sampling, Monotonic8 provides a transparent method for hydrography modernization workflows.