

Online Resource C1: Geographic information system methodology used to determine basin-wide 3.05-cm digital elevation models within the New Madrid and the St. Johns Basins in southeastern Missouri.

1. Used Hawth's Analysis Tools for ArcGIS (<http://www.spataleecology.com/htools>) to create grid cells (3048 m x 3048 m) which encompassed the entirety of the basin and clipped grid cells to the boundaries of each basin if cells extended beyond the boundaries of the basin.
 - a. If resultant clipped grid was small, or lacked sufficient contour lines for subsequent interpolation, it was merged with an adjacent grid cell [Analysis Tools; Overlay; Union].
2. Extracted separate pieces of the original contour lines using each of the separate clipped grid cells as extraction boundaries [Analysis Tools; Extract; Clip].
3. Interpolated 3.05-cm elevation digital elevation model (DEM) for each extracted subdivision using ArcMap [Spatial Analyst Tools; Interpolation; Topo-to-Raster]. Interpolation was set at the default of 20 cells beyond the boundary of the grid cell extraction (i.e., overlap among subdivisions) and output cell size of resultant DEM specified at 0.9 m x 0.9 m horizontal spacing. Resultant elevation models were 64-bit, floating point rasters.
 - a. For a few subdivisions, Topo-to-Raster interpolation failed. In these instances, the area being interpolated was reduced through reiteration of the above methods but with a smaller grid (e.g., 1524 m x 3048 m).
4. Used ERDAS IMAGINE 2010 (Erdas Inc., Norcross, Georgia) to merge all subdivisions within each basin into a single digital elevation model (raster). Areas of overlap were assigned mean values.
5. Multiplied all cell values within each merged digital elevation model by 10 [Spatial Analyst Tools; Math; Times, and converted from a floating point raster to a 16-bit unsigned raster], such that each raster cell represented a 'decifoot' elevation (where 1 decifoot = 0.03048 m). For example, an original elevation of 89.862 m (294.824 ft) would be represented as 2948 decifoot.