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* ALL COMMERCIAL USE OF THESE TOOLS IS STRICTLY FORBIDDEN*
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RESonate Background

RESonate is an open-source toolbox for ArcGIS 10 that was developed through a partnership between The University of Kansas, Kansas Biological Survey (KBS) and the U.S. EPA National Exposure Research Laboratory (EPA-NERL), Cincinnati, Ohio. Research and development was funded primarily by the U.S. EPA through Student Services and consulting contracts from the U.S. EPA Office of Research and Development (EPA-ORD). Additional funding was provided by a student grant from the Kansas Academy of Sciences and an NSF EPSCoR grant to the Kansas University Center for Research (EPS-0553722). The tools contained within RESonate are intended to facilitate data collection for large-scale hydrogeomorphic analyses of river corridors, specifically; identification of functional process zones (FPZs). These tools are free to use **FOR RESEARCH PURPOSES ONLY**. **COMERCIAL AND NON-RESEARCH USE IS STRICTLY FORBIDDEN**. The tools may be modified by users; however, credit must be given to the original creators (see original reference below).

Questions relating to RESonate and may be sent to James H. Thorp (thorp@ku.edu) or Nicholas Kotlinski (kotlinskikansas@gmail.com). Additional information on RESonate and FPZs may be found in the following publications and references therein.

---Original reference---

Williams, B.S., E.D'Amico, J.H. Kastens, J.H. Thorp, J.E. Flotemersch, and M.C. Thoms. (2013). Automated riverine landscape characterization: GIS-based tools for watershed-scale research, assessment, and management. *Environmental Monitoring and Assessment*. DOI: 10.1007/s10661-013-3114-6

Thorp, J.H., J.E. Flotermersch, B.S. Williams, and Gabanski, L.A. (2013). Critical role for hierarchical geospatial analyses in the design of fluvial research, assessment, and management. *Environmental Monitoring and Assessment*. DOI: 10.1007/s10661-013-3091-9

Thorp, J.H., J.E. Flotemersch, M.D. Delong, A.F. Casper, M.C. Thoms, F. Ballantyne, B.S.Williams, B.J. O'Neill, and C.S. Haase. 2010. Linking ecosystem services, rehabilitation, and river hydrogeomorphology. *Bioscience* 60: 67-74.

Thorp, J.H., Thoms, M.C., and M.D. Delong. (2008). *The riverine ecosystem synthesis*. Boston: Academic Press.

Thorp, J.H., Thoms, M.C., and M.D. Delong. (2006). The riverine ecosystem synthesis: biocomplexity in river networks across space and time. *River Research and Applications*, 22, 123-147.

System Requirements –

Minimum System Specifications:
       Operating System: Windows XP 64 or 32-bit
       Processor: 2GHz quad-core processor
       Memory: 4 GB
       Primary Hard Drive: 250 GB, 7200 RPM, 32 MB cache, non-RAID
       Secondary Hard Drive: 250 GB, 7200 RPM, 32 MB cache, non-RAID

Ideal System Specifications:
       Operating System: Windows 7 64-bit
       Processor: (2) 2.33 GHz Xeon quad-core processors
       Memory: 8 GB
       Primary Hard Drive: (3) 250 GB, 7200 RPM, 32 MB cache, RAID 0
       Secondary Hard Drive: 250 GB, 7200 RPM, 32 MB cache, non-RAID

Software Requirements –

ArcGIS 10 with the Spatial Analyst and Network Analyst Extensions

ArcHydro Tools and the App Framework
ftp://ftp.esri.com/ArcHydro/Setup10/2.0.1.133_2.0_Final/

RESonate Toolbox
http://web.ku.edu/~riverecology/index.html

FLDPLN
http://web.ku.edu/~riverecology/index.html

Useful Statistical software packages
R
PRIMER
Minitab
PATN 3.11

Installation –
1) Save and then unzip the files to a directory of your choice
2) Open ArcGIS 10 and simply add the RESonate toolbox. Instructions for adding toolboxes to ArcGIS 10 may be found here:
http://help.arcgis.com/en/arcgisdesktop/10.0/help/index.html#//003q0000001m000000.htm