Arcgis spatial analyst tutorial pdf

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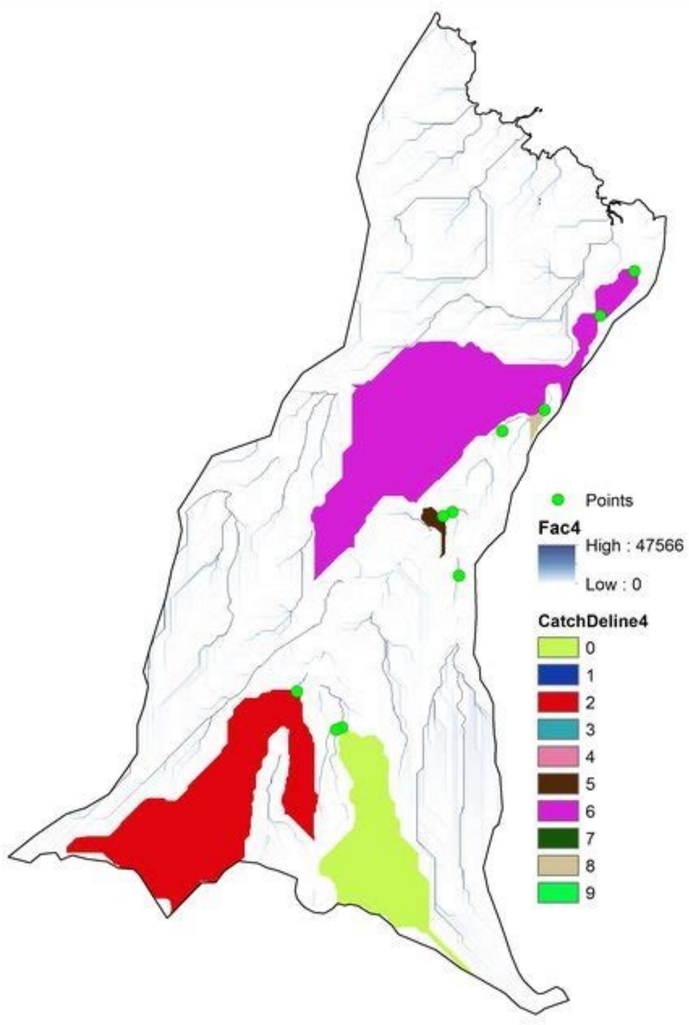


ArcGIS Network Analyst data prep tutorial

Many people come across free street data they wish to use with the ArcGIS Network Analyst extension. However, a lot of this data is missing essential fields, or it is not clean enough, meaning NA (Network Analyst) will not be able to find good routes, service areas etc. In fact, most free data will give only poor to far results with NA. Higher quality datasets are usually clean, but they may not have the desired fields such as drive time or one-way streets. Most purchased data, such as TeleAtlas™ or NAVTEQ™ street data, is clean and has the desired fields for use with NA, so these datasets need not undergo the procedures described in this document.

Using the data that comes with this download, this document will step through an example workflow for cleaning up some 'dirty' data, and adding missing fields such as drive time, one-way streets and many others. There are seven tutorials altogether.

Most of the exercises use a file geodatabase, but shapefiles and other geodatabase formats are not so different in most cases. Brief comments will be noted wherever a shapefile user would have to do something different.

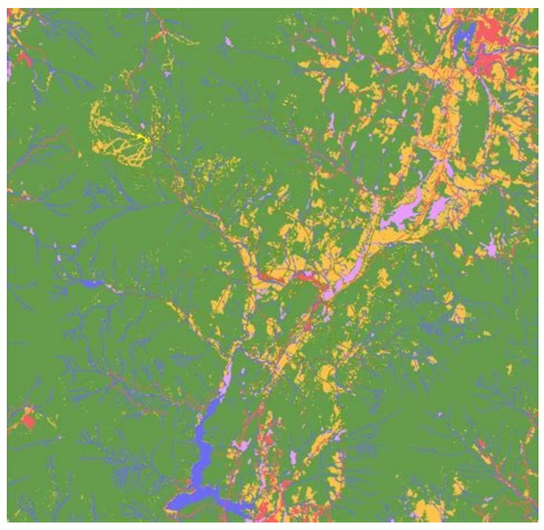
An ArcView license is sufficient for all of these tutorials. This means that occasionally, a less-efficient workflow that makes use of only ArcView functionality would be demonstrated, as opposed to the more-efficient workflow that can only be performed with a higher license. In such cases, these more efficient workflow(s) that make use of higher licenses will be noted.

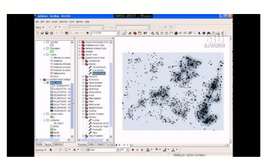
These tutorials are independent of each other, so you only have to do those you are interested in. Having said that, Tutorials 1 and 2 go together very well. Also, the instructions are less detailed as the tutorial progresses. For example, a common step in many of these tutorials is to label ObjectIDs in the map. In Tutorial 2, you are walked through the procedure, but in later tutorials, there is only a simple instruction to label the ObjectIDs. If you are a bit weak in either ArcGIS or NA, it is recommended that you do all of the tutorials in order.

U.S. data conventions and measurement units will be primarily used.

Assumptions:

- Familiarity with the basics of ArcGIS and NA.
  If you are not familiar with NA, do the ArcTutor NA Tutorial that comes with the software. In ArcMap or ArcCatalog, go to Help > ArcGIS Desktop Help, then type "Network Analyst tutorial exercises" into the Index tab.
- ArcGIS 9.2 or higher.
  Some of the tutorials will not work with earlier releases of the software.
- The NA extension is turned on (in both ArcMap and ArcCatalog).





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ArcGIS' Spatial Analyst extension includes the tools to solve geospatial problems. In this exercise, the optimal site for a new school in Stowe, Vermont was found. Before performing analysis, all requisite data was copied locally. A new geodatabase was created. The Stowe database was selected as the current workspace before moving its elements into the ArcMap workspace.Figure 1: The provided data: schools, recreational sites, destination, roads, elevation, and land use at 50% transparency.In this exercise, the Spatial Analyst extension was enabled. This extension contained the majority of the tools used in this tutorial.The hillshade tool was the first spatial analyst tool used; this tool yielded a shaded relief raster from an elevation raster and a user-specified sun angle and altitude. The default azimuth and altitude values were kept. A Z-factor of 0.3048 was used to convert the raster information in feet to meters.Figure 2: The user-created hillshade layer displayed under the land use layer at 30%.The symbology properties of the land use layer were altered to more intuitive colors, as seen above. ArcMap was then used to view and alter raster information; opening each raster's attribute table gave an overview of the information contained therein. The identify tool could be used to display information selected graphically, while the histogram functionality of the Spatial Analyst toolbar allows for a class-based view of raster information.The creation of models in ArcMap allows for the programming of repeatable, tool-based functions. Here, a suitability model was created with Spatial Analyst tools. After creating a new toolbox, a new ModelBuilder session was initiated from right-clicking the Site Analysis Toolbox. Through the model properties accessible in the model's main menu, the Model was renamed to FindSchool. The Model Properties window also allows for the specification of the model's environment settings; here, the processing extent and raster analysis was limited to that of the elevation layer. First, the slope tool was used to convert information in the elevation raster to slope information. Again, a factor of 0.3048 was used to convert units of feet in the elevation raster to meters.Figure 3: Slope Raster Output from Elevation Raster. Red represents areas of steepest slope, green represents ares of the shallowest slopeThe Euclidean Distance tool was used to derive distance from the rec_sites raster; its inclusion did not require parameter modification.Figure 4: Distance from Recreation Sites Output from rec_sites RasterDistance from current schools was also derived using the Euclidean Distance tool. Again, its use did not require modification to the tool's parameters.Figure 5: Distance from Schools Output from schools RasterReclassifying DatasetsIn order for the output rasters to be combined for spatial analysis, each raster must use the same units; as each raster expresses different physical characteristics, the data each contains was reclassified to a relative 1-10 scale. Each of the three output rasters was reclassified. In each case, higher numbers were set to represent more desirable characteristics (shallow slope, long distance from existing schools, short distance to recreation sites). Figure 6: Reclassed SlopeWeighting and Combining DatasetsHaving converted each of the output rasters to similar relative scales, the weighted overlay tool was used in combination with the land use layer to select suitable sites for a new school. The tool allows for relative weighting of input rasters. Here, 50% of the importance was given to distance to recreational areas, 25% importance was given to distance from exiting schools, 13% to slope and 12% to land use. Figure 7: Suitable Sites for New SchoolThe suitable sites found were further analyzed to find optimal areas for school construction. Using the Con tool found in the conditional toolset, optimal areas were defined as regions of the highest suitability of 9. The Majority Filter tool restricted the selection to areas were eight neighboring cells all possess a suitability rating of 9. The resulting layer was then converted to a polygon.Figure 8: Optimal Areas for School ConstructionThe creation of models in ArcMap allows for the programming of repeatable, tool-based functions. Here, a suitability model was created with Spatial Analyst tools. Creating the Cost DatasetCost of road construction was considered using the slope output and landuse rasters; by reclassifying the slope output raster and combining the result with landuse, the Weighted Overlay tool output a raster based on the assumption that it is more costly to build and travel over roads constructed on steep slopes.Figure 9: Cost Surface based on Elevation; Green Represents the most costly construction areasFinding the Least Costly PathHaving computed the cost surface for the town of Stowe Vermont, the Cost Distance and Cost Path tools were used to create a least costly path from a predetermined destination point. Figure 10: Model Used for Least Costly PathFigure 11: Least Costly Path Shown in Bright GreenFinally, the Raster to Polyline tool was used for final display purposes. For this final step, the directory of the output file was changed from the working scratch database to the final Stowe database.Figure 12: Final Least Costly Path Polyline to Final Site of New School Click to have a closer look About this book Customer reviews Biography GIS Tutorial 2: Spatial Analysis Workbook provides hands-on exercises to help GIS users at the intermediate level build problem-solving and analysis skills. A companion to the concepts in The Esri Guide to GIS Analysis book series, GIS Tutorial 2 offers experience with various spatial analysis methods, including location analysis; change over time, location, and value comparisons; geographic distribution; pattern analysis; and cluster identification. This edition includes access to a 180-day trial of ArcGIS 10.1 for Desktop Advanced software and a DVD with data for working through the exercises. Customer Reviews (1) its very good book By hamed 25 Apr 2021 Written for Paperback 1 of 1 found this helpful - Was this helpful to you? Yes No David W. Allen is the GIS manager for the City of Euless, Texas. He has taught at Tarrant County College since 1999, where he helped found one of the first GIS degree programs in Texas and establish a state standard for GIS degree programs. He is the author of Getting to Know ArcGIS ModelBuilder (Esri Press, 2011) and the co-author of GIS Tutorial 3: Advanced Workbook. Page 2 Available with Spatial Analyst license. The exercises in the Spatial Analyst tutorial will help you learn how to use the functionality available in the ArcGIS Spatial Analyst extension. In the tutorial, you'll learn how to run Spatial Analyst tools and how to combine several tools in a model to perform more complex analyses.The data to use with the Spatial Analyst tutorial is generally located in the default software installation path in the C:\ArcGIS\ArcTutor\Spatial Analyst directory.If you cannot find the data at this location, contact your system administrator for assistance.You will need to have the extension licensed and enabled to go through the tutorial. You can find out about other training classes and online courses for Spatial Analyst through the Esri Training website . What is the ArcGIS Spatial Analyst extension? This website is preserved as an Archive for the NIH-funded GISPopSci / Advanced Spatial Analysis Training Programs (2005–2013). Current resources in support of Spatially Integrated Social Science are now available at the following: www.spatial.ucsb.edu www.gispopsci.org www.teachspatial.org These materials have been prepared as part of the R25 Advanced Spatial Analysis Training Grant (PI: Stephen A. Matthews, Penn State) funded by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD). Award Number: 5R25 HD057002-02. The links included below are intended as useful starting points for interested users. We make no claims for comprehensive coverage. If you have suggestions to include on this site please send them to Stephen Matthews. Software Geostatistical Analyst is an extension to ArcGIS desktop that provides tools for spatial data exploration and surface generation. ArcGIS Geostatistical Analyst software may be found at: ﷺ Here you will find a short video of ArcGIS Spatial Analyst (and more additional information on the analytical functions available within this extension. Note: Geographically Weighted Regression (GWR) was introduced with ArcGIS 9.3 and is available in the Spatial Statistics Toolbox with ArcInfo, ArcGIS Spatial Analyst, or ArcGIS Geostatistical Analyst. Support For additional documentation for ArcGIS Geostatistical Analyst, visit overview of Geostatistical Analyst To read a comprehensive overview of ArcGIS Geostatistical Analyst, visit For general help with ArcGIS software, visit To view sample applications of ArcGIS Geostatistical Analyst, visit Books Johnston, Kevin. ArcGis 9: Using ArcGis Geostatistical Analyst. GIS by ESRI. Redlands, Calif: Esri Press, 2004. Johnston, Kevin. Using ArcGIS Geostatistical Analyst: GIS by ESRI. Redlands, CA: Environmental Systems Research Institute, 2001. Useful Articles Fraczek W, A Bytnerowicz, and MJ Arbaugh. "Application of the ESRI Geostatistical Analyst for Determining the Adequacy

and Sample Size Requirements of Ozone Distribution Models in the Carpathian and Sierra Nevada Mountains." TheScientificWorldJournal. 1 (2001): 836-54. Kumar, Ashok, Suman Maroju, and Abhishek Bhat. "Application of ArcGIS Geostatistical Analyst for Interpolating Environmental Data from Observations." Environmental Progress. 26. 3 (2007): 220. Mei, Shilong. "Geologist-Controlled Trends Versus Computer-Controlled Trends: Introducing a High-Resolution Approach to Subsurface Structural Mapping Using Well-Log Data, Trend Surface Analysis, and Geospatial Analysis." Canadian Journal of Earth Sciences. 46 (2009): 309-329. For technical articles related to ArcGIS, visit Tutorials in ArcGIS Geostatistical Analyst For the ArcGIS Geostatistical Spatial Analyst tutorial, see For an index of sections covered in the ArcGIS Geostatistical Spatial Analyst tutorial, visit For technical support, visit Other software links and resources for geostatistical analysis and spatial statistics can be found at the AI-GeoStats webpage at URL: .

Next, refer to the installation guide for assistance with installing and setting up ArcGIS Pro. Before installing ArcMap, check whether your machine meets the minimum system requirements . One requirement is Microsoft .NET Framework 4.5.2 or later. Combine MIKE+ with ArcGIS Pro capabilities and open the door to world leading Esri software. MIKE+ ArcGIS gives you access to sophisticated spatial processing technology to help you efficiently prepare, analyse, and visualise spatial data. ... the model files required for running the demonstration exercise and the tutorial files for the user ... Regression analysis issues. OLS regression is a straightforward method, has well-developed theory behind it, and has a number of effective diagnostics to assist with interpretation and troubleshooting. OLS is only effective and reliable, however, if your data and regression model meet/satisfy all the assumptions inherently required by this method (see the table below). 16.06.2022 · Click Download. An executable file is downloaded to your computer.. Download ArcGIS 10.7 - GIS Crack Download ArcGIS 10.7 February 25, 2019 by franzpc ArcMap 10.7 introduces new features and capabilities in mapping, geocoding, and the ArcGIS Network Analyst extension. 10.7 also includes changes in database and geodatabase support. Note: Although GTFS allows blank values for these fields, the Network Analyst public transit data model requires explicit times for all stop arrivals and departures. The GTFS To Public Transit Data Model geoprocessing tool, which you will use later in this tutorial, can estimate blank arrival and departure times using simple linear interpolation. If there are any blank values in the data, you ... About the Spatial Analyst tutorial. ArcGIS Tracking Analyst. In this tutorial, you'll learn how ArcGIS Tracking Analyst can be used to analyze the movement of hurricanes in the Atlantic Ocean. The tutorial will introduce you to several features Tracking Analyst provides for symbolizing, visualizing, and analyzing temporal data. Tracking Analyst ... Explore the world of spatial analysis and cartography with geographic information systems (GIS). In this class you will learn the basics of the industry’s leading software tool, ArcGIS, during four week-long modules: Week 1: Learn how GIS grew from paper maps to the globally integrated electronic software packages of today.

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