

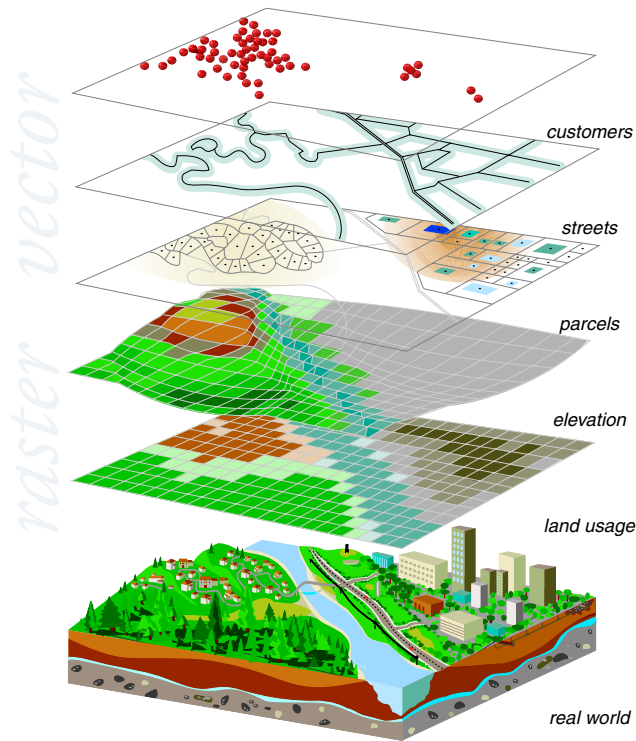
ArcGIS™ Spatial Analyst

Advanced GIS Spatial Analysis Using Raster and Vector Data



advanced spatial analysis

ArcGIS™ Spatial Analyst provides a broad range of powerful spatial modeling and analysis features. You can create, query, map, and analyze cell-based raster data; perform integrated raster/vector analysis; derive new information from existing data; query information across multiple data layers; and fully integrate cell-based raster data with traditional vector data sources.



Sophisticated Raster Data Analysis on the Desktop

ESRI® ArcGIS Spatial Analyst provides the tools you need to support a broad range of spatial modeling and application requirements.

- Surface analysis (create buffers of distance from features, determine the proximity to a feature, derive density surfaces, and perform site suitability analysis).
- Terrain analysis (slope, aspect, hillshade, watershed delineation, visibility analysis, contour generation, and viewshed analysis).
- Overlay vectors on rasters, apply masks, and group raster areas inside vector polygons.
- Map algebra (reclassify values, assign weighted values to grids, sum grid values within polygons, and sum grid values in multiple grids).

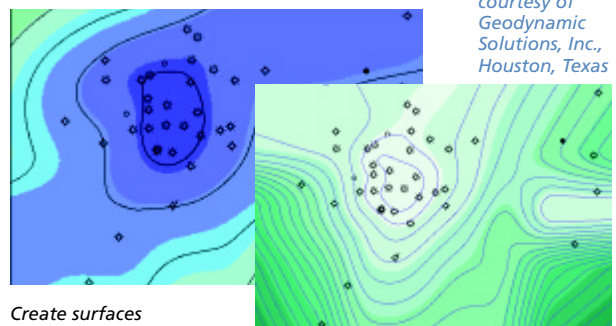
Raster-Vector Integration

ArcGIS Spatial Analyst lets desktop GIS users create, query, and analyze cell-based raster maps; derive new information from existing data; query information across multiple data layers; and fully integrate cell-based raster data with traditional vector data sources.

Cell-based raster data sets, or grids, are especially well suited to represent traditional geographic phenomena that vary continuously such as elevations, slope, precipitation, and so on. Raster data sets can also be used to represent less traditional types of information such as population density, consumer behavior, and other demographic characteristics. In addition, grids are the ideal data representation for spatial modeling applications such as hydrologic modeling or evaluating the dynamics of population change over time.

With ArcGIS Spatial Analyst, you can leverage both types of data to achieve optimal results. For example, site suitability analysis often requires combining data about slope (information best represented as grids) and the location of roads and property boundaries (information best represented as vectors) in order to determine suitable locations for a new facility.

Terrain Analysis



Provided courtesy of Geodynamic Solutions, Inc., Houston, Texas

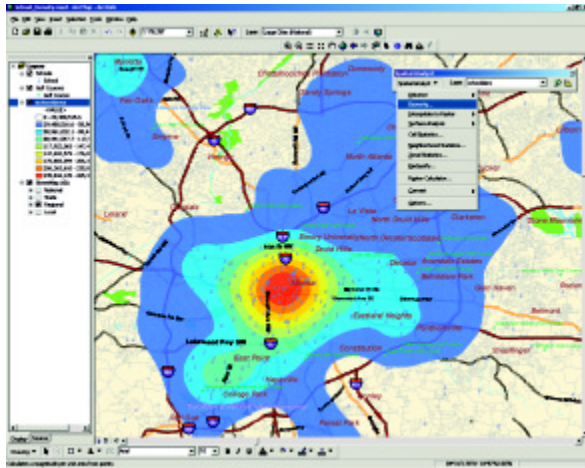
Create surfaces from point data.

Create contours.

ArcGIS Spatial Analyst supports a diverse range of applications. Some examples include

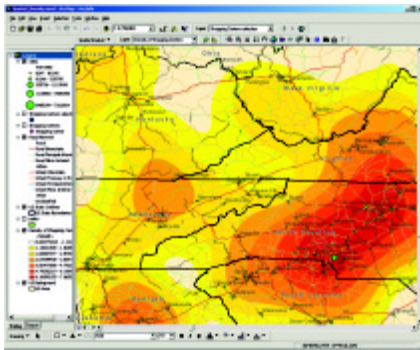
- | | |
|---------------------------|------------------------------|
| Capability Modeling | Predictive Modeling |
| Sensitivity Modeling | Hydrologic Modeling/Analysis |
| Site Suitability Analysis | Trade Area Mapping |
| Site Location Analysis | Land Use Analysis |
| Crop Yield Analysis | Demographic Analysis |

seeing the big picture

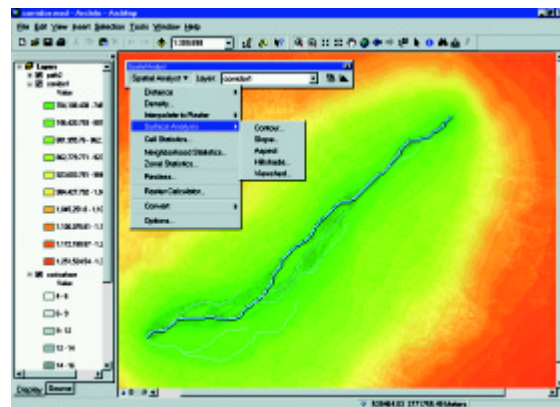


Modeling Tools and Features

- Convert features (point, line, or polygon) to grids.
- Create raster buffers based on distance or proximity from features or grids.
- Generate density maps from point features.
- Create continuous surfaces from scattered point features.
- Derive contour, slope, and aspect maps and hillshades of these surfaces.
- Perform map algebra—Boolean queries and algebraic calculations.
- Perform neighborhood and zone analysis.
- Carry out discrete cell-by-cell analysis.
- Perform grid classification and display.
- Use data from standard formats including TIFF, BIL, IMG, USGS DEM, SDTS, DTED, and many others.



Query neighborhood and zone density in a specific mile radius.



Perform surface analysis using contour, slope, aspect, hillshade, and viewshed.

Data Sources

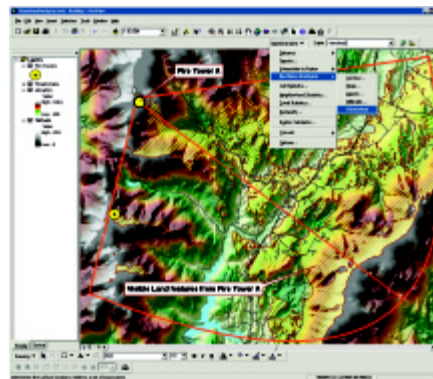
ArcGIS Spatial Analyst can create raster data from any point, line, or polygon feature source such as ArcInfo™ coverages, shapefiles, computer-aided design files, vector product format files, and ArcGIS themes created from tabular data. In addition, data in standard formats can be imported including TIFF, JPEG, BMP, SunRaster™, USGS DEM, DTM, NIMA DTED, generic ASCII, MrSID™, and others.

Developer Tools

ArcGIS Spatial Analyst includes a rich suite of additional raster analysis tools that can be accessed through Microsoft® VBA, which is included with ArcGIS. ArcGIS Spatial Analyst, customized with any COM-compliant language, lets you build new applications that deliver highly sophisticated spatial modeling solutions.

Supported Platforms

ArcGIS Spatial Analyst is available for Windows NT® and Windows® 2000. ArcGIS Spatial Analyst requires ArcInfo 8.1, ArcEditor™ 8.1, or ArcView® 8.1.



Model and analyze raster and vector data together.



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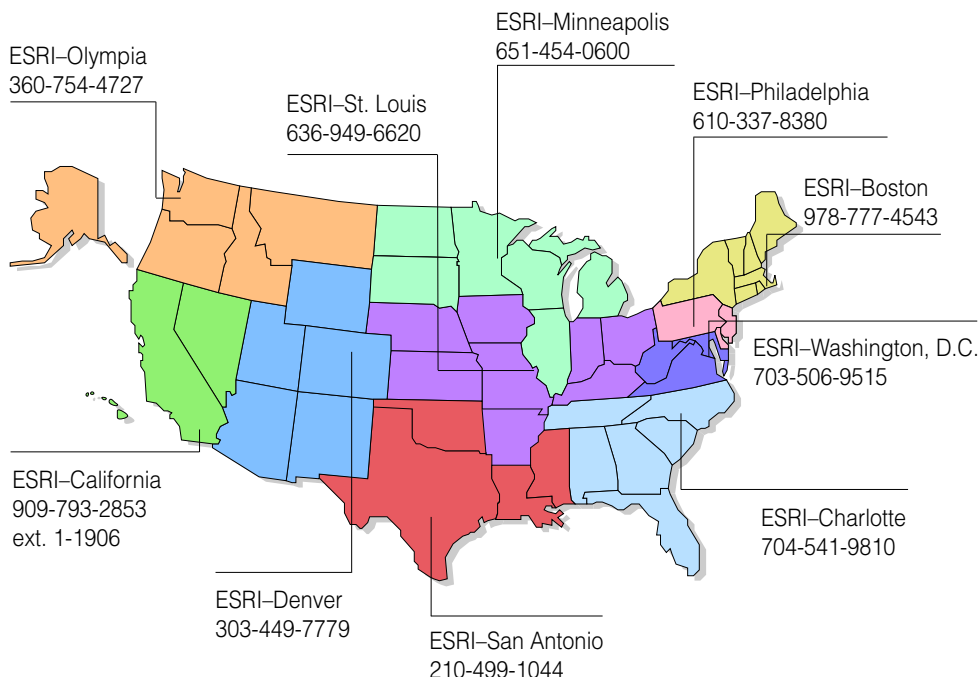
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