With ArcGIS Spatial Analyst, You Can

• Clean up data to prepare it for further analysis
• Perform distance and cost-of-travel analysis.
• Find suitable locations based on multiple attributes.
• Calculate complex terrain attributes.
• Perform statistical analysis based on local environment, small neighborhoods, or predefined areas.
• Derive additional information about your data.
• Create surfaces using interpolation tools such as IDW, Spline, and Kriging.

ArcGIS Spatial Analyst is used to create surfaces, analyze terrain, predict crime, perform demographic analysis, develop store locations, and more.

ArcGIS Spatial Analyst Advanced Raster Spatial Analysis

ArcGIS Spatial Analyst is an optional extension to ArcGIS Desktop. It provides powerful tools for performing advanced raster analysis. ArcGIS Spatial Analyst software’s strong integration with the ArcGIS Desktop geoprocessing environment allows users to create and implement analysis models quickly and easily. These models are self-documenting and can be saved so others can understand the spatial analysis process applied and “What if” scenarios can be easily executed and compared.

Through its simple yet powerful interface, ArcGIS Spatial Analyst provides an integrated environment within ArcGIS Desktop for doing advanced raster analysis. ArcGIS Spatial Analyst allows users to combine data sets, interpret new data, and perform complex raster operations such as terrain analysis, surface modeling, surface interpolation, hydrologic analysis, statistical analysis, and much more.

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ArcGIS Spatial Analyst is an optional extension to ArcGIS Desktop (ArcView®, ArcEditor™, and ArcInfo®) preface themselves to users familiar with the ArcGIS software environment. It provides a wide range of powerful tools for raster-based spatial analysis. Users of ArcGIS Spatial Analyst include those who need to build complex site location analysis models as well as those users who are interested in conducting terrain and visibility modeling or who want to perform density mapping, hydrologic analysis, statistical analysis, and much more.

ArcGIS Spatial Analyst provides an integrated environment within ArcGIS Desktop for combining data sets, interpreting new data, and performing complex raster operations such as terrain analysis, surface modeling, surface runoff modeling, wildland modeling, site location analysis, and more.

Through its simple yet powerful interface, ArcGIS Spatial Analyst provides an appealing, all-inclusive environment within ArcGIS Desktop for conducting analysis. With ArcGIS Spatial Analyst, users can align and store complex data sets, allow “what if” scenarios to be easily executed and results compared. ArcGIS Spatial Analyst under the ArcGIS Desktop platform applied and “ArcGIS” software can be easily extended and reused.

Using ArcGIS Spatial Analyst, data in these data sets should contain their location attributes, metadata as well as those users who are interested in conducting terrain and visibility modeling or who want to perform density mapping, hydrologic analysis, statistical analysis, and much more.

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With ArcGIS Spatial Analyst, users can:

- Create, store, and analyze your data layers
- Perform additional spatial analysis using your data layers
- Create your own mapping reports
- Display your data layers in a variety of ways
- Perform complex raster operations such as terrain analysis, surface modeling, surface runoff modeling, wildland modeling, site location analysis, and more
- Use a wide range of data formats to combine data sets, interpret new data, and perform complex raster operations such as terrain analysis, surface modeling, surface runoff modeling, site location analysis, and more

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With ArcGIS Spatial Analyst, users can:

- Create, store, modify, and analyze data in a raster environment.
- Perform advanced spatial analysis such as terrain analysis, surface modeling, hydrologic analysis, statistical analysis, and much more.
- Combine data sets, interpret new data, and perform complex raster operations such as terrain analysis, surface modeling, surface runoff modeling, wildland modeling, site location analysis, and more.
- Analyze customer behavior.
- Model and visualize crime patterns.
- Perform demographic analysis.
- Perform complex terrain analysis.
- Find the best store location.
- Perform distance to streams or roads.
- Predict fire risk.
- Perform land use analysis.
- Find suitable locations based on multiple factors or constraints.
- Perform statistical analysis based on local attributes.
- Create surfaces using interpolation tools such as IDW, Spline, and Kriging.
- Perform distance and cost-of-travel analysis.
- Find the best location for a new business or service.
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- Determine pollution levels.
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ArcGIS Spatial Analyst

ArcGIS Spatial Analyst is fully integrated with ArcGIS Desktop and provides more than 150 tools and functions for spatial analysis, making it easy to calculate and visualize complex surfaces and data. Spatial Analyst is fully integrated with ArcGIS for Desktop and provides more than 150 tools and functions for spatial analysis, making it easy to calculate and visualize complex surfaces and data. Spatial Analyst is fully integrated with ArcGIS for Desktop and provides more than 150 tools and functions for spatial analysis, making it easy to calculate and visualize complex surfaces and data.

Suitability Modeling
Suitability modeling is a tool for estimating the potential for a location to be used for a particular purpose. It allows users to create a suitability surface, which is a model that predicts the probability of success for a particular purpose. The surface is typically created using a set of factors, such as distance to roads, elevation, or vegetation.

Dynamic Modeling and Advanced Visualization
Dynamic Modeling and Advanced Visualization are tools that allow users to create dynamic and interactive models. These models can be used to simulate processes and analyze data. The tools include Modeler, Spatial Analyst, and 3D Analyst.

Data and Customization
ArcGIS Spatial Analyst includes a number of statistical analysis tools and a cell calculator. Cell statistics allow users to analyze the relationship between two or more variables. A cell calculator allows users to perform advanced calculations on cell values. ArcGIS Spatial Analyst also includes specialized tools for working with hydrology, vegetation, and image data. These tools include the Hydrology Analysis toolset, the Vegetation Analysis toolset, and the Image Analysis toolset.

Evaluation
Evaluate ArcGIS Spatial Analyst today: www.esri.com/spatialanalyst
ArcGIS Spatial Analyst is a powerful tool that allows users to conduct spatial analysis and modeling tasks via ModelBuilder and scripts. It helps users to conduct analysis and modeling tasks in ArcGIS Desktop without having to change environments between processes. It includes more than 150 Spatial Analyst tools, which can be used to conduct analysis and modeling tasks using raster datasets. The toolset includes methods for describing hydrologic characteristics, such as slope, current road infrastructure, and land use, and for calculating least-cost path, shortest path distance, and cost-weighted distance. ArcGIS Spatial Analyst also provides tools for visualizing data and provides an easy-to-use and powerful way to create custom tools and models for specific spatial analysis. ArcGIS Spatial Analyst can be used for traditional image processing applications such as transforming and analyzing images, as well as for more complex tasks such as deriving new estimated surface values. ArcGIS Spatial Analyst uses Inverse Distance Weighting (IDW) to interpolate values from scattered data points into a continuous surface. These include contours, angle patterns, and derived surfaces. With ArcGIS Spatial Analyst, users can access in the same environment as the more than 200 other ArcGIS Desktop tools. This allows users to conduct analysis and modeling tasks using raster datasets.
ArcGIS Spatial Analyst

ArcGIS Spatial Analyst is a data analysis extension for ArcGIS Desktop that provides tools for raster analysis. It helps users answer questions such as, "Where is the best location?"—whether it involves finding the best location for a new road or pipeline, a new dairy center, or an urban center. Analyst helps you conduct analysis and modeling tasks, and is most useful when you're working with geographic data from multiple layers, which can then be used to suggest changes to the environment between processes.

Modelling and Visualization

ArcGIS Spatial Analyst is a data analysis extension for ArcGIS Desktop that provides tools for raster analysis. It helps users answer questions such as, "Where is the best location?"—whether it involves finding the best location for a new road or pipeline, a new dairy center, or an urban center. Analyst helps you conduct analysis and modeling tasks, and is most useful when you're working with geographic data from multiple layers, which can then be used to suggest changes to the environment between processes.

Suitability Modeling

A common theme specific to arcGIS® applications, Suitability Modeling is used to identify areas that are best suited for a certain activity or to find areas that are best avoided. Analyst includes various modeling tools for suitability modeling, comparing layers using distance, slope, aspect, habitat suitability, and other factors.

Site Selection Modeling

Site Selection Modeling helps users decide which candidate site is the best option. Analyst provides tools to conduct analysis and modeling tasks, combining the results with take into consideration distance to major highways and commercial developer building a new retail store may want to consider."
ArcGIS Spatial Analyst
Advanced Business Spatial Analyst

Modelling and Analysis
ArcGIS Spatial Analyst is tightly integrated with ArcGIS and provides advanced business intelligence in location-based analysis, a distinct advantage over 250 other ArcGIS Desktop tools. The analyst can see new opportunities and trends in their data, which can lead to increased profit, revenue, and value in a variety of business applications that require the analysis and presentation of data in a geographic context.

Suitability Modeling
A powerful tool to help determine the best location for a new retail store. ArcGIS Spatial Analyst can help determine the best locations through an overlay analysis of potential factors to determine the best location for that store. Factors may include land use, population density, and consumer spending, among others. The analyst can then evaluate the best locations for their new store and make informed decisions.

Site Selection Modeling
When looking for the best location, the analyst can use ArcGIS Spatial Analyst to determine the best location for a new store. Site Selection Modeling is a powerful tool to help determine the best location for a new store. The analyst can use Site Selection Modeling to evaluate the best locations for their new store and make informed decisions.

Dynamic Modeling and Advanced Visualization
More than 150 Spatial Analyst Tools
ArcGIS Spatial Analyst includes a comprehensive suite of tools for advanced business intelligence, including Overlay analysis, Site Selection Modeling, Site Selection Modeling, and more. These tools allow the analyst to quickly and easily identify the best locations for their new store, making it easier to make informed decisions.

Statistical Analysis Tools
Numerical Analysis
In ArcGIS Spatial Analyst, users can calculate a statistic between two or more raster datasets. This can be used to identify areas of high and low density, trends, and other patterns in the data. The analyst can then use these patterns to make informed decisions.

Map Algebra
Typically, the analyst language for ArcGIS Spatial Analyst is used to create and manipulate raster datasets. This allows the analyst to create custom tools and models for their specific needs. The analyst can use Map Algebra expressions to perform a wide range of operations on raster data, such as addition, subtraction, multiplication, and division.

Data and Customization
ArcGIS Spatial Analyst supports the standard ArcGIS ArcMap interface, making it easy to create custom tools and models. The analyst can use Map Algebra expressions to perform a wide range of operations on raster data, such as addition, subtraction, multiplication, and division. These operations can be used to create custom tools and models for specific needs, such as urban growth modeling, vegetation analysis, and more.

Evaluate ArcGIS Spatial Analyst today: www.esri.com/spatialanalyst
With ArcGIS Spatial Analyst, You Can
• Create, save, and edit layers of your data.
• Perform traditional analysis of your data.
• View layers using transparent tools such as color, shape, and opacity.
• Perform slope, aspect, and visual prominence analysis.
• Calculate complex terrain attributes.
• Create surfaces using interpolation tools such as IDW, Spline, and Kriging.
• Create, query, map, and analyze cell-based raster data.

Key Features

With ArcGIS Spatial Analyst, You Can
• Analyze customer behavior.
• Model and visualize crime patterns.
• Conduct risk assessments.
• Perform demographic analysis.
• Determine areas of high value.
• Compute distance to streams or roads.
• Determine erosion potential.
• Perform crop yield analysis.
• Determine pollution levels.
• Analyze transportation corridors.
• Predict fire risk.
• Perform land use analysis.
• Find the best store location.

Advanced Raster Spatial Analysis

ArcGIS Spatial Analyst provides an environment for comprehensive, raster-based spatial analysis. With ArcGIS Spatial Analyst, users can employ a wide range of data formats to conduct advanced raster analysis. ArcGIS Spatial Analyst software’s strong integration with the ArcGIS Desktop geoprocessing environment allows users to create and implement analysis models quickly and easily. These models are self-documenting and can be saved so others can understand the spatial analysis process applied and “What if” scenarios can be easily executed and results compared.

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Users of ArcGIS Spatial Analyst include those who need to build complex site location analysis models as well as those users who are interested in conducting terrain and visibility modeling or who want to conduct detailed mapping, analysis, or modeling related to climate, elevation, and other environmental factors. ArcGIS Spatial Analyst also includes tools for performing density analysis, overlay, distance analysis, and more.
Input Sources

ArcGIS Spatial Analyst

The following extensions work with ArcGIS Spatial Analyst:

- ArcGIS 3D Analyst™
- ArcGIS Data Interoperability
- ArcGIS Geostatistical Analyst
- ArcGIS Network Analyst
- ArcGIS Publisher

Analysis and Visualization

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This poster illustrates the common use of ArcGIS Spatial Analyst to find suitable locations by ranking a landscape into categories of high and low desirability on a process known as weighted overlay modeling.

In this example, a suitability site selection modeling was used to find a suitable habitat for grizzly bears. The same process can be applied to many other types of spatial problems such as finding the best location for a new store, deciding where to purchase a home, or determining the best route for a proposed road.

Applying analysis tools to input data creates new information such as density of roads or degree of a DEM. Combining different data, such as density of roads per square kilometer and slope in units of degrees, requires a common measurement scale to assess the likelihood that a grizzly bear would prefer a particular location.

These derived datasets are reclassified into categories of interest to the problem being solved. We know bears prefer to be away from roads, so data is reclassified into several categories of varying road density and proximity.

Using the Weighted Overlay tool, weights are assigned to each category for each dataset representing bear habitat suitability. Vegetation types such as white bark pine, moist grasses, and berry patches are assigned a “most preferred” weight value of 9, and areas with very dense roads are assigned a “least preferred” weight value of 1. In addition, the Weighted Overlay tool is also used to assign a percentage of influence to each input dataset. For example, vegetation can be assigned higher importance than proximity to roads.

With the powerful Weighted Overlay tool, parameters of a suitability model such as this can be easily set and changed in a single dialog window, allowing the user to test many different scenarios.

Data and modeling guidelines are provided courtesy of the Craighead Environmental Research Institute (www.grizzlybear.org).

ArcGIS Publisher

To request an evaluation copy, please visit www.esri.com/spatialanalyst