Appendix D. Glossary of GIS and Source Water Assessment Terms

Note: The sources for these definitions:
http://www.epa.gov/OCEPAterms/
http://www.esri.com/library/glossary

The terms selected for inclusion were derived from previously published lists, internal glossaries produced by various programs and various software providers. This is a partial listing of Geographic Information System terminology and Source Water Assessment terms that are commonly found in related documents.

address matching

A mechanism for relating two files using address as the relate item. Geographic coordinates and attributes can be transferred from one address to the other. For example, a data file containing student addresses can be matched to a street coverage that contains addresses creating a point coverage of where the students live.

analysis

Analysis is the process of identifying a question or issue to be addressed, modeling the issue, investigating model results, interpreting the results, and possibly making a recommendation. See model and spatial analysis.

area

1. A homogeneous extent of the Earth bounded by one or more arc features (polygon) or represented as a set of polygons (region). Examples: states, counties, lakes, land-use areas, and census tracts.

aspect

The compass direction toward which a slope faces, measured in degrees from North in a clockwise direction.

attribute

1. A characteristic of a geographic feature described by numbers, characters, images and CAD drawings, typically stored in tabular format and linked to the feature by a user-assigned identifier (e.g., the attributes of a well might include depth and gallons per minute).

2. A column in a database table

attribute table

An INFO or other tabular file containing rows and columns. In ArcInfo, attribute tables are associated with a class of geographic features, such as wells or roads. Each row represents a geographic feature. Each column

represents one attribute of a feature, with the same column representing the same attribute in each row.

azimuth

The horizontal direction of a vector, measured clockwise in degrees of rotation from the positive y-axis, for example, degrees on a compass.

buffer

A zone of a specified distance around coverage features. Both constant- and variable-width buffers can be generated for a set of coverage features based on each feature's attribute values. The resulting buffer zones form polygons-areas that are either inside or outside the specified buffer distance from each feature. Buffers are useful for proximity analysis (e.g., find all stream segments within 300 feet of a proposed logging area).

CERCLA

Comprehensive Environmental Response, Compensation, and Liability Act (1980)

CERCLIS

Comprehensive Environmental Response, Compensation, and Liability Information System

character

1. A letter (e.g., a, b, c, or d), digit (e.g., 1, 2, or 3), or special graphic symbol (e.g., *, |, or -) treated as a single unit of data.

2. A data type for an attribute designating that values for the attribute will be represented using characters.

clip

The spatial extraction of those features from one coverage that reside entirely within a boundary defined by features in another coverage (called the clip coverage)-clipping works much like a cookie cutter.

column

The vertical dimension of a table. A column has a name and a data type applied to all values in the column.

contaminant

Any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.

contamination

Introduction into water, air, and soil of microorganisms, chemicals, toxic substances, wastes, or wastewater in a concentration that makes the medium unfit for its next intended use. Also applies to surfaces of objects, buildings, and various household and agricultural use products.

contamination source inventory (potential)

An inventory of contaminant sources within delineated State Water-Protection Areas. Targets likely sources for further investigation.

continuous data

A surface for which each location has a specified or derivable value. Typically represented by a tin or lattice (e.g., surface elevation).

contour

A line connecting points of equal surface value.

contour interval

The difference in surface values between contours.

coordinate

A set of numbers that designate location in a given reference system, such as x,y in a planar coordinate system or an x,y,z in a three-dimensional coordinate system. Coordinates represent locations on the Earth's surface relative to other locations.

coordinate system

A reference system used to measure horizontal and vertical distances on a planimetric map. A coordinate system is usually defined by a map projection, a spheroid of reference, a datum, one or more standard parallels, a central meridian, and possible shifts in the x- and y-directions to locate x,y positions of point, line, and area features. In ArcInfo, a system with units and characteristics defined by a map projection. A common coordinate system is used to spatially register geographic data for the same area.

coverage

1. A digital version of a map forming the basic unit of vector data storage in ArcInfo. A coverage stores geographic features as primary features (such as arcs, nodes, polygons, and label points) and secondary features (such as tics, map extent, links, and annotation). Associated feature attribute tables describe and store attributes of the geographic features.

2. A set of thematically associated data considered as a unit. A coverage usually represents a single theme such as soils, streams, roads, or land use.

database

A logical collection of interrelated information, managed and stored as a unit, usually on some form of mass-storage system such as magnetic tape or disk. A GIS database includes data about the spatial location and shape of geographic features recorded as points, lines, areas, pixels, grid cells, or tins, as well as their attributes.

data conversion

The translation of data from one format to another. ArcInfo supports data conversion from many geographic data formats such as DLG, TIGER, DXF, and DEM.

data dictionary

A catalog of all data held in a database, or a list of items giving data names and structures. Also referred to as DD/D for data dictionary/directory. Commercial RDBMSs have online data dictionaries stored in special tables called system tables.

data model

1. The result of the conceptual design process. A generalized, user-defined view of the data related to applications.

2. A formal method of describing the behavior of the real-world entities. A fully developed data model specifies entity classes, relationships between entities, integrity rules and operations on the entities.

3. ArcInfo coverages and grids use a georelational data model, a hybrid data model that combines spatial data (in coverages or grids) and attribute data (in tables). Other data models used in ArcInfo include tins, images, and grid.

data set

A named collection of logically related data items arranged in a prescribed manner.

database management system (DBMS)

A set of computer programs for organizing the information in a database. A DBMS supports the structuring of the database in a standard format and provides tools for data input, verification, storage, retrieval, query, and manipulation.

datum

A set of parameters and control points used to accurately define the three-dimensional shape of the Earth (e.g., as a spheroid). The datum is the basis for a planar coordinate system. For example, the North American Datum for 1983 (NAD83) is the datum for map projections and coordinates within the United States and throughout North America.

DEM

See digital elevation model.

descriptive data

Tabular data describing the characteristics of geographic features. Can include numbers, text, images, and CAD drawings about features. ArcInfo stores descriptive data in feature attribute tables and in related tables. Also referred to as attribute data.

digital elevation model

1. A digital representation of a continuous variable over a two- dimensional surface by a regular array of z values referenced to a common datum. Digital elevation models are typically used to represent terrain relief. Also referred to as 'digital terrain model' (DTM).

2. An elevation database for elevation data by map sheet from the National Mapping Division of the U.S. Geological Survey (USGS).

3. The format of the USGS digital elevation data sets.

digitize

1. To encode geographic features in digital form as x,y coordinates.

2. The process of using a digitizer to encode the locations of geographic features by converting their map positions to a series of x,y coordinates stored in computer files. Pushing a digitizer button records an x,y coordinate. A digitized line is created by recording a series of x,y coordinates.

DLG

1. Digital Line Graph files from the U.S. Geological Survey (USGS), including data from the base map categories such as transportation, hydrography, contours, and public land survey boundaries.

2. The digital format standards published by USGS for exchanging cartographic data files and in which the USGS delivers Digital Line Graph data sets.

downstream

In tracing, downstream is the direction along the arcs that is the same as the direction of flow. Direction of flow is determined by a user-defined convention.

edit

To correct errors within, or modify, a computer file, a geographic data set, or a tabular file containing attribute data.

FGDC

The United States Federal Geographic Data Committee. Composed of representatives of several federal agencies and GIS vendors, the FGDC has the lead role in defining spatial metadata standards, which it describes in the Content Standards for Spatial Metadata

field

In a database, another term for column.

file

A set of related information that a computer can access by a unique name (e.g., a text file, a data file, a DLG file). Files are the logical units managed on disk by the computer's operating system. Files may be stored on tapes or disks.

FIPS

The Federal Information Processing Standards. FIPS deals with a wide range of computer system components including the components of most GISs: hardware, storage media, data files, codes, interfaces, data transmission, networking, data management, documentation, programming languages, software engineering, performance, security, and so forth. FIPS 173 is the precursor to the SDTS (Spatial Data Transfer Standard), which includes standardized definitions for a variety of digital mapping terms, addressing federal requirements for accuracy. FIPS provides a U. S. government standard state and country identification code; standards approved for use by U.S. government agencies. FIPS 152-2 includes POSIX.1 Compliance.

foreign key

One or more table attributes that can uniquely identify a record in another table. A foreign key is the primary key of another table. Foreign key-primary key relationships define a relational join. See also relate.

format

The pattern into which data are systematically arranged for use on a computer. A file format is the specific design of how information is organized in the file. For example, ArcInfo has specific, proprietary formats used to store coverages. DLG, DEM, and TIGER are geographic data sets with different file formats.

GBF/DIME

For the 1980 census, the U.S. Census Bureau produced Geographic Base Files (GBF) and Dual Independent Map Encoding (DIME) files, containing census geographic statistical codes and coordinates of line segments for most metropolitan areas. DIME files provide a schematic map of a city's streets, address ranges, and geostatistical codes relating to the Census Bureau's tabular statistical data. DIME was replaced by TIGER for the 1990 Census.

geocode

The process of identifying the coordinates of a location given its address. For example, an address can be matched against a TIGER street network to determine the location of a home. Also referred to as address geocoding.

geographic data

The locations and descriptions of geographic features. The composite of spatial data and descriptive data.

geographic feature

A user-defined geographic phenomenon that can be modeled or represented using geographic data sets in ArcInfo. Examples of geographic features include streets, sewer lines, manhole covers, accidents, lot lines, and parcels.

geographic information system

See GIS.

georeference

To establish the relationship between page coordinates on a planar map and known real-world coordinates.

GIS

Geographic information system. An organized collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information.

global positioning system

A system of satellites and receiving devices used to compute positions on the Earth. GPS is used in navigation, and its precision supports cadastral surveying.

GPS

See global positioning system.

GRASS

Geographical Resource Analysis Support System. A public-domain raster GIS modeling product of the U.S. Army Corp of Engineers' Construction Engineering Research Laboratory (USACERL).

GRID

A fully integrated grid (cell-based) geoprocessing system for use with ArcInfo. GRID supports a Map Algebra spatial language that allows sophisticated spatial modeling and analysis.

GWUDI

Ground Water Under Direct Influence of surface water.

grid

A geographic data model representing information as an array of equally sized square cells arranged in rows and columns. Each grid cell is referenced by its geographic x,y location. See also raster and grid cell.

grid cell

A discretely uniform unit that represents a portion of the Earth, such as a square meter or square mile. Each grid cell has a value that corresponds to the feature or characteristic at that site, such as a soil type, census tract, or vegetation class.

ground water

The supply of fresh water found beneath the Earth's surface, usually in aquifers, which supply wells and springs. Because ground water is a major source of drinking water, there is growing concern over contamination from leaching agricultural or industrial pollutants or leaking underground storage tanks.

hardware

The physical components of a computer system-the computer, plotters, printers, terminals, digitizers, and so on.

heuristic

A computational method that uses trial and error methods to approximate a solution for computationally difficult problems.

IGDS

Interactive Graphics Design Software. Intergraph IGDS file formats can be converted to and from ArcInfo coverages.

image

A graphic representation or description of a scene, typically produced by an optical or electronic device. Common examples include remotely sensed data

(e.g., satellite data), scanned data, and photographs. An image is stored as a raster data set of binary or integer values that represent the intensity of reflected light, heat, or other range of values on the electromagnetic spectrum.

index

Special data structure used in a database to speed searching for records in tables or spatial features in geographic data sets.

INFO

A tabular DBMS used by ArcInfo to store and manipulate feature attribute tables and other related tables.

INFO database

The contents of a set of INFO data files, feature attribute tables, and related files stored in each ArcInfo workspace under a subdirectory named INFO. This subdirectory contains all feature attribute tables for the set of coverages contained in the workspace.

integer

A number without a decimal (0, 1, 25, 173, 1032, etc.). Integer values can be less than, equal to, or greater than zero.

Internet

An international consortium of wide area networks that operate using a standard set of addresses allowing machine-to-machine connectivity on a global scale. The Internet is an outgrowth of a Defense Advanced Research Projects Agency (DARPA) research project in the early 1970s to provide connectivity between scientists running computer simulations in different locations. Additional regional, private, and public networks have joined the Internet over time. At this point there are over two million computers that now have direct access to the resources on the Internet.

interpolation

The estimation of z values of a surface at an unsampled point based on the known z values of surrounding points.

isoline

A line on a surface connecting points of equal value.

join

See relational join.

landfill

1. Sanitary landfills are disposal sites for non-hazardous solid wastes spread in layers, compacted to the smallest practical volume, and covered by material

applied at the end of each operating day. 2. Secure chemical landfills are disposal sites for hazardous waste, selected and designed to minimize the chance of release of hazardous substances into the environment.

latitude-longitude

A spherical reference system used to measure locations on the Earth's surface. Latitude and longitude are angles measured from the Earth's center to locations on the Earth's surface. Latitude measures angles in a north-south direction. Longitude measures angles in the east-west direction.

legend

1. The reference area on a map that lists and explains the colors, symbols, line patterns, shadings, and annotation used on the map. The legend often includes the scale, origin, orientation, and other map information.

2. The symbol key used to interpret a map.

line

1. A set of ordered coordinates that represents the shape of geographic features too narrow to be displayed as an area at the given scale (e.g., contours, street centerlines, or streams), or linear features with no area (e.g., state and county boundary lines).

2. A single arc in a coverage.

3. A line on a map (e.g., a neatline).

line-in-polygon

A spatial operation in which arcs in one coverage are overlaid with polygons of another coverage to determine which arcs, or portions of arcs, are contained within the polygons. Polygon attributes are associated with corresponding arcs in the resulting line coverage.

linear feature

A geographic feature that can be represented by a line or set of lines. For example, rivers, roads within a pizza delivery area, and electric and telecommunication networks are all linear features.

map

An abstract representation of the physical features of a portion of the Earth's surface graphically displayed on a planar surface. Maps display signs, symbols, and spatial relationships among the features. They typically emphasize, generalize, and omit certain features from the display to meet design objectives (e.g., railroad features might be included in a transportation map but omitted from a highway map).

map projection

A mathematical model that transforms the locations of features on the Earth's surface to locations on a two-dimensional surface. Because the Earth is three-dimensional, some method must be used to depict a map in two dimensions. Some projections preserve shape; others preserve accuracy of area, distance, or direction. See also coordinate system.

Map projections project the Earth's surface onto a flat plane. However, any such representation distorts some parameter of the Earth's surface be it distance, area, shape, or direction.

map scale

The reduction needed to display a representation of the Earth's surface on a map. A statement of a measure on the map and the equivalent measure on the Earth's surface, often expressed as a representative fraction of distance, such as 1:24,000 (one unit of distance on the map represents 24,000 of the same units of distance on the Earth). Map scale can also be expressed as a statement of equivalence using different units; for example, 1 inch = 1 mile or 1 inch = 2,000 feet.

map units

The coordinate units in which a geographic data set (e.g., a coverage) is stored in ArcInfo. Map units can be inches, centimeters, feet, meters, or decimal degrees.

meridian

A line running vertically from the north pole to the south pole along which all locations have the same longitude. The Prime Meridian (0) runs through Greenwich, England. From the Prime Meridian, measures of longitude are negative to the west and positive to the east up to 180, halfway around the globe.

metadata

This is information about GIS data coverages or "data about data" that describe the content, quality, condition, and other characteristics of data. The Federal Geographic Data Committee (FGDC) approved the Content Standard for Digital Geospatial Metadata (FGDC-STD-001-1998) in June 1998. For more information regarding the current metadata standards visit: www.fgdc.gov

model

A representation of reality used to simulate a process, understand a situation, predict an outcome, or analyze a problem. A model is structured as a set of rules and procedures, including spatial modeling tools available in a geographic information system (GIS). See also spatial modeling, data model, analysis and spatial analysis.

NIMA

The National Imagery and Mapping Agency (NIMA) provides timely, relevant, and accurate imagery, imagery intelligence, and geospatial information in support of national security objectives. The Department of the Interior, U.S. Geological Survey (USGS), is the distributor of public sale National Imagery and Mapping Agency (NIMA) topographic maps, publications, and digital products.

neatline

A border line commonly drawn around the extent of a map.

node

1. The beginning and ending locations of an arc. A node is topologically linked to all arcs that meet at the node. See also network node.

2. In graph theory, the location at which three or more lines connect.

3. The three corner points of each triangle in a tin. Every sample point input to a tin becomes a node in the triangulation. A triangle node is topologically linked to all triangles that meet at the node.

null value

The absence of a value. If a particular column of a row in a table is null, that means there is no value stored. Null is not the same as blank or zero.

ODBC

Open Database Communication. A standard API (application program interface) used to communicate with database management systems, developed by Microsoft, and incorporated in ArcView Version 2. ArcView supports ODBC for DBMSs on the Microsoft Windows platform.

OGC

The Open GIS Consortium, a group composed of software vendors, academics, government agencies, consultants and software integrators, dedicated to open systems geoprocessing. Their first project is to develop an open geodata interoperability specification (OGIS).

one-to-many

A relate in which one record in a table is related to many records in another table.

online access

Direct access to data that does not involve file transfer.

operating system

Computer software designed to allow communication between the computer and the user. The operating system controls the flow of data, the application of

other programs, the organization and management of files, and the display of information.

ORACLE
: A relational database management system.

origin
: 1. The reference location for a planar coordinate system, usually represented by the values 0,0.

: 2. The place where a trip starts. This is usually the home for most consumers. For a population group, an origin could be a census tract or a city. Origins are represented as nodes in a network coverage, as points in a point coverage, and as label points in a polygon coverage.

overlay
: See topological overlay.

permeability
: The rate at which liquids pass through soil or other materials in a specified direction.

pixel
: A contraction of the words picture element. The smallest unit of information in an image or raster map. Referred to as a cell in an image or grid.

point
: 1. A single x,y coordinate that represents a geographic feature too small to be displayed as a line or area; for example, the location of a mountain peak or a building location on a small-scale map.

point-in-polygon
: A topological overlay procedure which determines the spatial coincidence of points and polygons. Points are assigned the attributes of the polygons within which they fall.

polygon
: A coverage feature class used to represent areas. A polygon is defined by the arcs that make up its boundary and a point inside its boundary for identification. Polygons have attributes (PAT) that describe the geographic feature they represent.

polygon overlay
: A topological overlay procedure which determines the spatial coincidence of

two sets of polygon features and creates a new set of polygons based on identity, intersect, or union.

precision
: Refers to the number of significant digits used to store numbers, and in particular, coordinate values. Precision is important for accurate feature representation, analysis and mapping.

primary key
: One or more attributes whose values uniquely identify a row in a database table. See also foreign key.

projection
: See map projection.

public water system (pws)
: A system that provides piped water for human consumption to at least 15 service connections or regularly serves 25 individuals. Publicly Owned Treatment Works (POTWs): A waste-treatment works owned by a state, unit of local government, or Indian tribe, usually designed to treat domestic wastewaters.

quadrangle (quad map)
: See topographic map.

quadtree
: A spatial index which recursively decomposes a data set (e.g., image) into square cells of different sizes until each cell has a homogeneous value. Quadtrees are often used for storing raster data. See also spatial indexing.

RCRA
: Resource Conservation and Recovery Act

RDBMS
: Relational database management system. A database management system with the ability to access data organized in tabular files that can be related to each other by a common field (item). An RDBMS has the capability to recombine the data items from different files, providing powerful tools for data usage.

raster
: A cellular data structure composed of rows and columns for storing images. Groups of cells with the same value represent features. See also grid.

real numbers
: Decimal numbers (e.g., 3.1417, 0.25, 1.8992, 6.0).

record

1. In an attribute table, a single 'row' of thematic descriptors. In SQL terms, a record is analogous to a tuple.

2. A logical unit of data in a file. For example, there is one record in the ARC file for each arc in a coverage.

rectification

The process by which an image or grid is converted from image coordinates to real-world coordinates. Rectification typically involves rotation and scaling of grid cells, and thus requires resampling of values.

relate

An operation that establishes a temporary connection between corresponding records in two tables using an item common to both (i.e., relate key). Each record in one table is connected to those records in the other table that share the same value for the common item. Compare with relational join.

relate key

The common set of columns used to relate two attribute tables. See also relate, primary key and foreign key.

relation

See table.

relational database

A method of structuring data as collections of tables that are logically associated to each other by shared attributes. Any data element can be found in a relation by knowing the name of the table, the attribute (column) name, and the value of the primary key. See also relate, relate key, and relational join.

relational join

The operation of relating and physically merging two attribute tables using their common item.

resampling

The process of reducing image data set size by representing a group of pixels with a single pixel. Thus, pixel count is lowered, individual pixel size is increased, and overall image geographic extent is retained. Resampled images are "coarse" and have less information than the images from which they are taken. Conversely, this process can also be executed in the reverse. In ArcInfo, the GRID function RESAMPLE supports resampling of raster data using Cubic Convolution, Bilinear Interpolation, Nearest Neighbor Assignment, and custom "Nearest Data" assignment methods.

resolution

1. Resolution is the accuracy at which a given map scale can depict the location and shape of geographic features. The larger the map scale, the higher the possible resolution. As map scale decreases, resolution diminishes and feature boundaries must be smoothed, simplified, or not shown at all. For example, small areas may have to be represented as points.

2. Distance between sample points in a lattice.

3. Size of the smallest feature that can be represented in a surface.

4. The number of points in x and y in a grid or lattice (e.g., the resolution of a U.S. Geological Survey one-degree DEM is 1201 x 1201 mesh points).

row

1. A record in an attribute table. The horizontal dimension of a table composed of a set of columns containing one data item each.

2. A horizontal group of cells in a grid, or pixels in an image.

rubber sheeting

A procedure to adjust coverage features in a nonuniform manner. Links representing from- and to-locations are used to define the adjustment.

run-length encoding

A data compression technique for storing raster or gridded data. Run-length encoding stores data by row. If two or more adjacent cells in a row have the same value, the 'run' is recorded, as opposed to recording an individual value for each cell. The more adjacent columns having the same value, the greater the compression.

safe water

Water that does not contain harmful bacteria, toxic materials, or chemicals, and is considered safe for drinking even if it may have taste, odor, color, and certain mineral problems.

scale

See map scale.

scale bar

A map element that shows the map scale graphically.

single precision

Refers to a level of coordinate accuracy based on the number of significant digits that can be stored for each coordinate. Single-precision numbers store

up to 7 significant digits for each coordinate, retaining a precision of 5 meters in an extent of 1,000,000 meters. ArcInfo data sets can be stored as either single- or double-precision coordinates. See also double precision.

sliver polygon

A small areal feature commonly occurring along the borders of polygons following the topological overlay of two or more coverages.

slope

A measure of change in surface value over distance, expressed in degrees or as a percentage. For example, a rise of 2 meters over a distance of 100 meters describes a 2% slope with an angle of 1.15. Mathematically, slope is referred to as the first derivative of the surface.

Soil Survey Geographic Database (SSURGO)

Digital soil mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) data base. Mapping scales generally range from 1:12,000 to 1:63,360; SSURGO is the most detailed level of soil mapping done by the Natural Resources Conservation Service (NRCS). SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships, and county natural resource planning and management. The user should be knowledgeable of soils data and their characteristics. The map extent for a Soil Survey Geographic (SSURGO) data set is a soil survey area, which may consist of a county, multiple counties, or parts of multiple counties. A SSURGO data set consists of map data, attribute data, and metadata. For more information, visit: http://www.ftw.nrcs.usda.gov/ssurgo.html

spatial analysis

The process of modeling, examining, and interpreting model results. Spatial analysis is useful for evaluating suitability and capability, for estimating and predicting, and for interpreting and understanding. There are four traditional types of spatial analysis: topological overlay and contiguity analysis, surface analysis, linear analysis, and raster analysis.

spatial data

Information about the location and shape of, and relationships among, geographic features, usually stored as coordinates and topology.

spatial feature

See geographic feature.

spatial indexing

A means of accelerating coverage drawing, spatial selection, and feature identification by generating feature-based indexes for one or more feature classes of a coverage.

spatial interaction

An analytical technique that estimates the number of interactions occurring between an origin and destination locations.

spatial modeling

Analytical procedures applied with a GIS. There are three categories of spatial modeling functions that can be applied to geographic features within a GIS: (1) geometric models, such as calculating the Euclidean distance between features, generating buffers, calculating areas and perimeters, and so on; (2) coincidence models, such as topological overlay; and (3) adjacency models (pathfinding, redistricting, and allocation). All three model categories support operations on spatial data such as points, lines, polygons, tins, and grids. Functions are organized in a sequence of steps to derive the desired information for analysis. See also model and analysis.

SQL

Structured Query Language. A syntax for defining and manipulating data from a relational database. Developed by IBM in the 1970s, it has become an industry standard for query languages in most relational database management systems.

State Soil Geographic Database (STATSGO)

Soil maps for the State Soil Geographic (STATSGO) database are made by generalizing the detailed soil survey data. The mapping scale for STATSGO map is 1:250,000 (with the exception of Alaska, which is 1:1,000,000). The level of mapping is designed to be used for broad planning and management uses covering state, regional, and multi-state areas. STATSGO data are available for the conterminous U.S., Alaska, Hawaii, and Puerto Rico. For more information, visit the following internet address: http://www.ftw.nrcs.usda.gov/statsgo.html

string

A series of alphanumeric characters of any length enclosed by quotes.

superfund (site)

The program operated under the legislative authority of CERCLA and SARA that funds and carries out EPA solid waste emergency and long-term removal and remedial activities. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising cleanup and other remedial actions.

surface

A geographic phenomenon represented as a set of continuous data, such as elevation or air temperature over an area. A clear or sharp break in values of the phenomenon (breaklines) indicates a significant change in the structure of the phenomenon (e.g., a cliff), not a change in geographic feature. Surfaces

can be represented by models built from regularly or irregularly spaced sample points on the surface. See also surface model.

surface model

Digital abstraction or approximation of a surface. Because a surface contains an infinite number of points, some subset of points must be used to represent the surface. Each model contains a formalized data structure, rules, and x,y,z point measurements that can be used to represent a surface.

surface water

All water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.)

symbol

A graphic pattern used to represent a feature. For example, line symbols represent arc features; marker symbols, points; shades symbols, polygons; and text symbols, annotation. Many characteristics define symbols, including color, size, angle, and pattern. See also text symbol, marker symbol, shade symbol, and line symbol.

table

A set of data elements that has a horizontal dimension (rows) and a vertical dimension (columns) in a relational database system. A table has a specified number of columns but can have any number of rows. A table is often called a relation. Rows stored in a table are structurally equivalent to records from flat files in that they must not contain repeating fields.

template

1. A coverage containing common feature boundaries, such as land-water boundaries, for use as a starting place in automating other coverages. Templates save time and increase the precision of topological overlays.

2. A map template containing neatlines, North arrow, logos, and other cartographic map elements for a common map series.

3. An empty tabular data file containing only item definitions.

Thiessen polygons

Polygons whose boundaries define the area that is closest to each point relative to all other points. Thiessen polygons are generated from a set of points. They are mathematically defined by the perpendicular bisectors of the lines between all points. A tin structure is used to create Thiessen polygons.

theme

A user-defined perspective on a coverage, grid, tin or image geographic data set specified, if applicable, by a coverage name and feature class or data set

name, attributes of interest, a data classification scheme, and theme-specific symbology for drawing.

thematic data
: See descriptive data.

TIGER
: The Topologically Integrated Geographic Encoding and Referencing data format used by the U.S. Census Bureau to support census programs and surveys. It was used for the 1990 census. TIGER files contain street address ranges along lines and census tract/block boundaries. This descriptive data can be used to associate address information and census/demographic data with coverage features.

topographic map
: 1. A map containing contours indicating lines of equal surface elevation (relief), often referred to as topo maps.

: 2. Often used to refer to a map sheet published by the U.S. Geological Survey in the 7.5-minute quadrangle series or the 15-minute quadrangle series.

topological overlay
: An analysis procedure for determining the spatial coincidence of geographic features. ArcInfo supports overlay among and between all feature classes. See also identity, intersect and union.

topology
: The spatial relationships between connecting or adjacent coverage features (e.g., arcs, nodes, polygons, and points). For example, the topology of an arc includes its from- and to-nodes, and its left and right polygons. Topological relationships are built from simple elements into complex elements: points (simplest elements), arcs (sets of connected points), areas (sets of connected arcs), and routes (sets of sections, which are arcs or portions of arcs). Redundant data (coordinates) are eliminated because an arc may represent a linear feature, part of the boundary of an area feature, or both. Topology is useful in GIS because many spatial modeling operations don't require coordinates, only topological information. For example, to find an optimal path between two points requires a list of the arcs that connect to each other and the cost to traverse each arc in each direction. Coordinates are only needed for drawing the path after it is calculated.

transformation
: The process that converts coordinates from one coordinate system to another through translation, rotation, and scaling. ArcInfo supports these transformations: similarity, affine, piecewise linear, projective, NADCON

datum adjustment using minimum-derived curvature transformation, and a polynomial transformation to warp grids and images.

USDA
: United States Department of Agriculture

USGS
: United States Geological Survey

UST
: Underground Storage Tank

UTM
: Universal Transverse Mercator

union
: A topological overlay of two polygonal spatial data sets which preserves features that fall within the spatial extent of either input data set; that is, all features from both coverages are retained. See also intersect and identity.

upstream
: In tracing, upstream is the direction along the arcs that is against the direction of flow. Direction of flow is determined by a user-defined convention.

USGS DEM
: A digital elevation model produced by the Survey Branch of the United States Department of the Interior, consisting of a regular array of elevations referenced in the Universal Transverse Mercator (UTM) coordinate system. These data correspond to the standard 1:24,000-scale 7.5 x 7.5-minute quadrangles or 1:250,000 one-degree map sheets. Elevations are in meters or feet referenced to mean sea level.

vector
: A coordinate-based data structure commonly used to represent linear geographic features. Each linear feature is represented as an ordered list of vertices. Traditional vector data structures include double-digitized polygons and arc-node models.

vertex
: One of a set of ordered x,y coordinates that constitutes a line.

view
: A logical table whose data are not physically stored. You define a view to access a subset of the columns stored in a row, access a set of columns stored in different rows, or avoid creating a redundant copy of data that is already stored.

watershed

The land area that drains into a stream; the watershed for a major river may encompass a number of smaller watersheds that ultimately combine at a common point.

weed tolerance

The minimum allowable distance between any two vertices along an arc. Weed tolerance is a parameter that can be set before adding arc features. When adding new arcs, if an input vertex is within the weed distance of the last vertex, it is disregarded. When weeding existing arcs, it is the tolerance used by the Douglas-Peucker algorithm. Nodes are always retained.

well

A bored, drilled, or driven shaft, or a dug hole whose depth is greater than the largest surface dimension and whose purpose is to reach underground water supplies or oil, or to store or bury fluids below ground.

wellhead protection area

A protected surface and subsurface zone surrounding a well or well field supplying a public water system to keep contaminants from reaching the well water.

World Wide Web

Developed by the European Laboratory for Particle Physics (CERN)

(WWW)

Consortium in Switzerland as a distributed hypermedia server. It allows one to prepare electronic documents that are composites of, or pointers to, many different files of potentially different types scattered across the world. It employs a hypertext markup language (html) to create the documents it serves and to follow "links" known as Universal Resource Locators (URLs) to fetch the document from elsewhere on the Internet. A WWW server does not provide search capabilities, rather it provides explicit linkage between files on the Internet using hypertext. This allows one to organize information in a particular way, but, unless the links exist, does not permit the discovery of other information that was not associated by the author. WWW can be accessed by Mosaic (see Mosaic).

Z39.50

An ANSI protocol standard for WAN (wide area network) information query and exchange to share library referencing requests via distributed electronic access to information.

z-value

The value of a surface at a particular x,y location (e.g., elevation). Often referred to as spot values or spot elevations.

zoom

To enlarge and display greater detail of a portion of a geographic data set.