Thiessen Polygons

The set of all points closer to a point $c$ of $S$ than to any other point of $S$ is the interior of a (in some cases unbounded) convex polytope called the Dirichlet domain or Voronoi cell for $c$. The set of such polytopes partitions the whole space, and this partitioning is called Voronoi tessellation corresponding to the set $S$. If the dimension of the space is only 2, then it is easy to draw pictures of Voronoi tessellations, and in that case they are sometimes called Voronoi diagrams. Voronoi diagrams that are used in Geophysics and Meteorology to analyse spatially distributed data (such as rainfall measurements) are called Thiessen polygons after American meteorologist Alfred H. Thiessen.


Thiessen (Voronoi) polygons define individual areas of influence around each of a set of points. Thiessen polygons are polygons whose boundaries define the area that is closest to each point relative to all other points. They are mathematically defined by the perpendicular bisectors of the lines between all points.

http://www.geo.ed.ac.uk/agidexe/term?1431
A polygon bounding the region closer to a point than to any adjacent point. The polygons are drawn so that the lines are of equal distance between two adjacent points. Thiessen polygons, also known Dirichlet tessellations, are sometimes used as a crude form of interpolation, particularly within the geosciences.

Applications:
http://research.esd.ornl.gov/CRERP/DOCS/RIVERMI/P114.HTM

Managers of many river and reservoir systems employ a specialized coordinate system for the identification of locations on the water. The location of a point in this coordinate system requires the specification of two numbers; a river mile, as measured along a curving center line, and a linear distance from either the left or right river bank. Thiessen polygons can be constructed around events along the centerline route to specify the river mile increments.

http://www.answers.com/topic/voronoi-diagram/

In the Thiessen polygon method, the watershed is divided into polygons with the rain gauge in the middle of each polygon assumed to be representative for the rainfall on the area of land included in its polygon. These polygons are made by drawing lines between gauges, then making perpendicular bisectors of those lines form the polygons.

Studies the space use patterns of animals using Thiessen polygons.