LECTURE FOUR
DISTANCE ANALYSIS WITH VECTOR DATA
MEASUREMENTS
MEASUREMENT TECHNIQUES

• Vector operations deal with objects (points, lines and polygons) which are harder to manipulate than grid cells

• Measures such as area have to be calculated from coordinates of objects, instead of counting cells

• This entails a much more complex computational geometry
Pythagoras's theorem is used to calculate the Euclidean distance between two points.
\[
AB = \sqrt{(C - A)^2 + (C - B)^2}
\]

\[
AB = \sqrt{4^2 + 4^2}
\]

\[
AB = \sqrt{32}
\]

\[
AB = 5.7 \text{ units}
\]
PROXIMITY ANALYSIS

• Provides us with information of distance surrounding a specific feature

• We can ask questions regarding our actions/behaviour in relation to the location of objects in the real world
  
  • Land development: distance for establishing notifications
  
  • Environmental Protection: distance from habitats
  
  • Marketing: distance to market goods and services
DISTANCE

• Same principles as calculating length
• But....
NEAREST NEIGHBOR

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BUFFER ANALYSIS

- The most common form of vector proximity analysis
- One or more zones are created around either points, lines or polygons to illustrate distance from feature
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