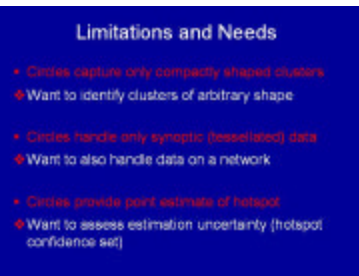


Issue

Limitations of Circle-Based SaTScan

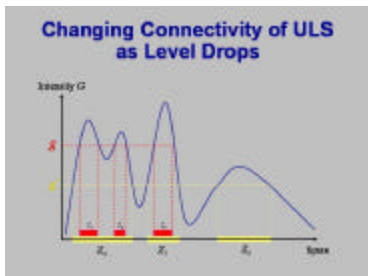
Proof of Concept Paper #1



Method

Upper Level Set (ULS) Scan Statistic for Arbitrarily Shaped Clusters

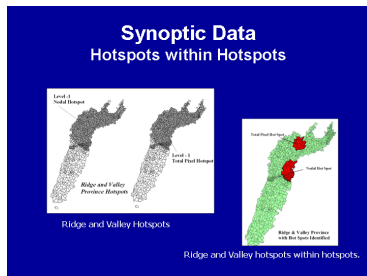
Concept Paper #1



Geospatial Surveillance

Hotspot Identification and Uncertainty Assessment

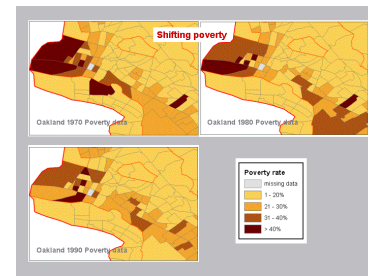
Penn State/EPA/Atlantic Slope Consortium



Spatial-Temporal Surveillance

Typology of Space-Time Hotspots

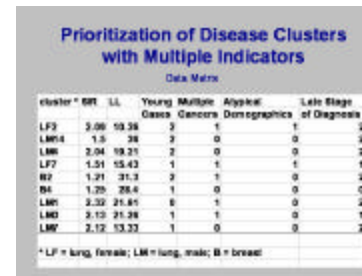
Penn State/Ford Foundation/Poverty Research



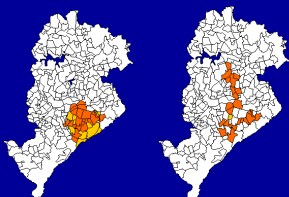
Hotspot Prioritization

Ranking Without Having to Integrate the Multiple Indicators

Penn State/EPA/Watersheds Research



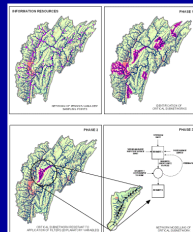
Poor Hotspot Delineation by Circular Zones



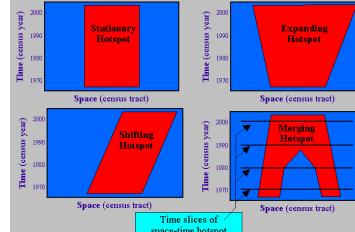
Features of ULS Scan Statistic

- Identifies arbitrary shaped clusters
- Applicable to data on a network
- Confidence set, hotspot rating
- Computationally efficient
- Applicable to continuous response
- Generalizes to space-time scan

Data on a Network



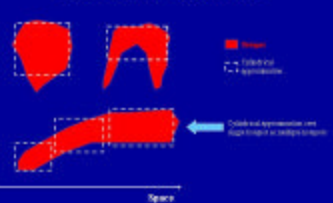
Typology of Space-Time Hotspots



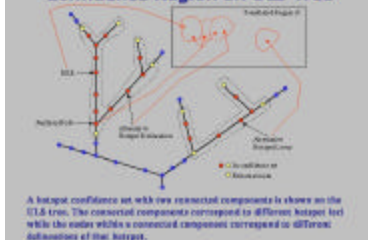
Ranking Partially Ordered Sets



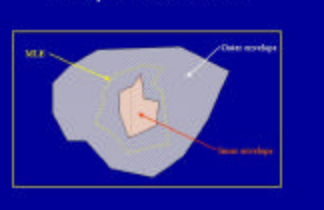
Poor Hotspot Delineation by Space-Time Cylinders



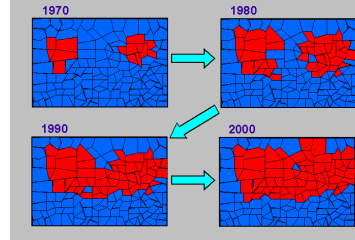
Confidence Region on ULS Tree



Estimation Uncertainty in Hotspot Delineation



Trajectory of a Merging Hotspot



Cumulative Rank Frequency Operator

