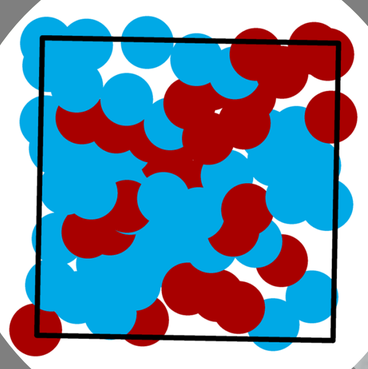
Spatial clustering in a network of great gerbil burrows ?

Great gerbils
Social rodents
Hosts of plague
Live in burrows

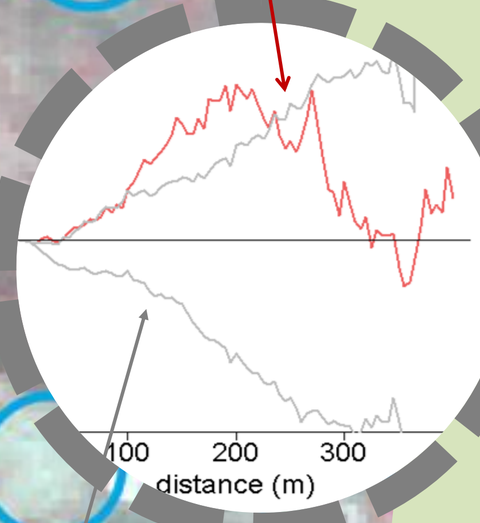
Why is this research relevant?
Plague can be transmitted to humans
Spatial configuration hosts will influence speed and direction of plague spread

Burrows
Usually round
diameter ± 20m
Not all occupied
Visible as bright spots on satellite images

Burrows are GPSed in the field inside squares.
Occupancy is determined
All are mapped
[Red = occupied
Blue = empty]



Visually, it is difficult to judge whether there is clustering, so we calculate a clustering coefficient - Ripley's K– for occupied burrows at 5-400m



We then compare this to Ripley's K of random samples to evaluate the significance.
This is repeated for 337 squares of in total 8614 burrows

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Conclusions

- Clustering of occupied burrows occurs..
  - in ~19 % of the locations
  - -Most in 2012 (compared to 2011 and 2013)
  - -More at occupancies between 25 and 75 % than below or above 25 and 75 % occupancy
- Significant dispersed patterns of occupied burrows are present in 2.1% of the locations

These results should be included in plague models