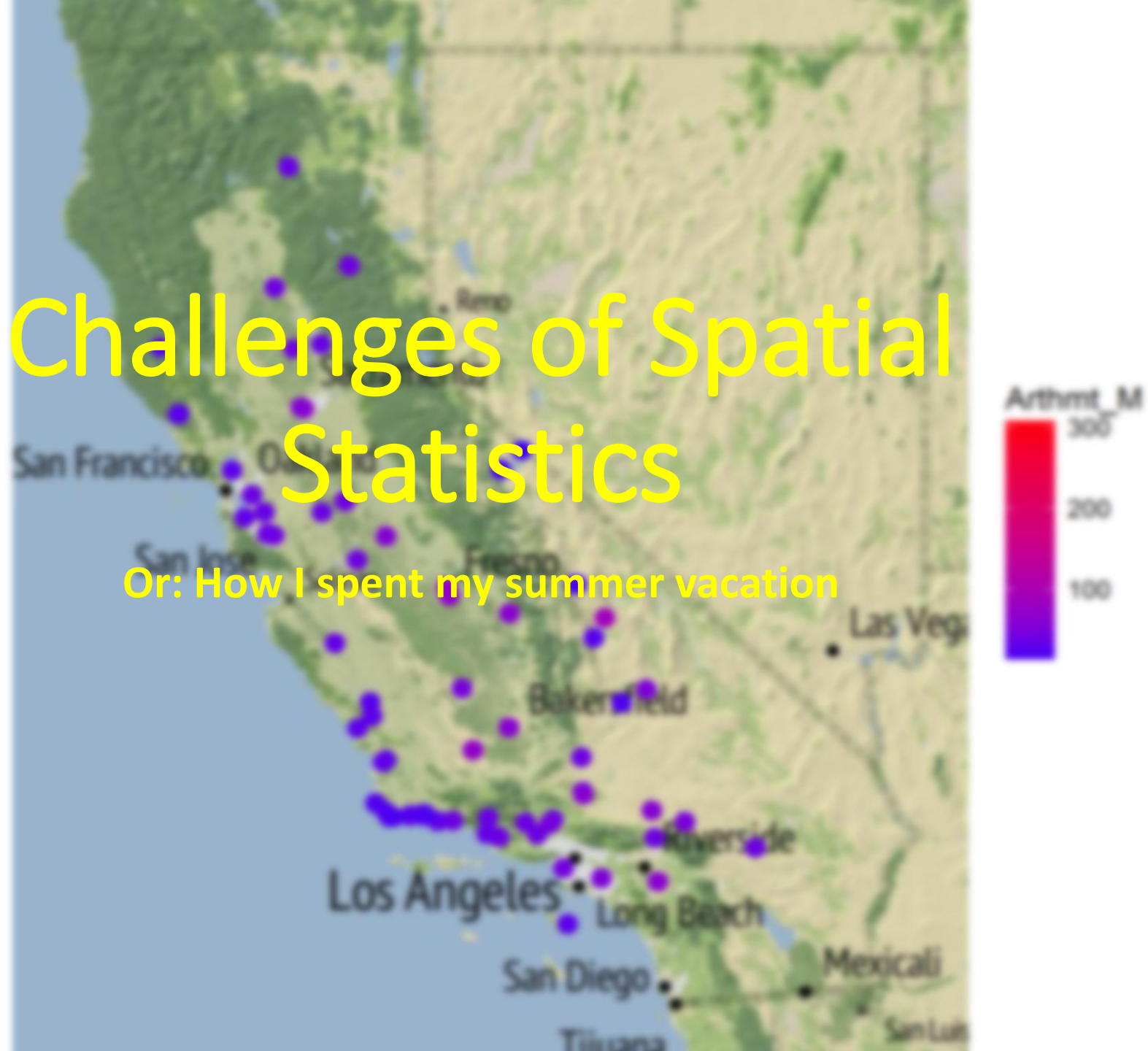


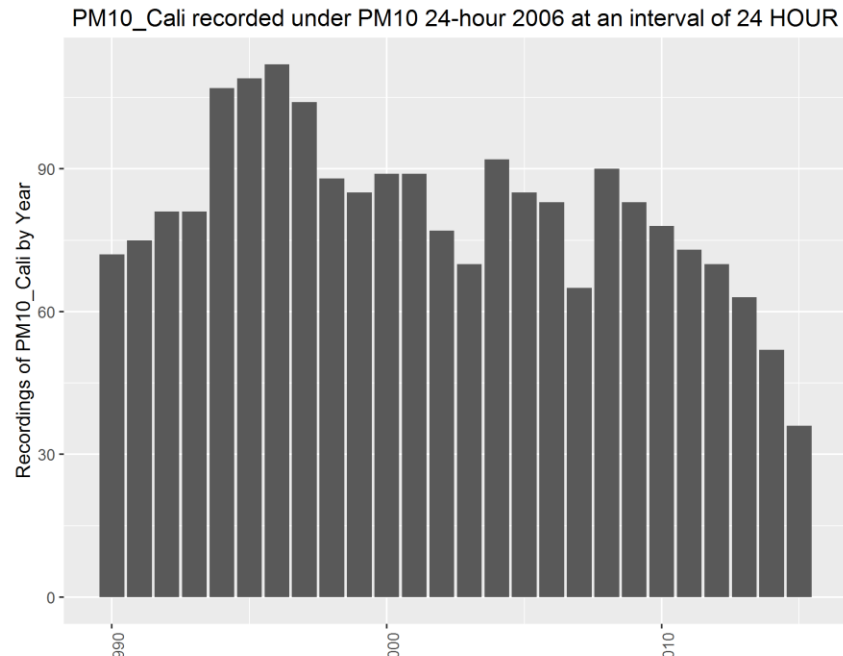
# Challenges of Spatial Statistics

Or: How I spent my summer vacation

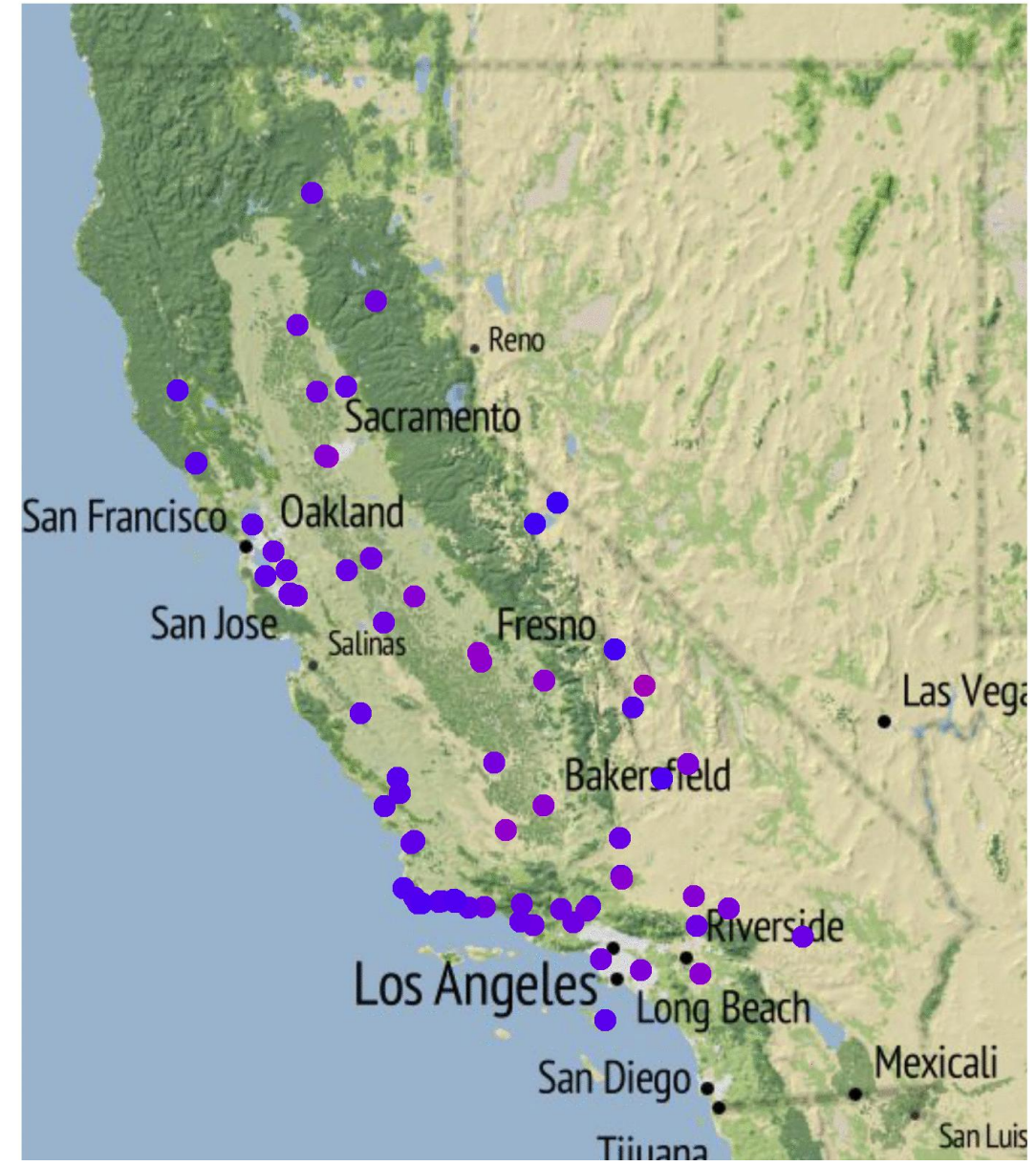


# Environmental Networks

- Expensive networks are downsized.
- Data used for **Policy Decisions**
  - Eg??
  - Take a moment to discuss...

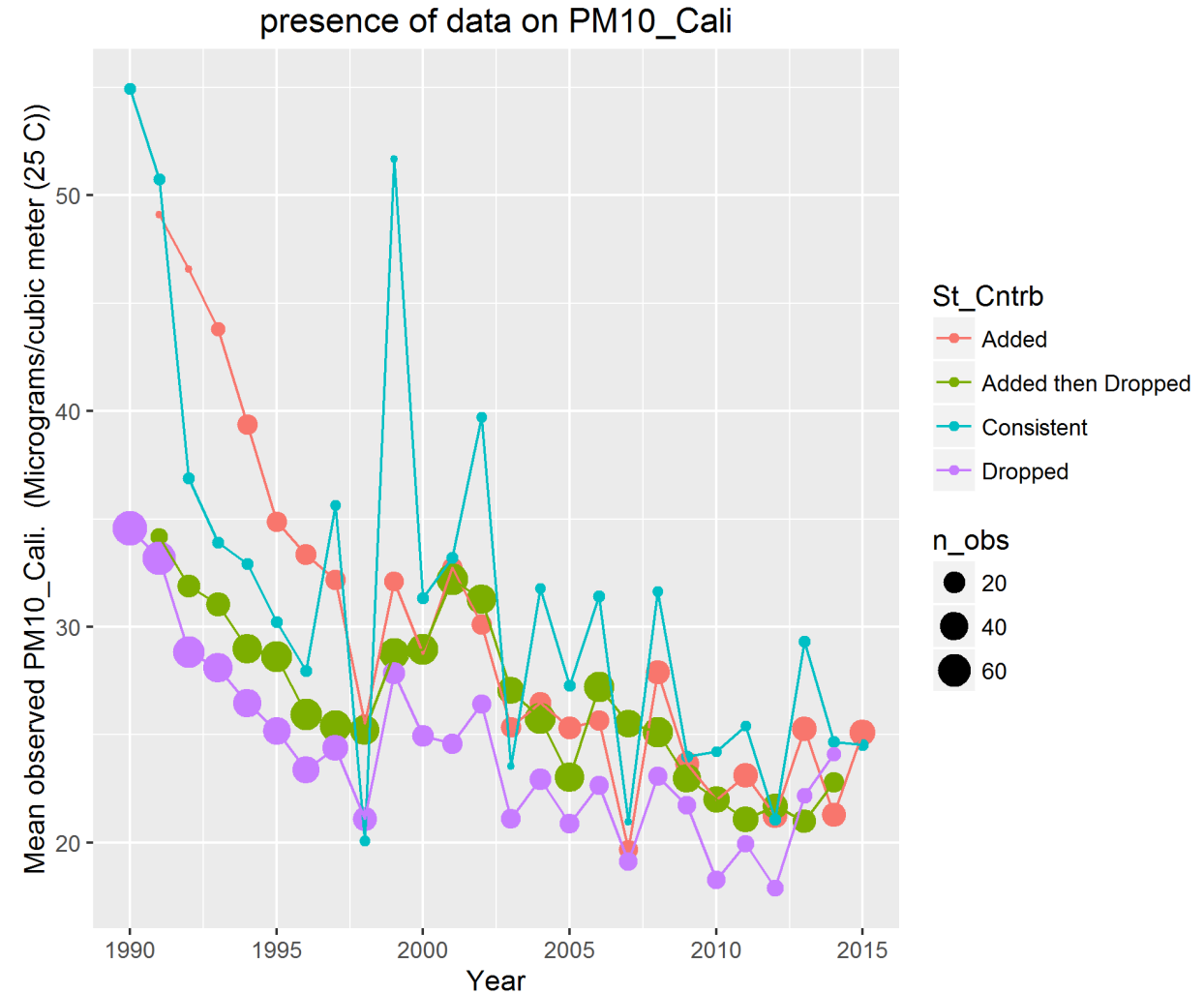


PM10\_Cali : 1990



# What am I up to?

- The data is used for important policy decisions
  - Health monitoring and advisories
  - Industry
  - Agriculture
  - Etc.
- This downsizing **might** cause **bias** in the network.

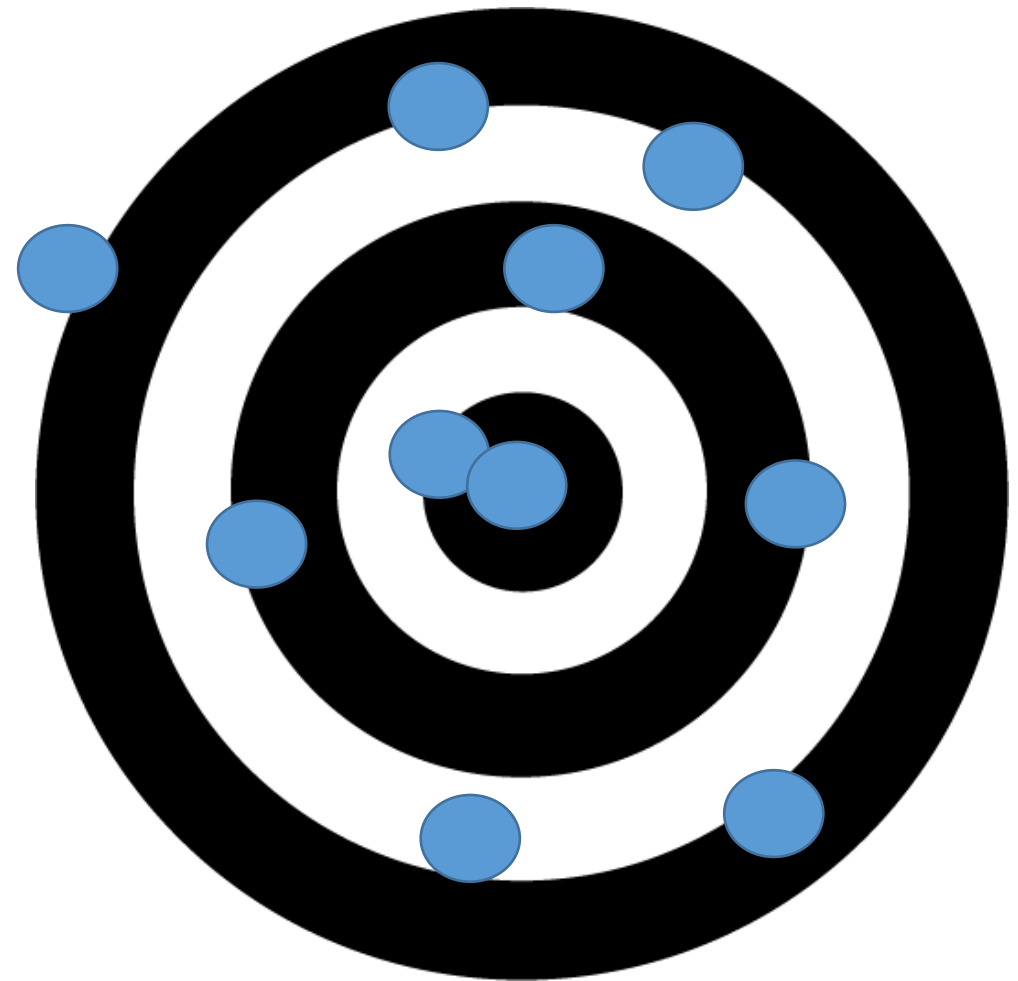


# Learning Objectives

- By the end of this lesson you will be able to:  
Name the three descriptive variables of a variogram and their relevance to spatial statistics.

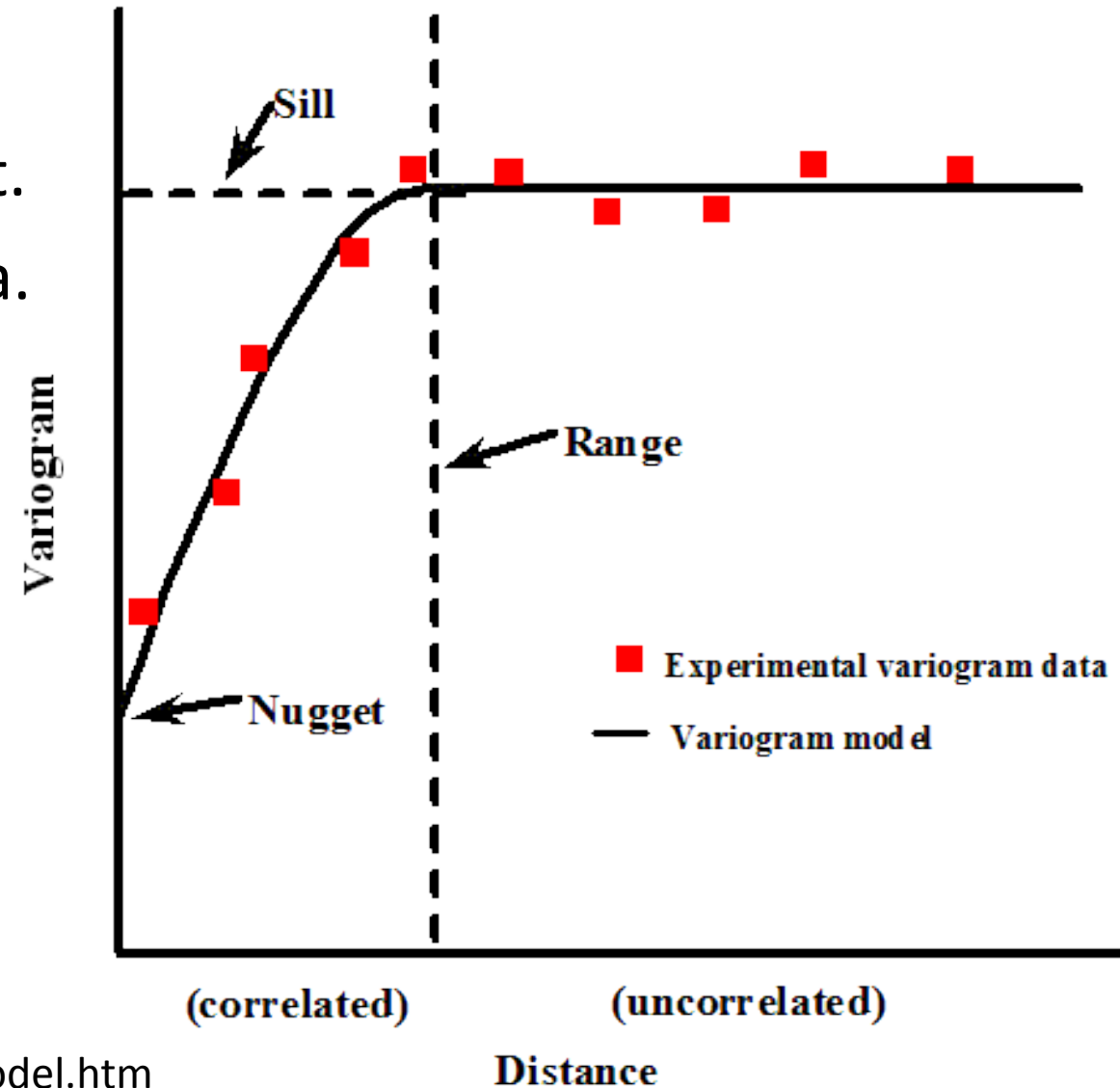
# The Variogram: Auto-Correlation in Spaaace!

- Similarity between things is measured with correlation.
- Things near to each other tend to be more similar
  - But how much?
  - When is this tendency no longer important?

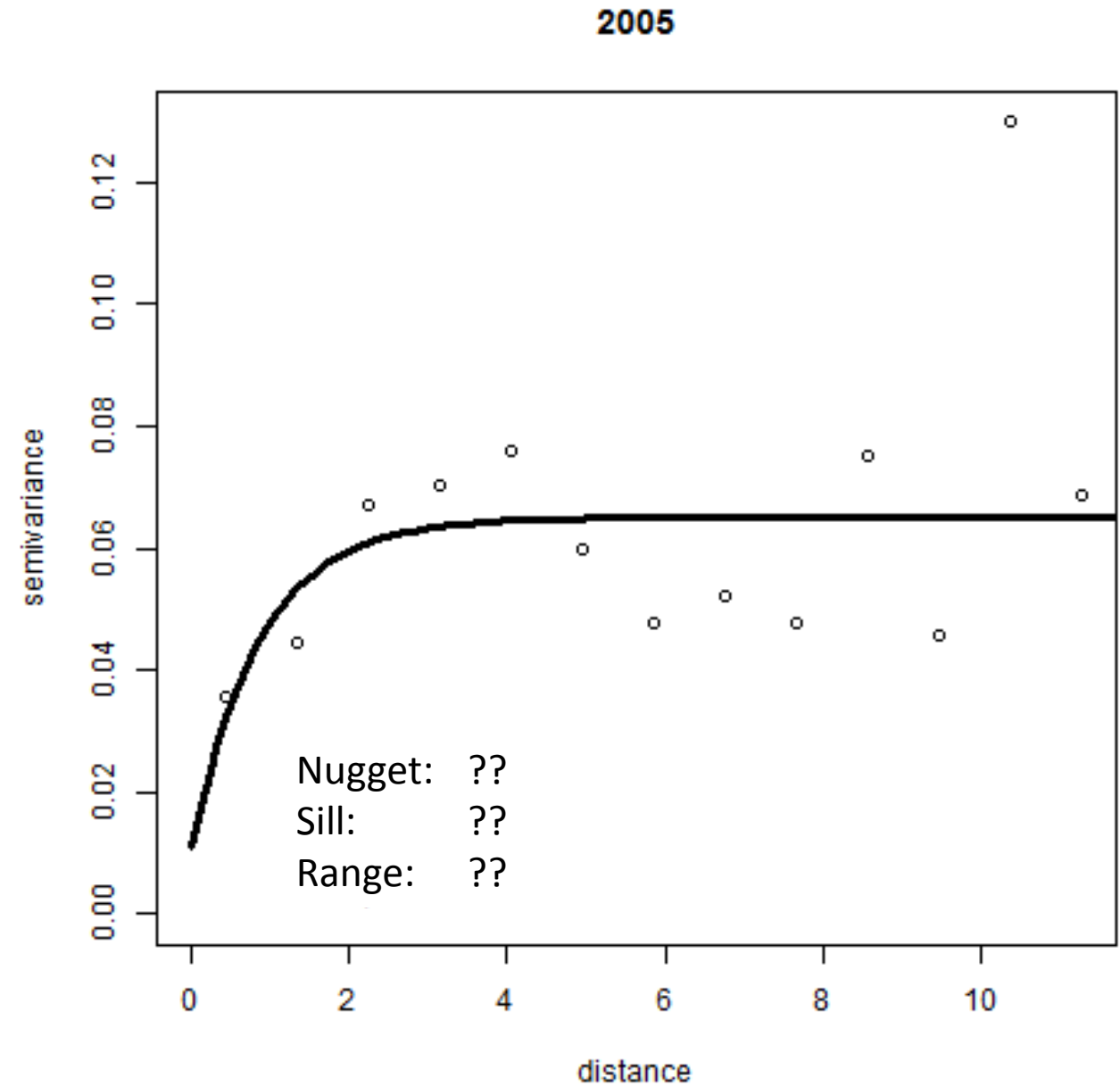
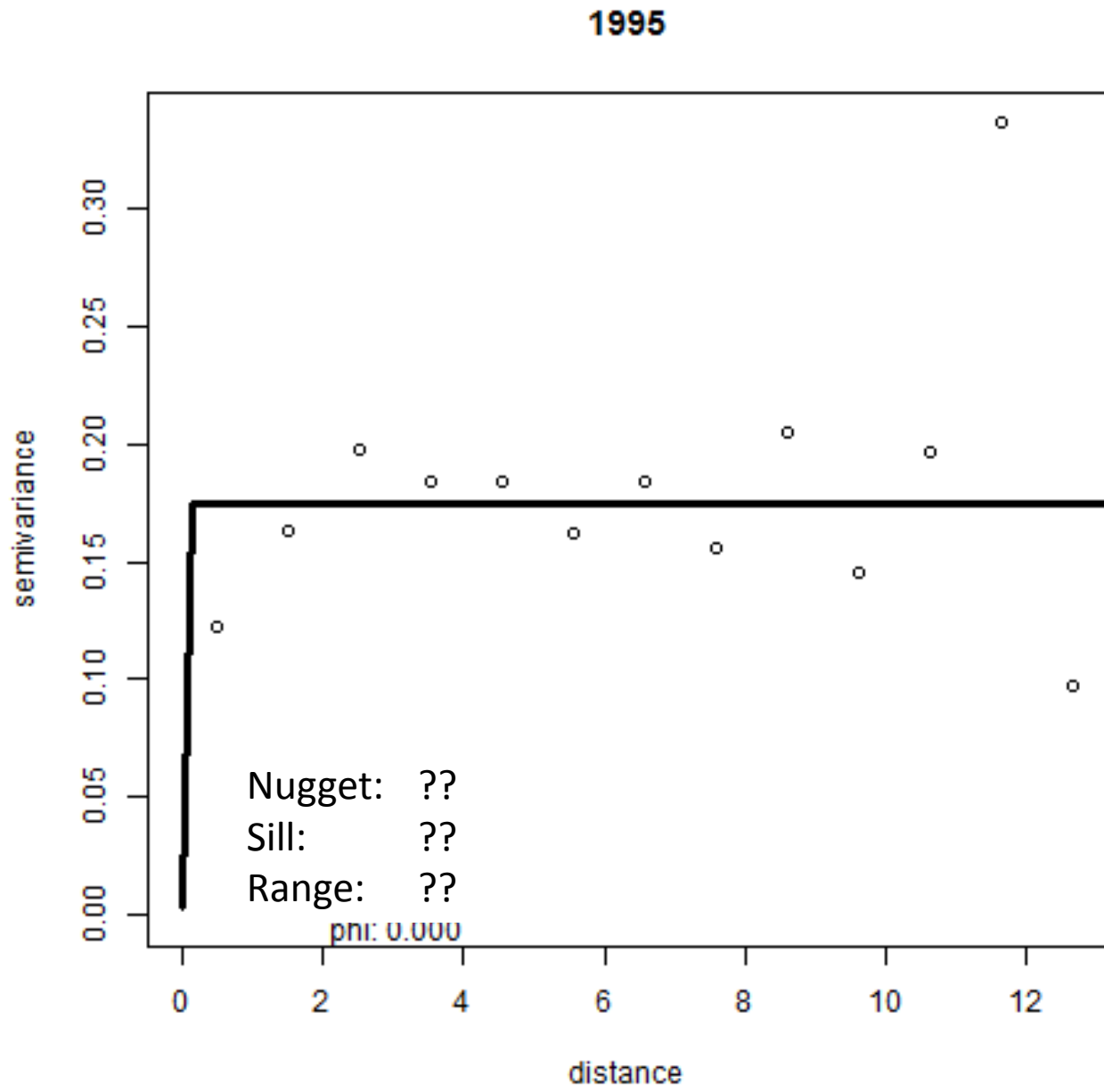


# Nugget, Sill, Range

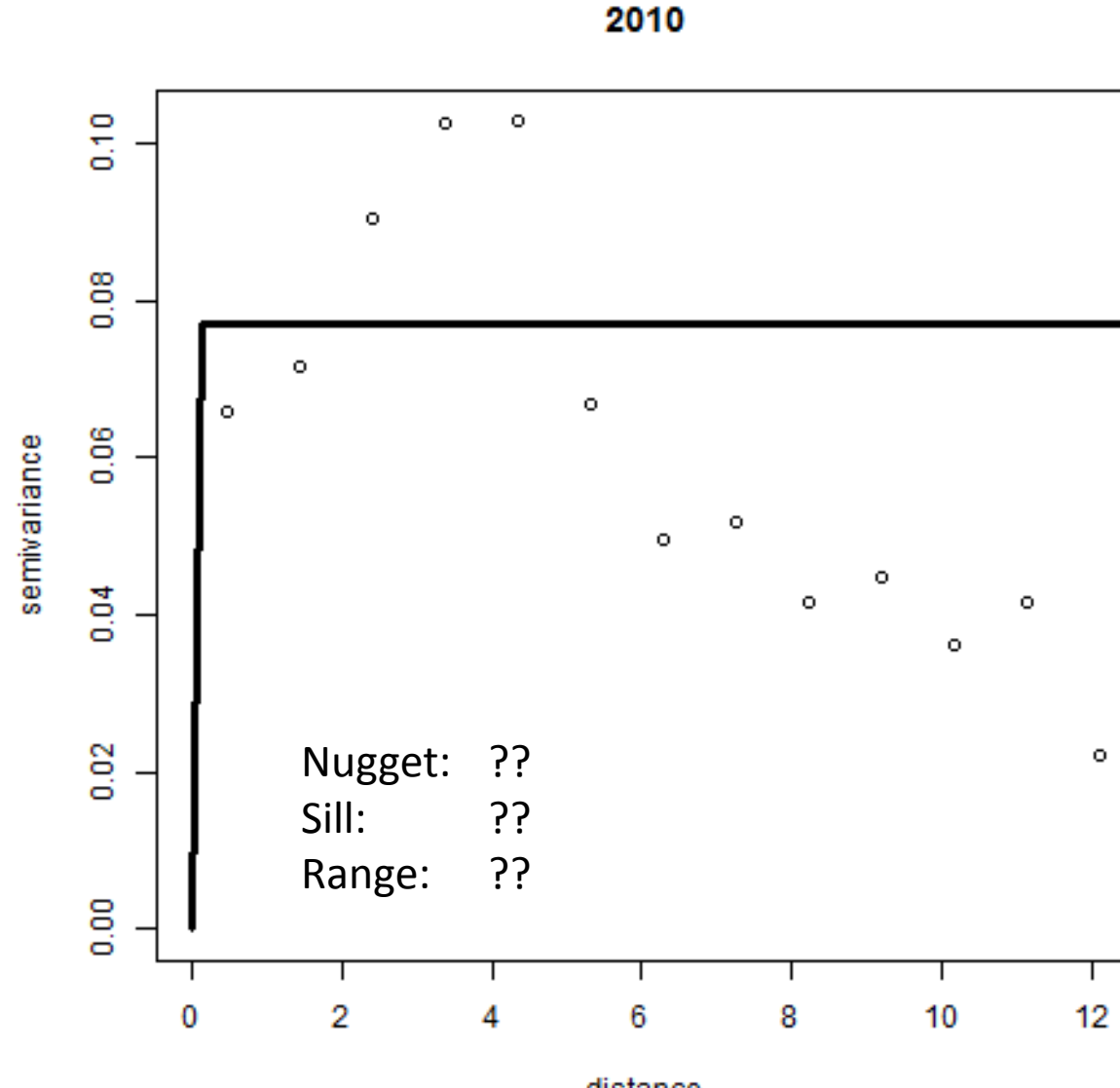
- **Nugget**  $\sim$  The scale of measurement.
- **Sill**  $\sim$  The variance of the whole area.
- **Range**  $\sim$  The distance past which there is no impact between points.



# Make some guesses for these Variograms!



Some times the data seem hopeless...





# Summary

- Variograms have 3 descriptive statistics
  - Nugget is how fine you measure
  - Sill is how much variation there is overall
  - Range is how far to measure before correlations are (almost) zero.