

# GEOGRAPHICAL INFORMATION SYSTEM

## UNIT 6

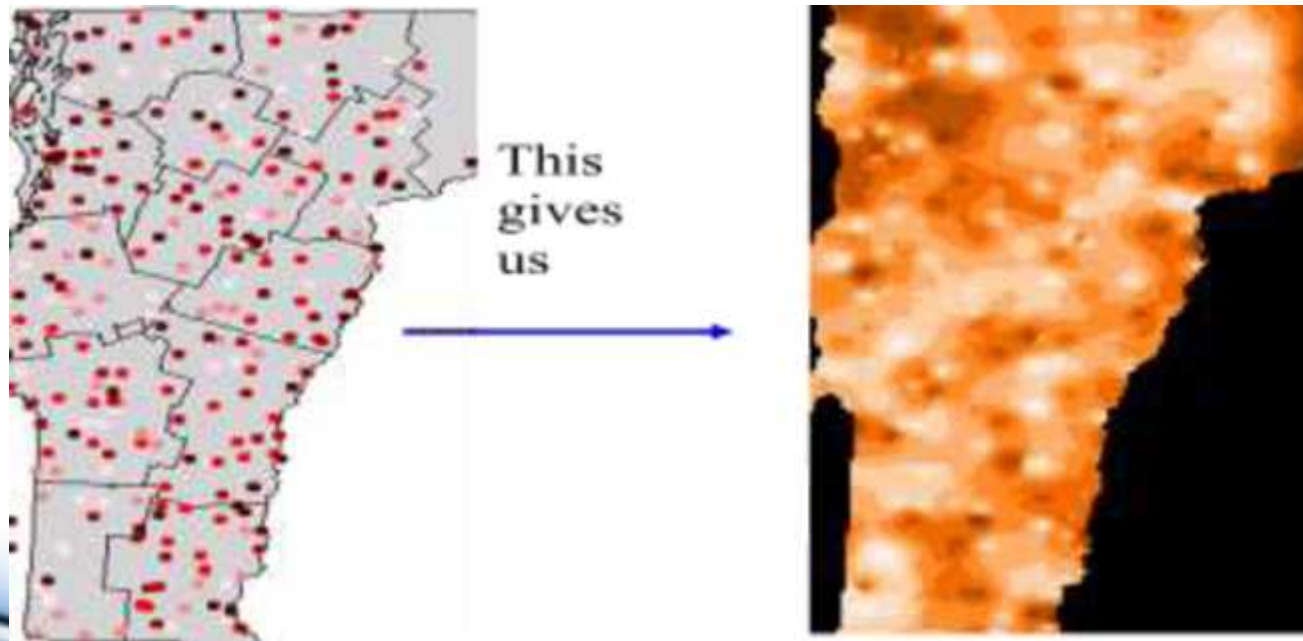


# Spatial Interpolation



# What is interpolation

- Process of creating a surface based on values at isolated sample points.
- We use mathematical estimation to “guess at” what the values are “in between” those points



# Elements of Spatial Interpolation

- **Control Points.**
  - Control Points are points with known values.
  - The number and distribution of control points can greatly influence the accuracy of spatial interpolation.
- **Type of Spatial Interpolation.**
  - Global Interpolation:- It uses every known point available to estimate an unknown value.
  - Local Interpolation:- It uses a sample of known points to estimate an unknown value.
  - **Spatial Interpolation can be grouped into Exact and Inexact interpolation, Stochastic and Deterministic interpolation**

- **Exact vs. Inexact**

- Exact interpolation predicts a value at the **point location that is the same as its known value**. In other words, exact interpolation generates a surface that passes through the control points. In contrast,
- inexact interpolation or approximate interpolation predicts a value at the **point location that differs from its known value**.

- **Deterministic vs. Stochastic**

- A deterministic interpolation method provides **no assessment of errors with predicted values.**
- A stochastic interpolation method, on the other hand, **offers assessment of prediction errors with estimated variances.**

## A classification of spatial interpolation methods

Global		Local	
Deterministic	Stochastic	Deterministic	Stochastic
<a href="#">Trend surface</a> (inexact)*	Regression (inexact)	<a href="#">Thiessen</a> (exact) <a href="#">Density estimation</a> (inexact) <a href="#">Inverse distance weighted</a> (exact) <a href="#">Splines</a> (exact)	<a href="#">Kriging</a> (exact)

- **Kringing:**

- Kringing is a geostatistical method for spatial interpolation. Kringing differs from the interpolation methods discussed so far because kringing can assess the quality of prediction with estimated prediction errors.



# END OF UNIT 6

