

Assignment week 14

Please explain the major differences between “Inverse Distance Weighted” and “Kriging” spatial interpolation approaches in your own words. How are weights defined in both techniques? Please upload to model

Inverse distance weighted:

In IDW the spatial objects in the dataset are assumed to have a spatial relationship, where closer objects are more similar (Tobler’s law). To interpolate the value of an unknown point, a weighted average is calculated via the surrounding observed values. How many points are included for this and the degree to which their influence is weighted is contingent on the technique used and the parameters selected.

Some of the differences to kriging are that

- 1) Values are unique and static in their calculation
- 2) No information on the quality of the interpolation is possible, such as a probability density function
- 3) Validation is only possible through using a test set of the original dataset, and not through creating a sample distribution

Kriging:

When using kriging for spatial interpolation, the value of an unknown point is derived in a stochastic process using a theoretical variogram based on the available data. The estimated value of the unknown point is based on the distribution of the calculated variogram. The weighted influence of known points is determined based on the degree of the spatial correlation between sample points the unknown point, not only the distances (as in IDW).

Some differences to IDW are that

- 1) Values are stochastic and variable
- 2) It is possible to assess the quality of the interpolation and the associated uncertainty of the estimated values
- 3) Validation is possible through comparing sample distributions