LAB 4: Spatial Interpolation

Tran Quang Bao

1. Input data into ArcGIS

From Excel, Notepad...

| | Α | В | С | D | Е | F | G | н | 1 | J | K | |
|----|-----|------|-------------|-------------|-----|-----------|--------|---------|----------|--------|---------|--|
| 1 | STT | Diem | Y | X | рН | DoDuc_NTU | DO_mgl | TSS_mgl | BOD5_mgl | Cl_mgl | COD_mgl | |
| 2 | 1 | M1 | 21.04841667 | 105.8392028 | 6.5 | 9.08 | 3.36 | 74 | 3.4 | 15.29 | 44 | |
| 3 | 2 | M2 | 21.04761111 | 105.8380167 | 8 | 8.88 | 2.97 | 98 | 6.54 | 28.36 | 45 | |
| 4 | 3 | M3 | 21.04767778 | 105.8391528 | 7.5 | 9.14 | 1.89 | 80 | 6.7 | 37.5 | 40 | |
| 5 | 4 | M4 | 21.04766667 | 105.8402972 | 8 | 6.8 | 4.97 | 46 | 6.78 | 29.07 | 58 | |
| 6 | 5 | M5 | 21.04763056 | 105.8414306 | 6.5 | 7.1 | 3.35 | 18 | 7.62 | 12.12 | 66 | |
| 7 | 6 | M6 | 21.04654167 | 105.8368222 | 7 | 9.02 | 3.26 | 74 | 7.58 | 42.08 | 68 | |
| 8 | 7 | M7 | 21.04635556 | 105.8380889 | 8 | 9.13 | 3.1 | 80 | 3.88 | 42.54 | 50 | |
| 9 | 8 | M8 | 21.04658056 | 105.8393139 | 7.5 | 8.42 | 4.39 | 130 | 3.94 | 38.99 | 63 | |
| 10 | 9 | M9 | 21.04560556 | 105.8368222 | 6.5 | 5.93 | 2.99 | 184 | 8.26 | 39.7 | 55 | |
| 11 | 10 | M10 | 21.04556944 | 105.8381583 | 7 | 6.19 | 3.13 | 178 | 8.62 | 42.54 | 64 | |
| 12 | 11 | M11 | 21.04555833 | 105.8390333 | 7.5 | 8.41 | 4.06 | 66 | 7.04 | 41.83 | 64 | |
| 13 | 12 | M12 | 21.04466389 | 105.8369028 | 7 | 8.72 | 2.09 | 92 | 8.64 | 22.68 | 53 | |
| 14 | 13 | M13 | 21.04455833 | 105.839025 | 7 | 5.54 | 2.02 | 42 | 4.12 | 43.66 | 66 | |
| 15 | 14 | M14 | 21.04462778 | 105.8379778 | 7 | 7.68 | 2.36 | 140 | 6.74 | 33.07 | 33 | |
| 16 | 15 | M15 | 21.04468889 | 105.839875 | 8 | 8.48 | 2.59 | 56 | 8.48 | 38.29 | 35 | |
| 17 | 16 | M16 | 21.04458611 | 105.8414111 | 7 | 7.22 | 3.49 | 180 | 8.38 | 19.14 | 61 | |

• Adding data from ArcMap.

| Add Data | | |
|------------------|-------------------------------------|-----|
| Look in: | ChiSo_Nuoc_TrucBach.xlsx | ~ 🕹 |
| ChatLu ChatLu | uongNuoc uongNuoc\$Export_Output | |

• Right Click => Display XY data.



• Choose X (longtitude), Y (latitude) and appropriated projection (WGS_1984_UTM_Zone_48N) for the data



2. Spatial Interpolation

• *Inverse Distance Weight (IDW)* Spatial Analysis Tools → Interpolation → IDW

Data

Properties...

Save As Layer File...

Create Layer Package.

Convert Symbology to Representation

Repair Data So

Make Permanent

View Item Descrip Review/Rematch A

Export To CAD... Export Data

Save this layer's data as a shapefile or geodatabase feature class

| - | | | | | | - |
|--|------------------------|--------|------------|--------------|---------|----------|
| Input point features | | | | | | |
| ChatLuongNuoc | | | | | - | e3 |
| Z value field | | | | | | |
| pH | | | | | | \sim |
| Output raster | | | | | | |
| D:\PROF\CaoHoc\Lab10_NoiSuyK | hongGian \Data \pH_IDW | TIF | | | | 6 |
| Output cell size (optional) | | | | | | |
| 1.97443999999791E-05 | | | | | | e3 |
| Power (optional) | | | | | | |
| | | | | | | 2 |
| Search radius (optional) | | | | | | |
| Variable \checkmark | | | | | | |
| Search Radius Settings | | | | | | |
| March and a state. | 12 | | | | | |
| Number of points: | 12 | | | | | |
| Maximum distance: | | | | | | |
| | | | | | | |
| Input barrier polyline features (opti | onal) | | | | | |
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- Natural Neighbor (Thiessen Polygon)
- Spatial Analysis Tools \rightarrow Interpolation \rightarrow Natural Neighbor

| Input point features ChatLuongNuoc Zvalue field PH Output raster D:PROF(CaoHoc'Lab I0_NoSUyKhongGian/Data'pH_INN.TIF Output cell size (optional) 1.97443999999791E-05 | <u>`</u> |
|---|----------|
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| pH Output rater D:/PROF/CaoHoc/Lab 10_NoiSuyKhongGian/Data/pH_NN.TJF D:/PROF/EaoHoc/Lab 10_NoiSuyKhongGian/Data/pH_NN.TJF Output cell size (optional) 1.97443999999791E-05 | |
| Output raster D: PROF(CaoHoc/Lab 10_NoiSuyKhongGian/Data/pH_NN.TIF Output cell size (optional) 1.97443999999791E-05 | |
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IDW

Thiessen Polygons

• Requirement for Lab Handout

+ Choose a water indication to analyze water quality

+ Apply IDW and Natural Neighbor method to interpolate

+ Create a layout showing your result

+ Answer the question: What are different/similar of temperature distribution interpolated by two methods?

+ Short writing about spatial distribution of selected indicator in Truc Bach Lake

<u>Turn in:</u>

A layout of the interpolated map and its analyzing as requirement

Lab 4 due date: One week after having instruction!