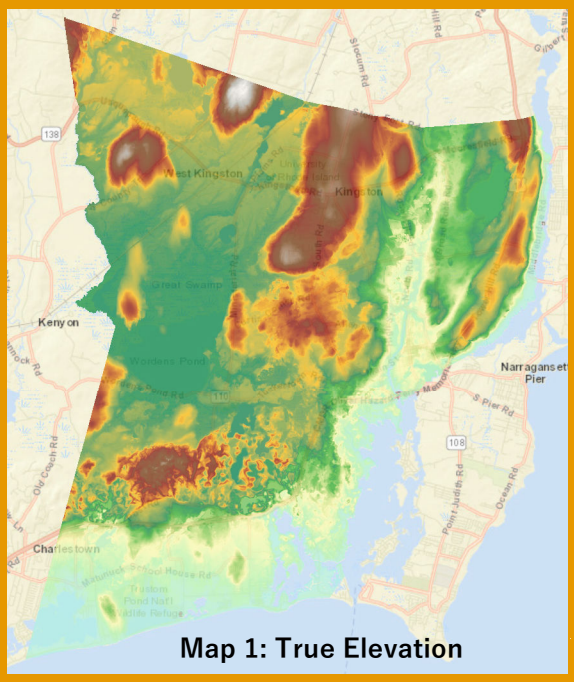
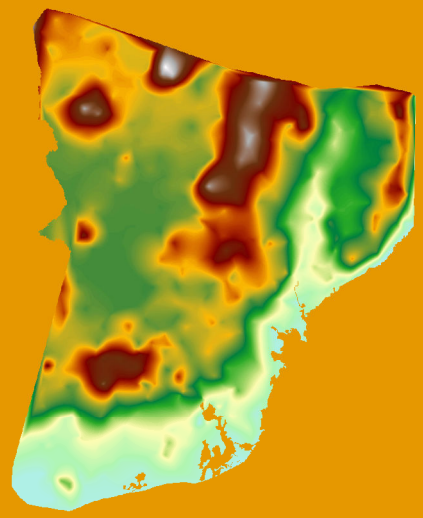
Using Interpolation for Digital Elevation Model Creation

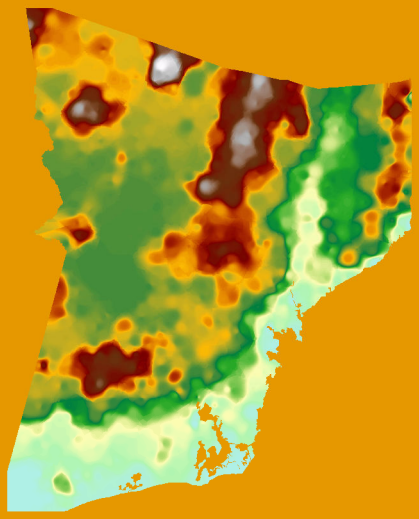
South Kingstown, Rhode Island



Map 1: True Elevation

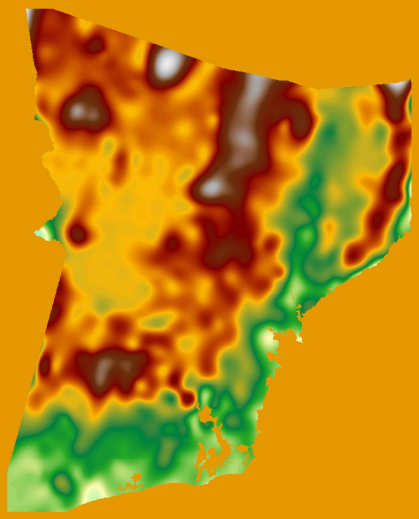


Map 2: Natural Neighbors



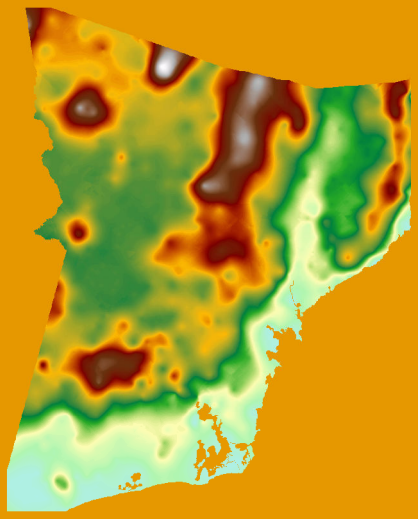
Map 3: IDW

Power = 3, # of points = 5



Map 4: Spline

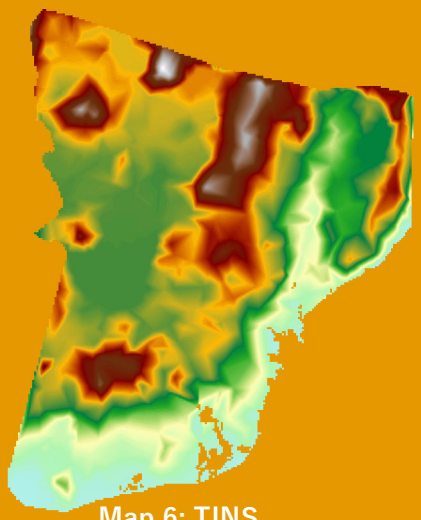
Weight = 0.8, # of points = 12



** Map 5: Kriging **

Type = Stable, Lag Size = 2030.40,

Lags = 12, RMS = 15.11



Map 6: TINS

Z Factor = 1, Sampling Distance = 250

Author: Azure Giroux || Date: 4/14/2017 || Source: ESRI, USGS, URI

This map demonstrates interpolation methods for creating a digital elevation model for South Kingstown. To establish which method is most accurate, a quantitative assessment was used, taking the mean of the absolute value of the difference between the true elevation (Map 1) and each interpolated elevation surface.

Legend

Elevation (ft)

High : 315.27

Low : -71.95

Results are the mean difference between the true and predicted models:

Natural Neighbors = 9.44 ft IDW = 10.08 ft Spline = 10.02 ft Kriging = 9.04 ft TIN = 9.57 ft

Based on these results, the Kriging method provides the most accurate surface relative to the true model due to having the smallest mean difference.

Scale Bar Map 1: 0 2 4 Miles

Scale Bar Maps 2-6: 0 2 4 Miles

N W E S