Comparison of classical kriging vs cost-based kriging

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26/03/2015

Here we compare the outcome of a classical kriging against a cost-based kriging which takes into account the presence of a semi-barrier

Data description

Read coordinates from csv. Units are meters? Rescale to km.

I modified the value of Calcium for observation 1, to improve the effect of the visualization

Take a look at the data and build a fake circular border at the bottom-left corner.

I left small gap (say, a door) in order to emphasize the difference between classical and cost-based estimations.

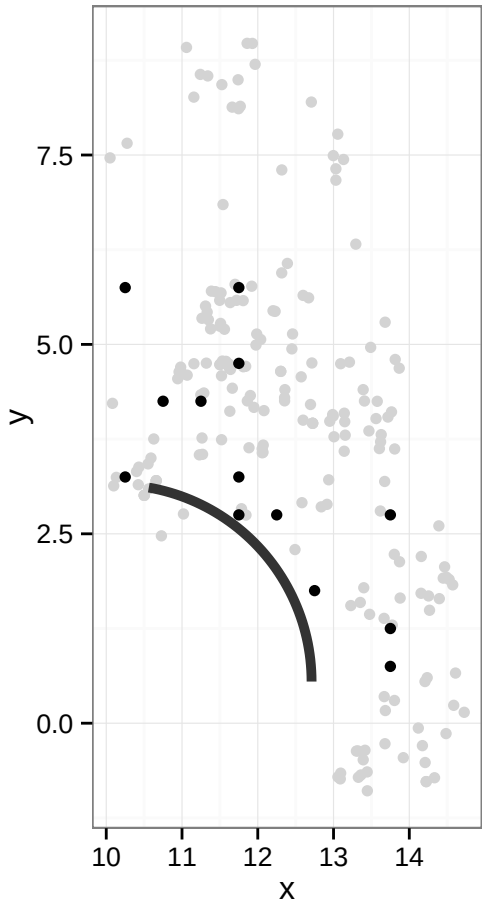

Figure 1: Observation locations and strong barrier. In gray, the locations of the bones.

Variogram estimation

Empirical (classical) variogram with Calcium observations. No need to compute cost-based variogram, as the only obstacle is off the observations envelope.

The variogram model is exponential with nugget fixed to 0, as is expected for a continuously varying quantity like Calcium content. In any case, it is estimated as zero.

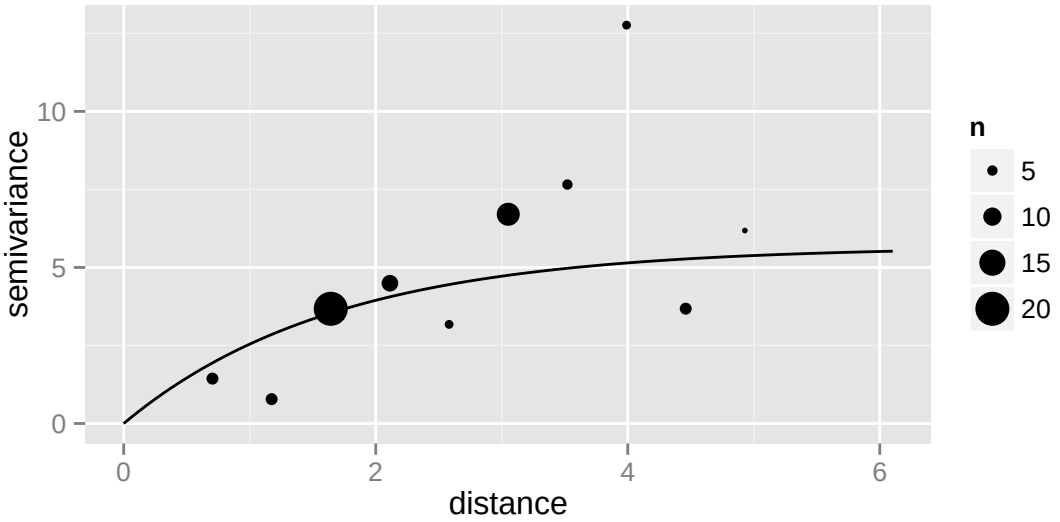

Figure 2: Empirical variogram and fitted model.

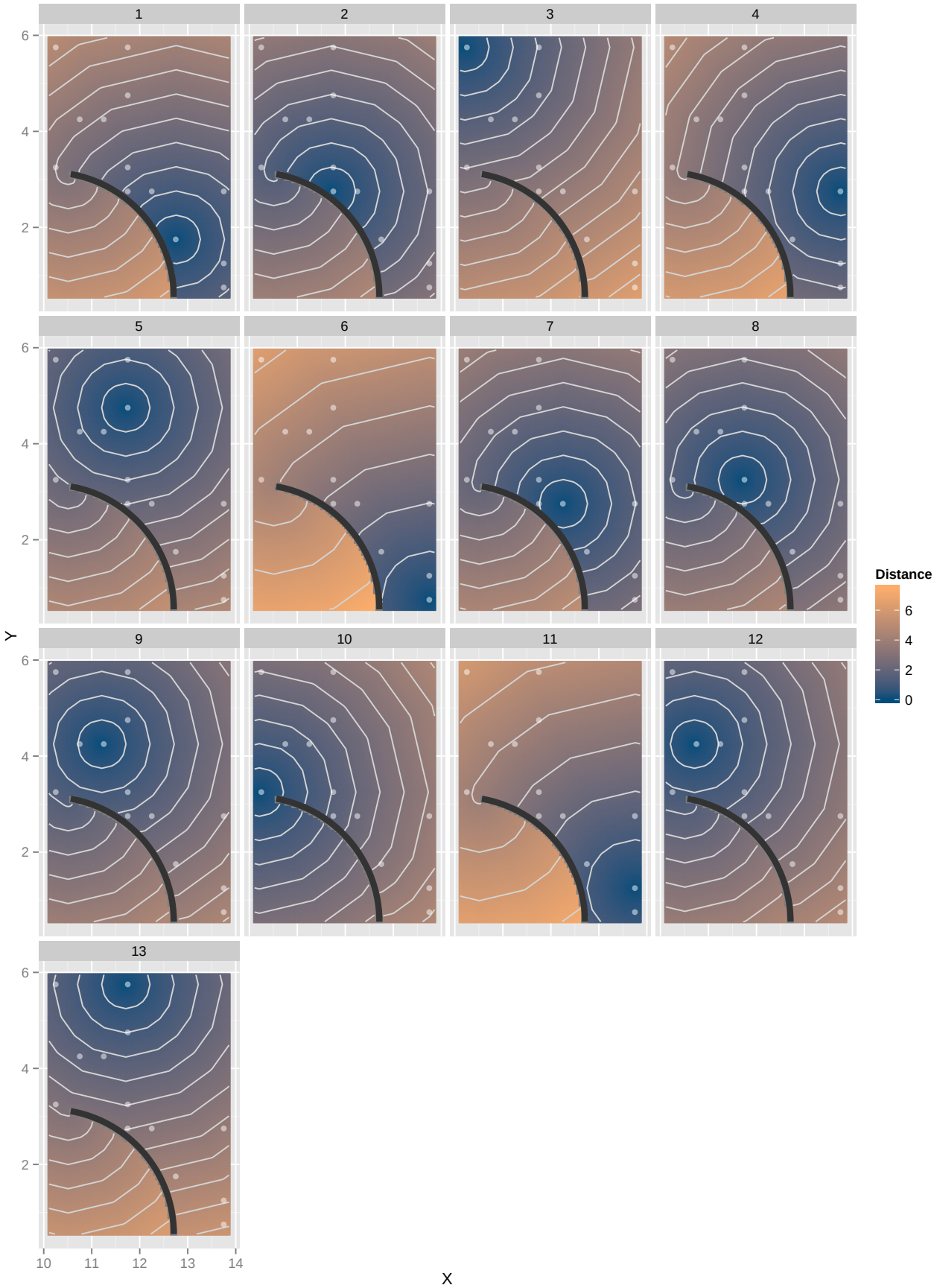

Figure 3: Cost-based distances to each of the observation locations.

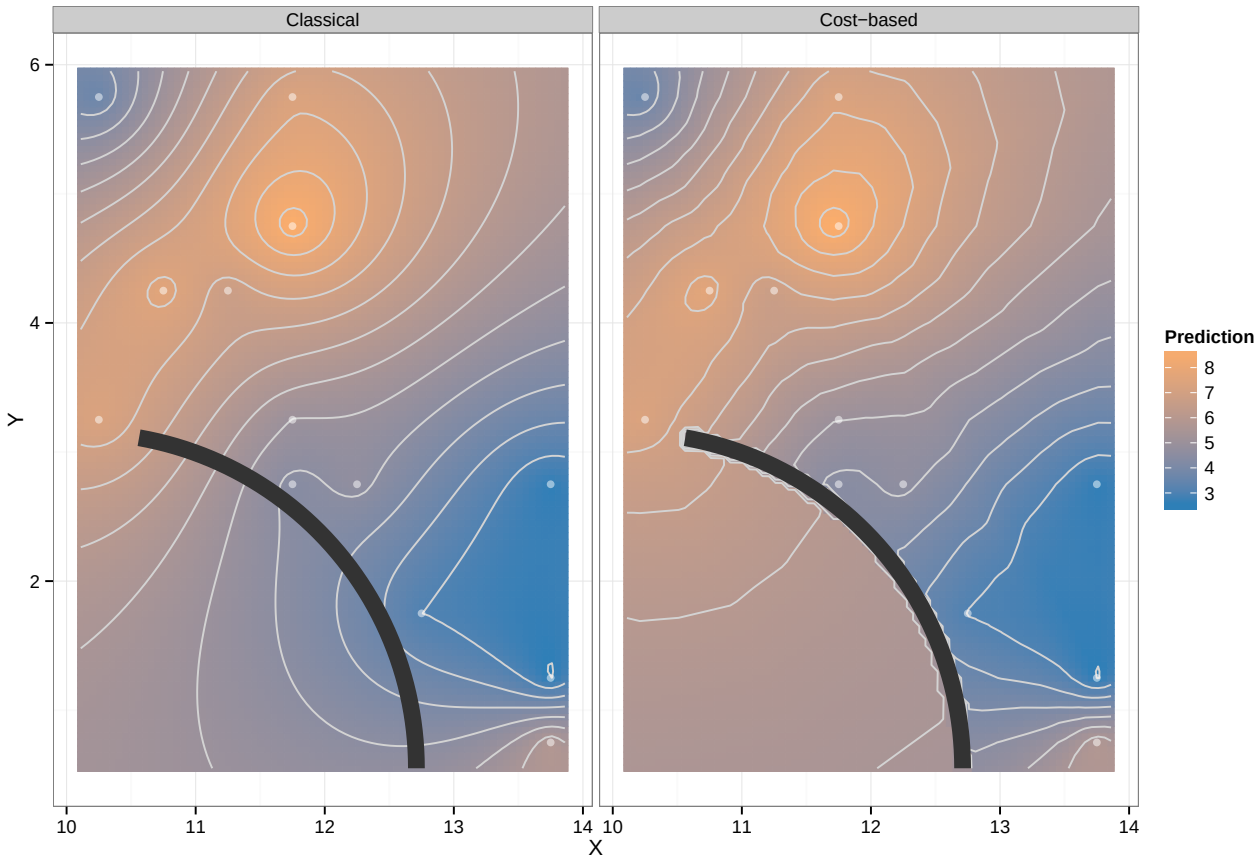

Figure 4: Comparison of Kriging estimates.

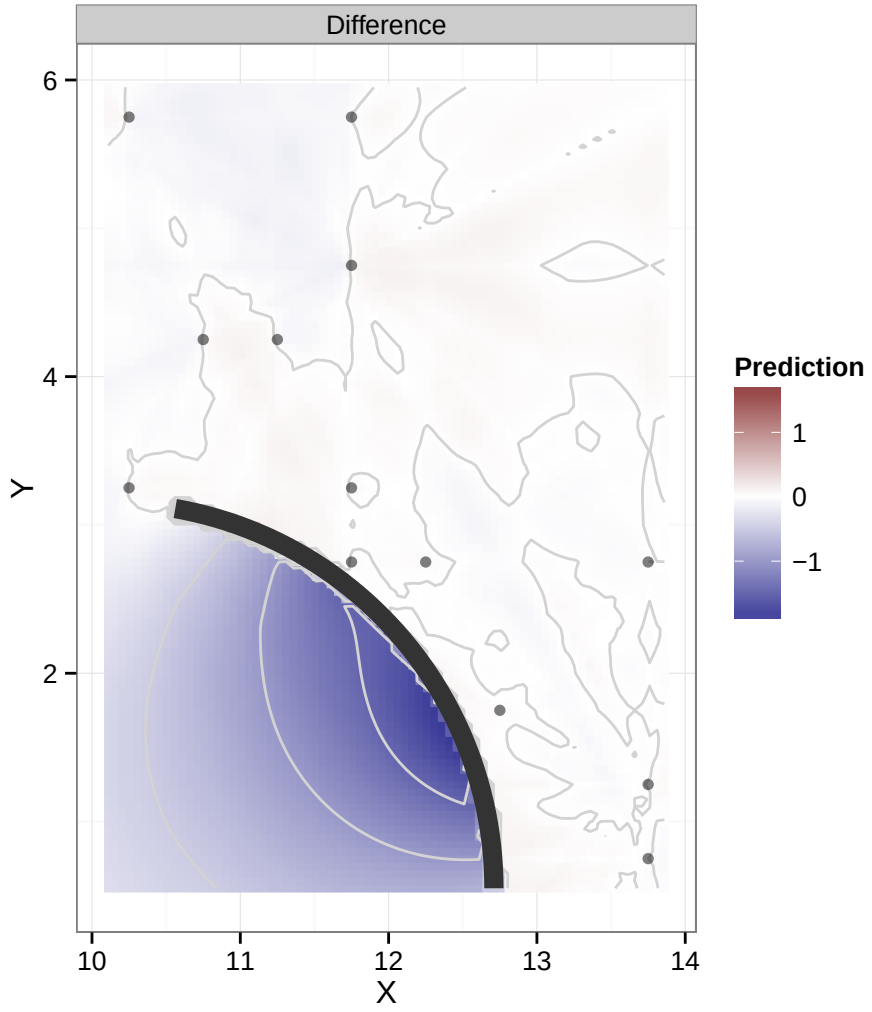

Figure 5: Difference between the cost-based prediction and the Euclidean prediction