Spatial assignment of test sample

December 14, 2016

Contents

Input

Website Identifier: 276

Isotope values of test sample

Table 1: Isotope values of test sample

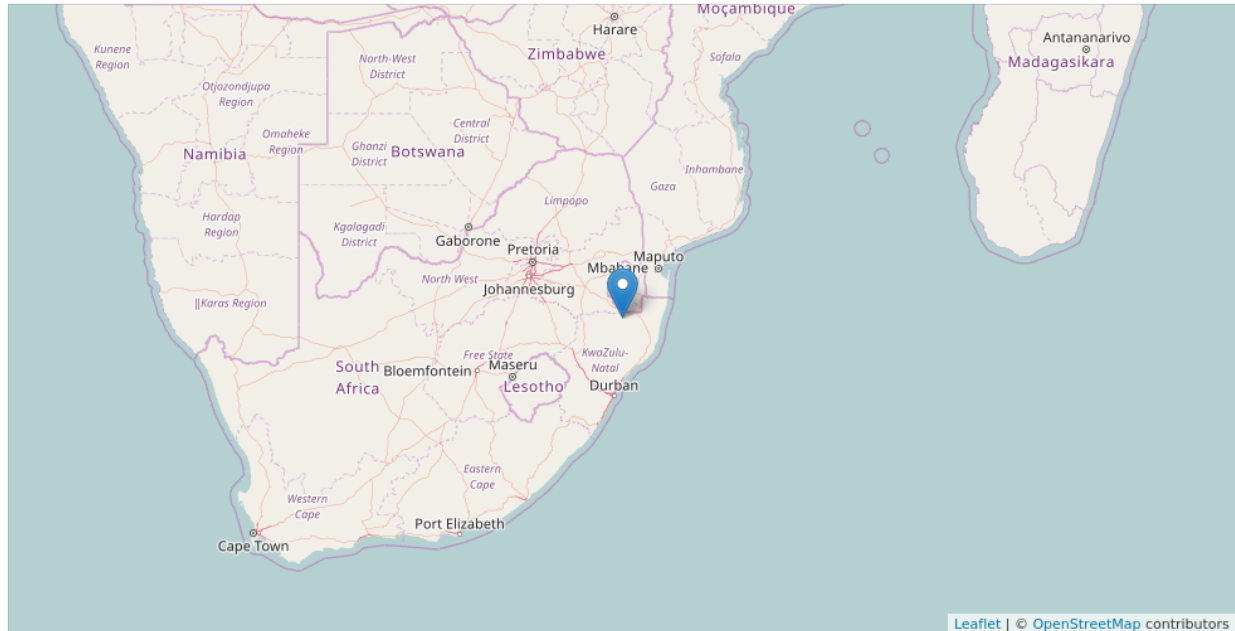| 13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-20.8	6.3	18.2	-36.3	11.3

Output

Model

```
##
## Call:
## train.kknn(formula = fmla, data = ivory.train, kmax = 15, distance = 2,     kernel = knl)
##
## Type of response variable: nominal
## Minimal misclassification: 0.1889986
## Best kernel: triangular
## Best k: 14
```
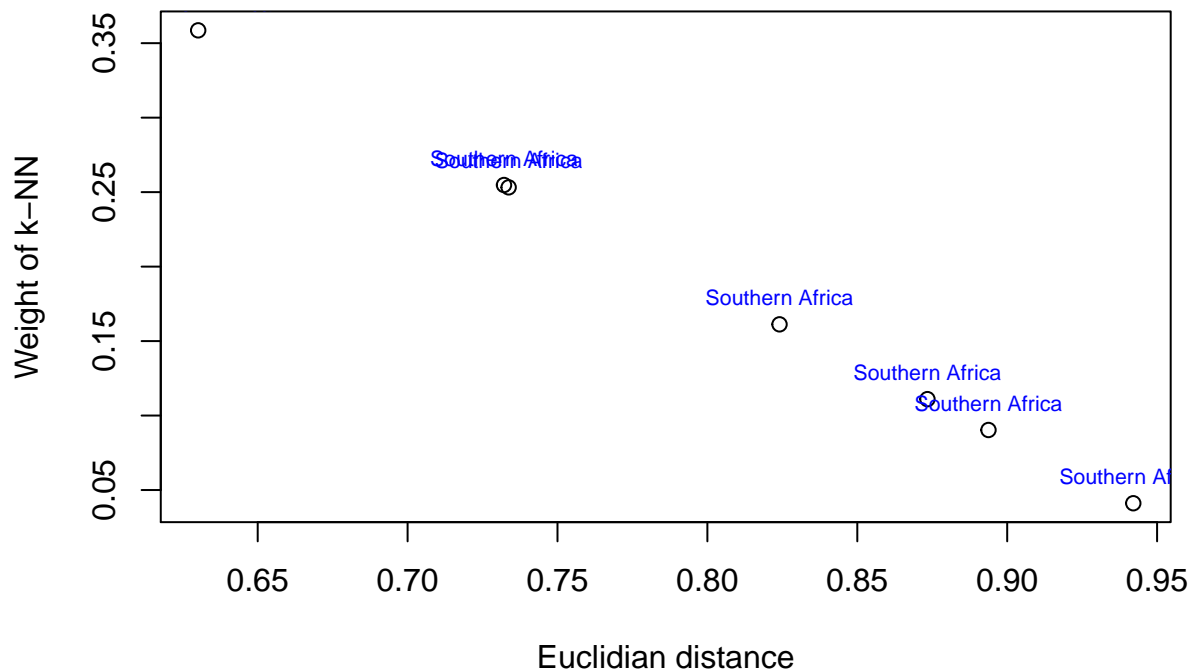
Classifier: **region**

Map of best fitted reference sample

Best fitted reference sample:

- Site: South Africa, Ithala
- Country: ZA
- Region: Southern Africa
- CITES: Appendix II
- Lat: -27.51
- Lon: 31.29

Assignment of test sample to nearest neighbours

Best fitted reference entries

Table 2: Details of best fitted reference entry (row 1) and other fitted entries within best classifier

lon	lat	location	13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
31.29	-27.51	South Africa, Ithala	-21.4	7.1	18.3	-39.9	11.8
31.29	-27.51	South Africa, Ithala	-21.2	7.0	17.7	-42.2	11.1
31.29	-27.51	South Africa, Ithala	-22.1	6.5	17.9	-37.8	10.7
31.29	-27.51	South Africa, Ithala	-21.4	7.2	17.0	-37.8	11.1
31.29	-27.51	South Africa, Ithala	-21.8	6.6	18.1	-42.4	10.0
32.38	-11.29	North Zambia, near Msitu	-20.7	7.0	18.2	-44.8	10.6
31.29	-27.51	South Africa, Ithala	-21.4	7.1	16.9	-41.0	10.8

Region of prediction: Southern Africa

Testing robustness of assignment: Wilcoxon signed rank test

If p-value > 0.05, the test concludes that the isotope signature of the test sample is similar to the respective nearest neighbour reference sample.

P-values for the k nearest neighbours in Wilcoxon Test

"0.127859, 0.048173, 0.022221, 0.012467, 0.006618, 0.003303, 0.000037"

Goodness of fit of test sample:

- good fit: if p > 0.05 for at least two tested nearest neighbour reference samples;
- moderate fit: if p > 0.05 for at least one tested nearest neighbour reference samples;
- uncertain: if p > 0.05 for none of the tested nearest neighbour reference samples.

Assumption: At least two nearest reference samples are available.

Overall goodness of fit of test sample: "**moderate fit**"