Spatial assignment of test sample

November 24, 2016

Contents

Input

Website Identifier:

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-21.6	11.1	17.5	-62.5	7

Output

Model

```
##
## Call:
## train.kknn(formula = fmla, data = ivory.train, kmax = 15, distance = 2,    kernel = knl)
##
## Type of response variable: nominal
## Minimal misclassification: 0.3765867
## Best kernel: triangular
## Best k: 15
```

Classifier: **country_code**

Map of best fitted reference sample
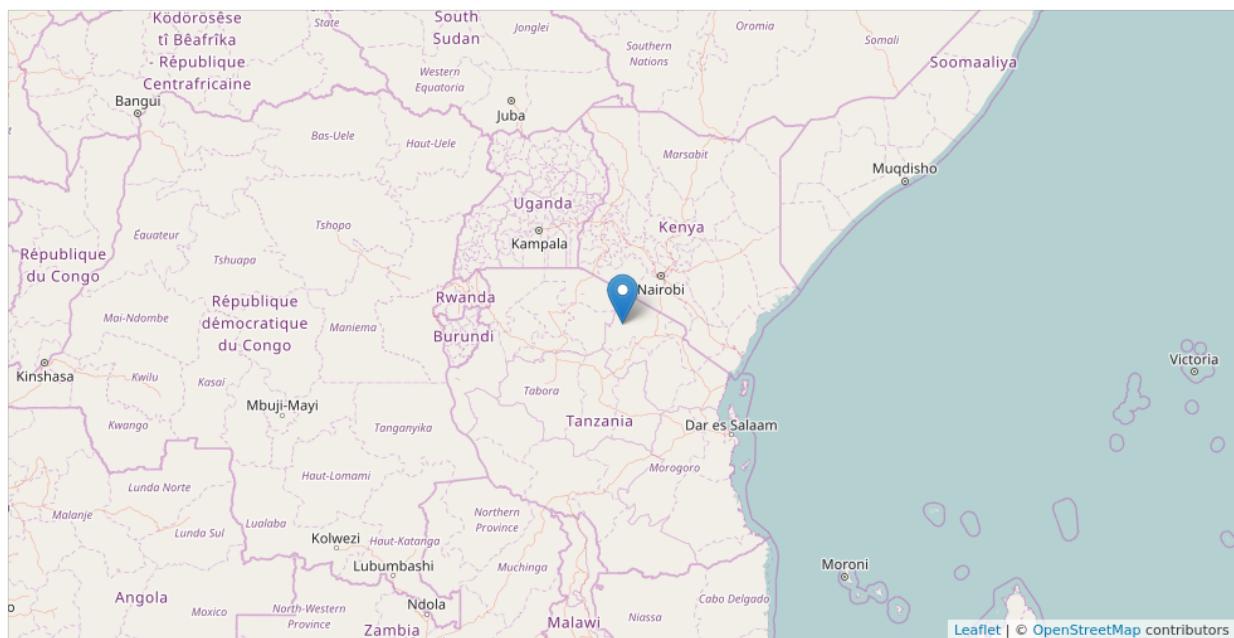
Best fitted reference sample:

- Site: Tanzania, Gebirgswald im Ngorongoro
- Country: TZ
- Region: East Africa
- CITES: Appendix I
- Lat: -3
- Lon: 35.463611

Assignment of test sample to nearest neighbours
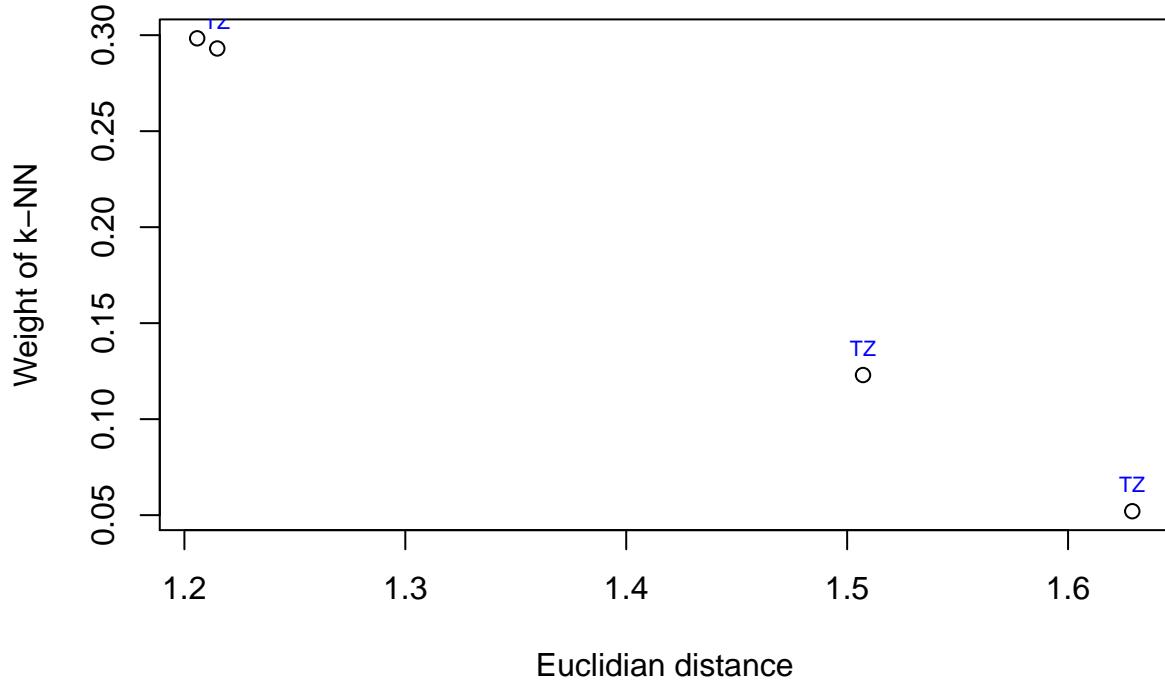
Best fitted reference entries

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
35.46	-3.00	Tanzania, Gebirgswald im Ngorongoro		-21.0	10.1	15.4	-61.0	6.8
35.33	-7.20		Tanzania	-22.1	9.5	16.5	-56.7	5.4
35.46	-3.21	Tanzania, Gebirgswald im Ngorongoro		-21.3	10.1	15.0	-59.3	9.1
35.46	-3.21	Tanzania, Gebirgswald im Ngorongoro		-22.7	9.1	15.6	-61.3	9.2

Country of prediction: TZ

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

"0.00034126, 0.00001761, 0.00001761, 0.00000049"

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: "**uncertain**"