Spatial assignment of test sample

November 24, 2016

Contents

Input

Website Identifier: T2_9cm

Isotope values of test sample

Table 1: Isotope values of test sample

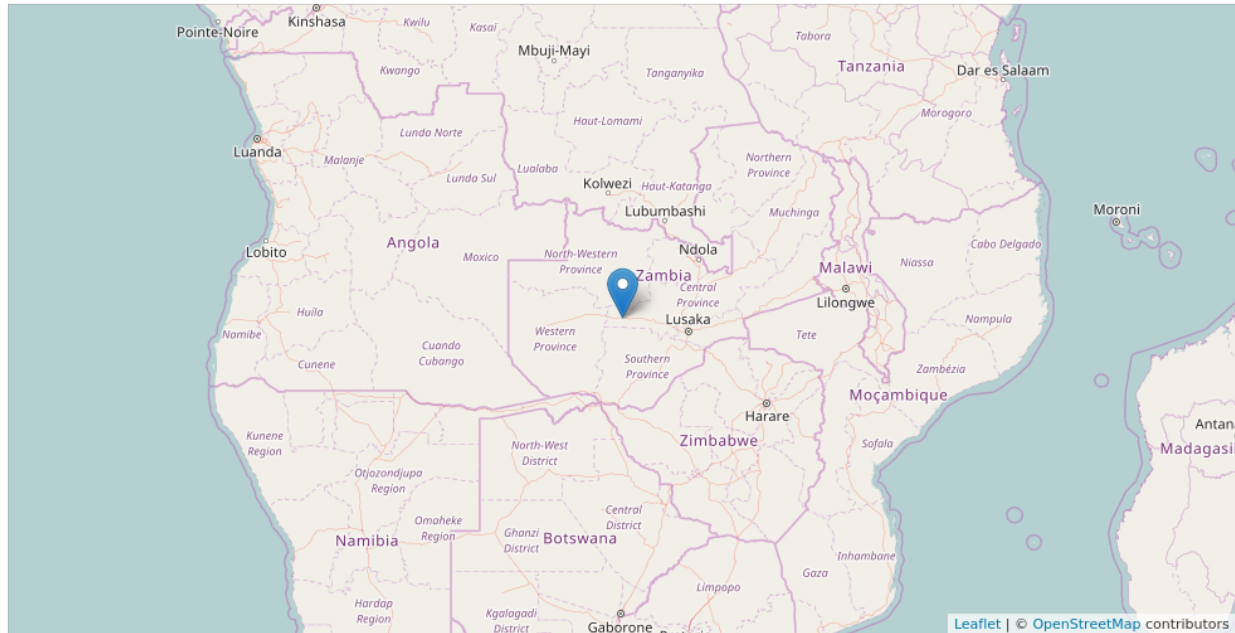| 13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-19.2	5.8	20.3	-50.9	8.5

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
```
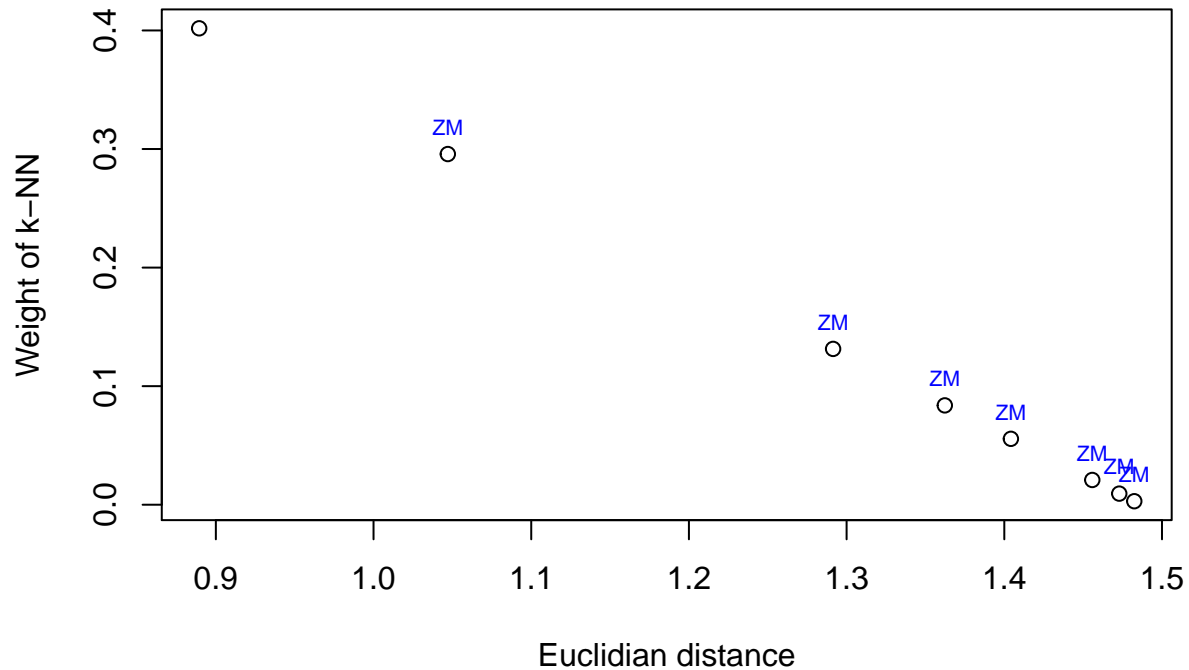
Classifier: **country_code**

Map of best fitted reference sample

Best fitted reference sample:

- Site: Southern Zambia
- Country: ZM
- Region: Southern Africa
- CITES: Appendix I
- Lat: -14.972185
- Lon: 25.957587

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
25.96	-14.97	Southern Zambia	-20.4	7.0	20.1	-49.2	8.5
25.96	-14.97	Southern Zambia	-20.6	7.1	19.6	-51.9	8.2
31.21	-13.62	Zambia, Luangwa River, western of Chipat	-18.7	7.5	19.3	-43.7	9.9
31.44	-12.12	Northeastern Zambia, near Chilonga	-20.9	6.9	18.7	-53.0	7.4
32.10	-12.05	Southern Zambia	-19.6	7.3	18.3	-45.3	7.4
26.02	-15.92	Southern Zambia	-21.5	6.1	19.7	-44.0	9.9
32.30	-11.37	Southern Zambia	-20.8	7.3	18.6	-54.2	9.6
25.45	-16.52	Southern Zambia	-21.3	7.1	18.8	-49.7	8.9

Country of prediction: ZM

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

"0.001600026, 0.000030996, 0.000001160, 0.000000774, 0.000000052, 0.000000026, 0.000000026, 0.000000026"

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**"