

Spatial assignment of test sample

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Contents

Input	1
Isotope values of test sample	1
Output	1
Model	1
Map of best fitted reference sample	2
Best fitted reference entries	3
Testing robustness of assignment: Wilcoxon signed rank test	3
P-values for the k nearest neighbours in Wilcoxon Test	3
Goodness of fit of test sample:	4

Input

Website Identifier: 231

Isotope values of test sample

Table 1: Isotope values of test sample

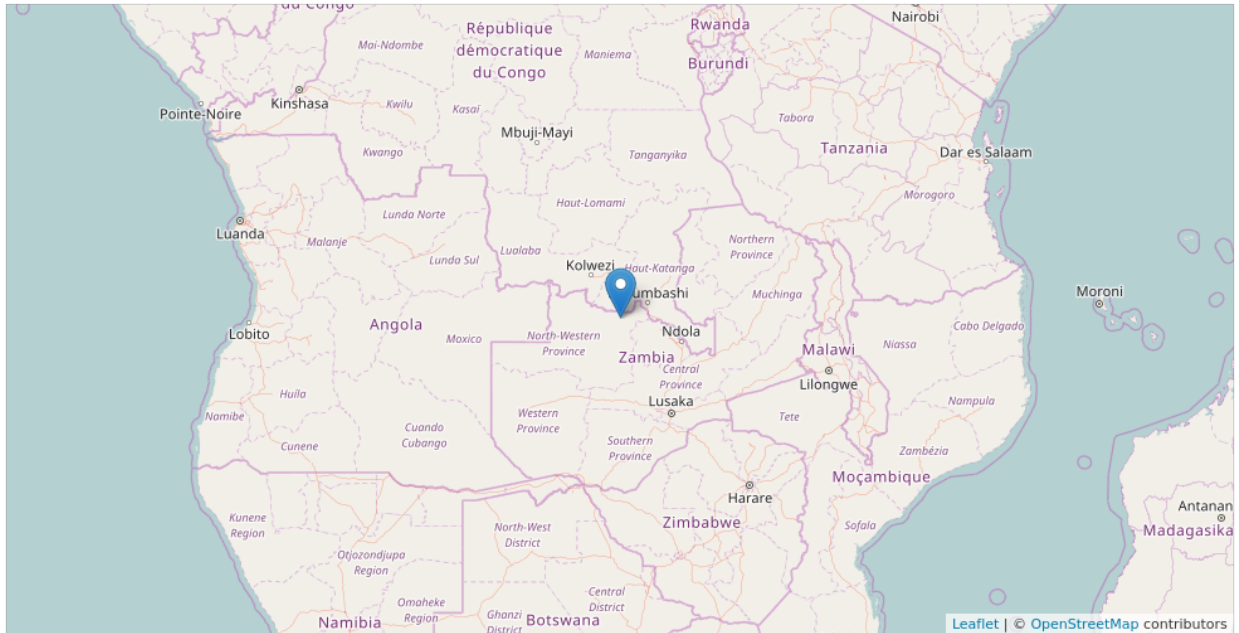
13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-23	8.2	18.3	-35.6	9.2

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
```

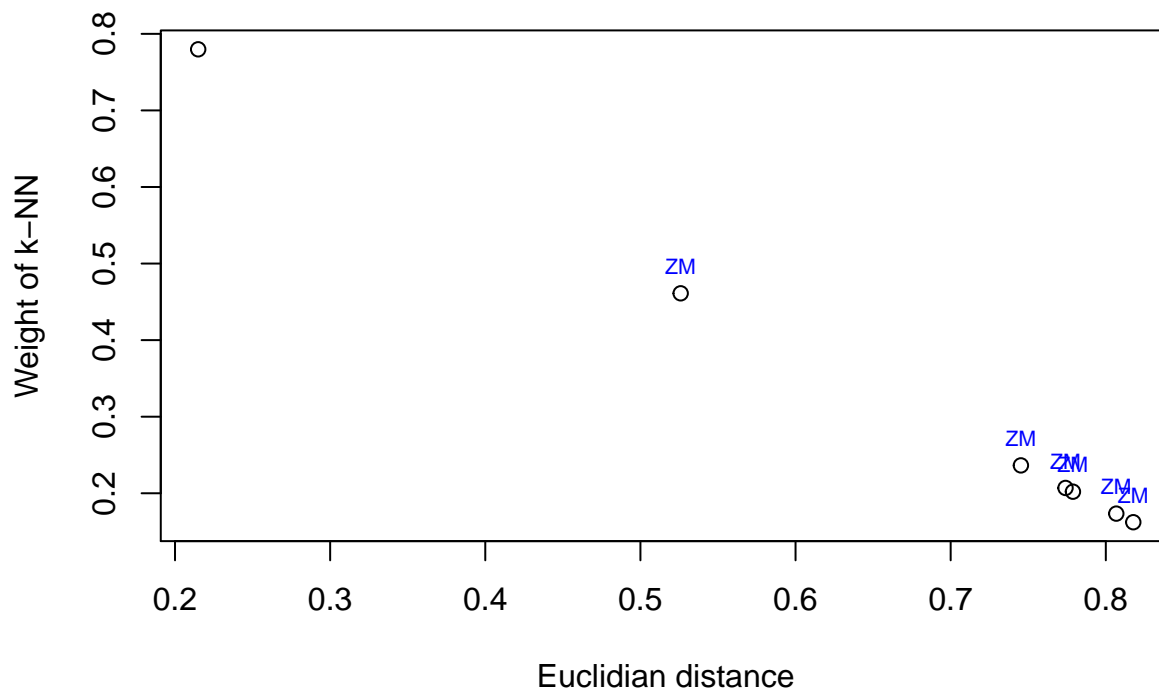
Map of best fitted reference sample



Best fitted reference sample:

- Site: Southern Zambia
- Country: ZM
- Region: Southern Africa
- CITES: Appendix I
- Lat: -12.200805
- Lon: 26.487889

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
26.49	-12.20	Southern Zambia	-22.8	8.2	18.0	-36.8	9.3
32.06	-11.38	Southern Zambia	-22.6	8.7	19.0	-37.8	8.9
26.21	-14.38	Southern Zambia	-23.0	7.9	18.2	-43.4	9.2
32.46	-11.08	Southern Zambia	-22.1	8.1	18.3	-42.0	9.7
26.06	-15.91	Southern Zambia	-22.2	8.8	19.4	-37.7	9.5
31.57	-12.28	Southern Zambia	-22.1	8.8	18.8	-39.2	10.6
31.37	-14.17	Southern Zambia	-21.7	8.8	17.8	-37.9	8.8

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

“0.9486, 0.2340, 0.1456, 0.1023, 0.0120, 0.0068, 0.0011”

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: “**good fit**”