

Spatial assignment of test sample

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Input

Website Identifier: T2_3cm

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-18.5	6.5	19	-49.4	8.5

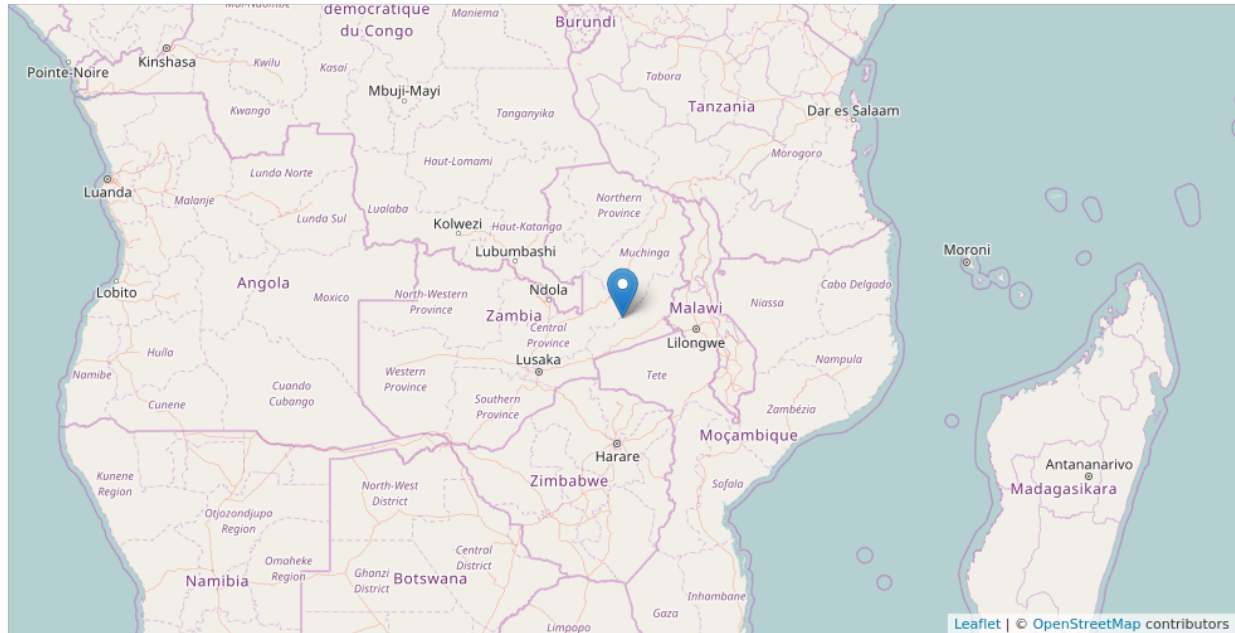
Output

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**

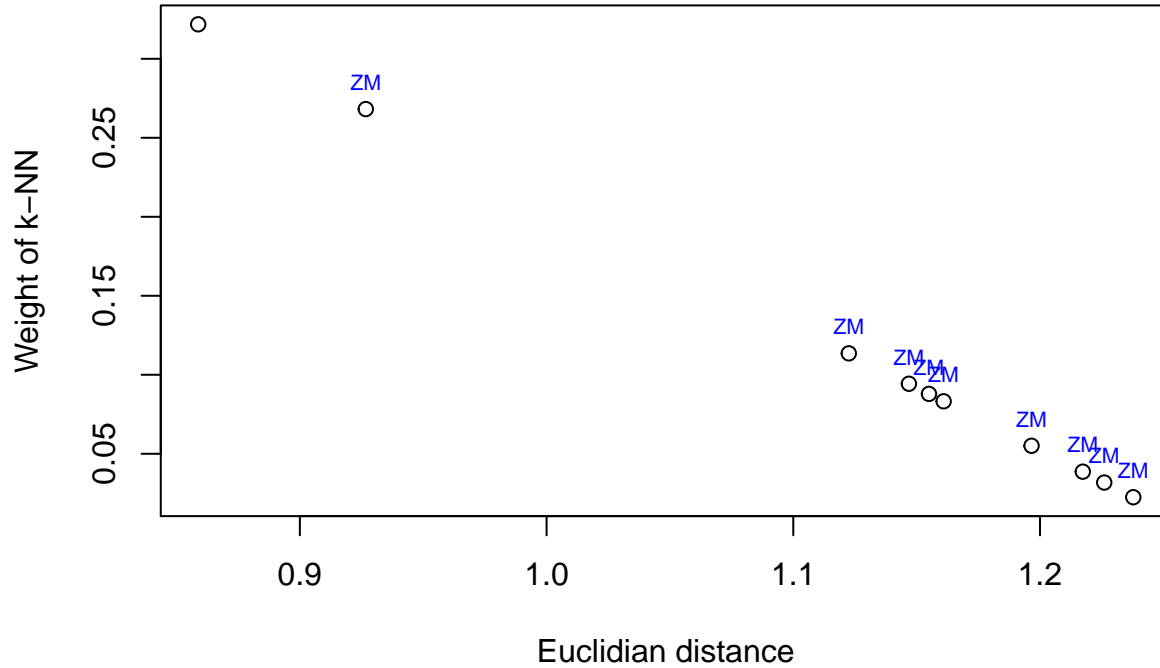
Map of best fitted reference sample



Best fitted reference sample:

- Site: Zambia, Luangwa River, western of Chipata
- Country: ZM
- Region: Southern Africa
- CITES: Appendix I
- Lat: -13.6248
- Lon: 31.210078

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
31.21	-13.62	Zambia, Luangwa River, western of Chipat	-18.7	7.5	19.3	-43.7	9.9
32.10	-12.05	Southern Zambia	-19.6	7.3	18.3	-45.3	7.4
32.05	-11.43	North Zambia, North of North Luangwa Nat	-18.8	7.9	17.3	-51.1	8.7
31.39	-12.22	Southern Zambia	-19.1	8.4	18.6	-44.0	8.7
25.96	-14.97	Southern Zambia	-20.4	7.0	20.1	-49.2	8.5
31.40	-12.24	Southern Zambia	-19.9	8.0	18.5	-48.0	7.1
25.96	-14.97	Southern Zambia	-20.6	7.1	19.6	-51.9	8.2
26.07	-15.90	Southern Zambia	-19.7	7.7	17.9	-54.9	9.9
31.57	-11.34	North Zambia, near Chitembo	-18.9	7.8	17.0	-48.4	9.2
31.59	-12.31	East Zambia, North of South Luangwa Nati	-17.5	8.2	17.8	-47.0	7.3

Country of prediction: ZM

Testing robustness of assignment: Wilcoxon signed rank test

If $p\text{-value} > 0.05$, 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

“0.171789338, 0.006833116, 0.000023492, 0.000002501, 0.000001160, 0.000000774, 0.000000490, 0.000000181,
0.000000052, 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: “**moderate fit**”