

Spatial assignment of test sample

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Input

Website Identifier: Blind 9_MW

Isotope values of test sample

Table 1: Isotope values of test sample

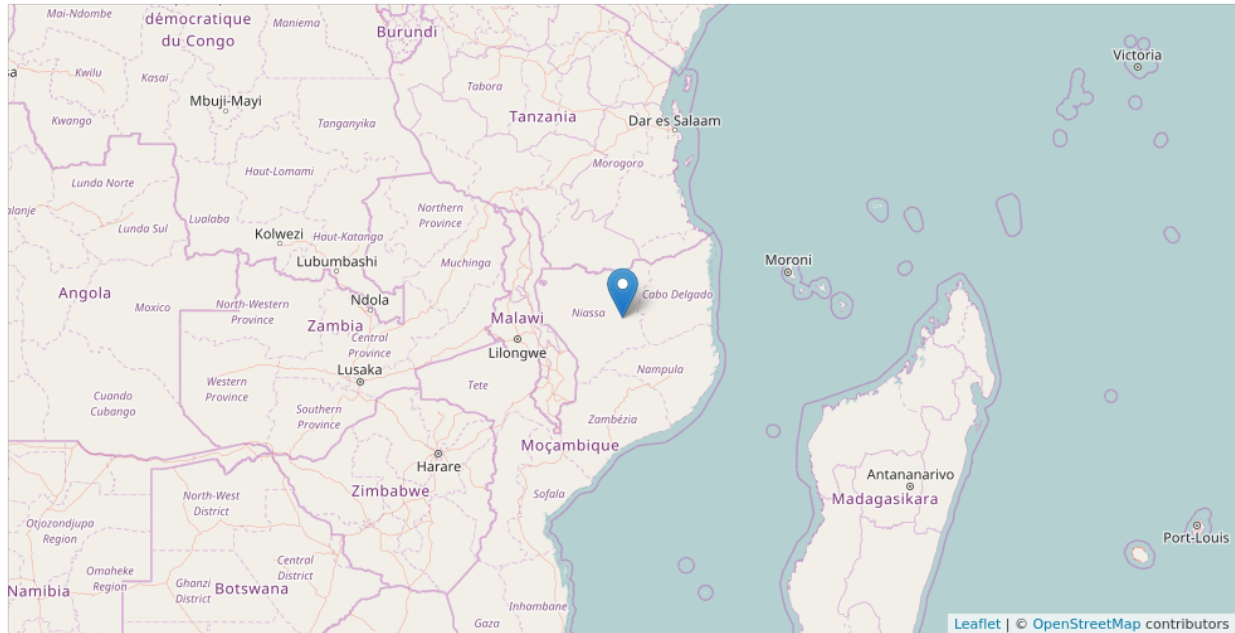
13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-20.9	7.8	15.5	-34.6	9.3

Output

Model

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

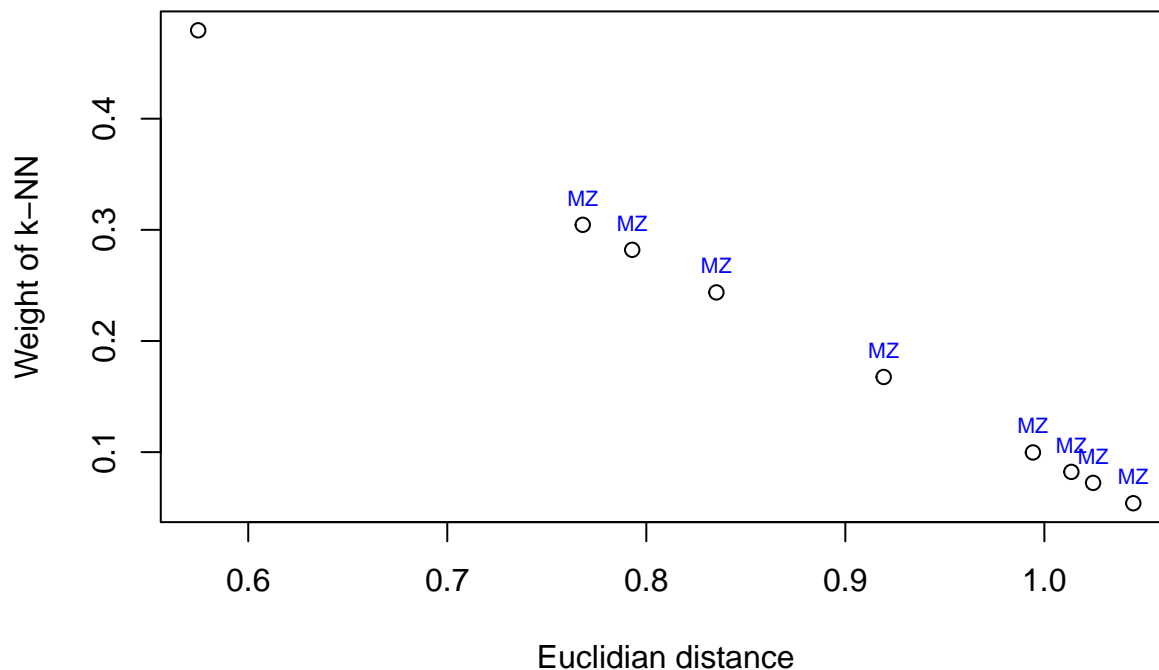
Map of best fitted reference sample



Best fitted reference sample:

- Site: Mozambique, Niassa Nature Reserve
- Country: MZ
- Region: Southern Africa
- CITES: Appendix I
- Lat: -13.3
- Lon: 37.44

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
37.44	-13.30	Mozambique, Niassa Nature Reserve	-20.1	7.5	16.2	-35.0	9.7
38.22	-12.18	Mozambique, Lugenda south bank (block C)	-22.0	7.8	15.5	-39.5	10.1
36.86	-11.90	Mozambique, Chipuputa area (block L5)	-21.7	7.0	15.9	-39.0	10.3
39.00	-11.18	Mozambique, Rovuma river area	-20.8	7.0	15.4	-40.0	7.5
37.84	-12.30	Mozambique, Block L7 - Lugenda south ban	-22.0	7.5	15.5	-41.6	8.4
38.42	-11.55	Mozambique, Lugenda north bank - Chipopu	-22.5	6.9	15.7	-35.8	8.4
32.00	-14.75	Mozambique, Kambako	-20.8	7.8	16.0	-45.0	9.8
32.10	-14.70	Mozambique, Kambako block - L8	-21.5	7.1	16.2	-42.3	10.8
37.85	-11.32	Mozambique, Chipupa / Rovuma	-22.0	6.9	16.7	-37.7	10.5

Country of prediction: MZ

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

“0.74719, 0.68295, 0.59074, 0.01568, 0.00506, 0.00226, 0.00134, 0.00134, 0.00052”

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**”