

Spatial assignment of test sample

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Input

Website Identifier: 347

Isotope values of test sample

Table 1: Isotope values of test sample

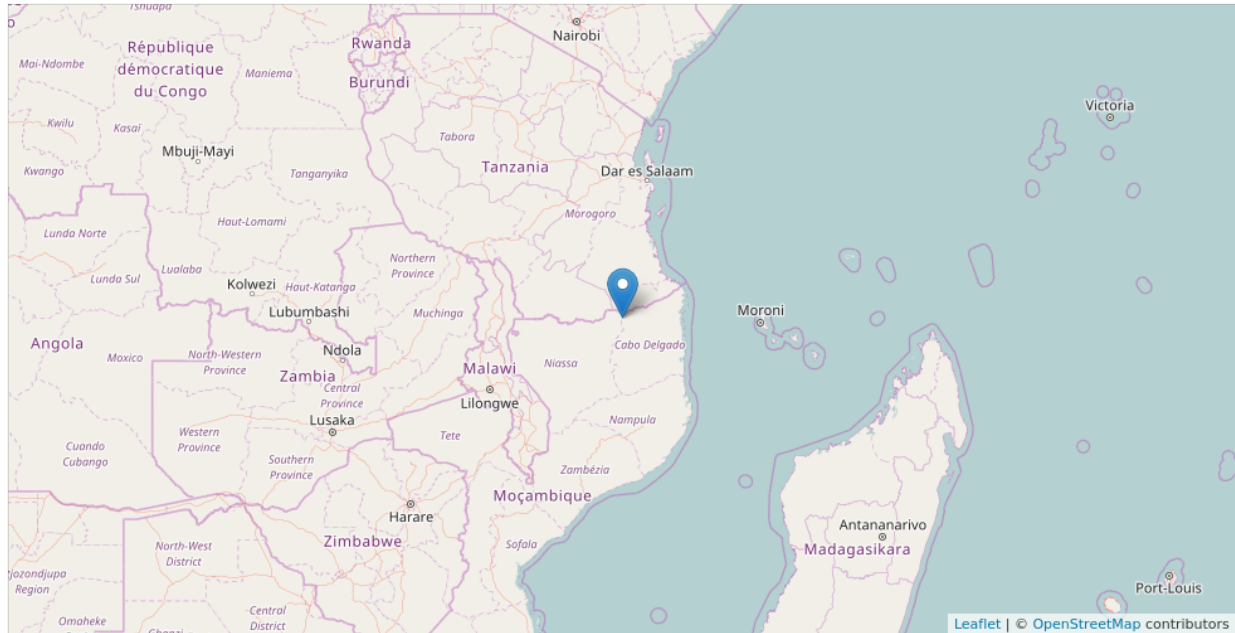
13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-21.9	6.8	15.9	-32	6.7

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
```

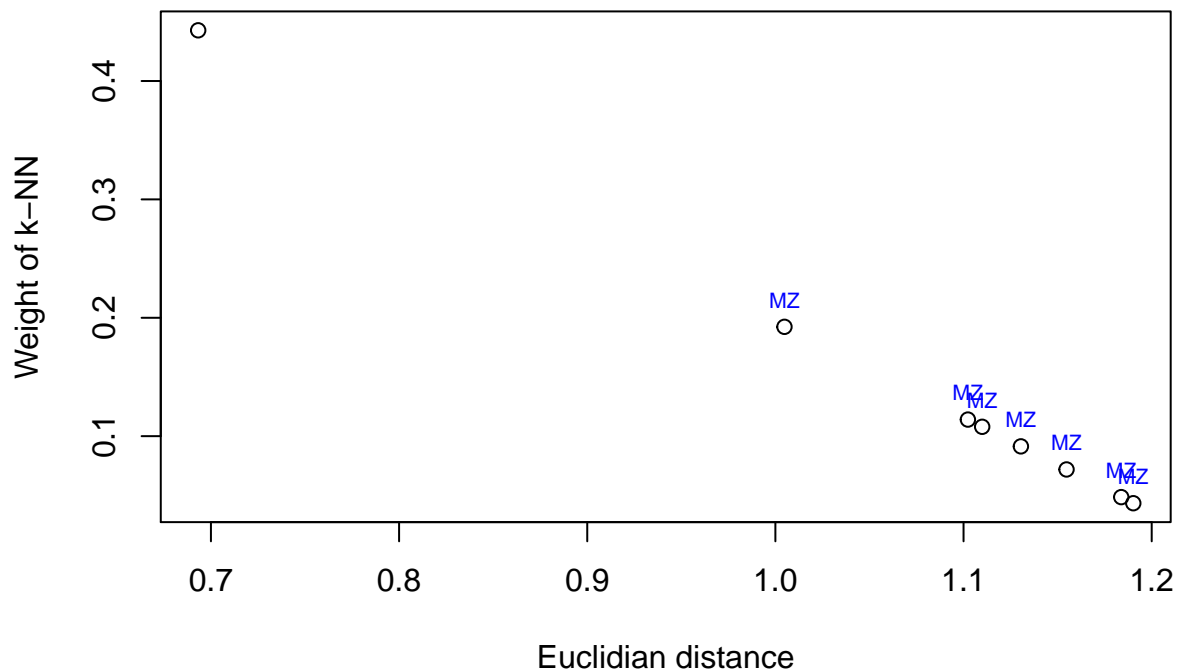
Map of best fitted reference sample



Best fitted reference sample:

- Site: Mozambique, Lugenda north bank - Chipoputa area
- Country: MZ
- Region: Southern Africa
- CITES: Appendix I
- Lat: -11.55
- Lon: 38.42

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
38.42	-11.55	Mozambique, Lugenda north bank - Chipopu	-22.5	6.9	15.7	-35.8	8.4
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
37.64	-12.44	Mozambique, Mbamba village area - Lugend	-22.3	8.5	16.0	-38.3	5.6
37.84	-12.30	Mozambique, Lugenda camp - block L7 area	-21.9	7.4	17.7	-36.5	8.3
38.52	-12.00	Mozambique, Mbamba village area - Lugend	-22.4	8.5	14.7	-34.9	5.6
37.30	-12.00	Mozambique, Luwure (block L7) area	-22.5	6.7	16.5	-41.6	8.9
37.35	-12.00	Mozambique, Gomba	-21.6	8.0	14.3	-38.5	6.1

Country of prediction: MZ

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

“0.9828649, 0.6829539, 0.0019061, 0.0011149, 0.0000235, 0.0000070, 0.0000050, 0.0000036”

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**”