

Spatial assignment of test sample

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Input

Website Identifier: Blind 14_BW

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-19.1	10	15.9	-32.3	15.3

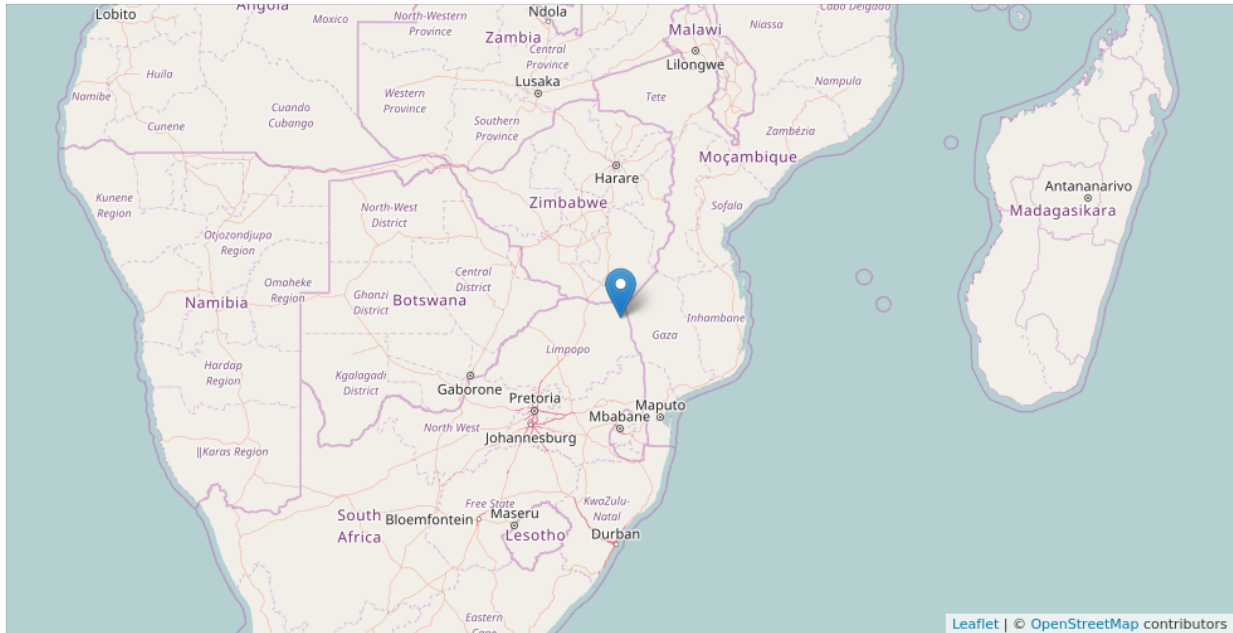
Output

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**

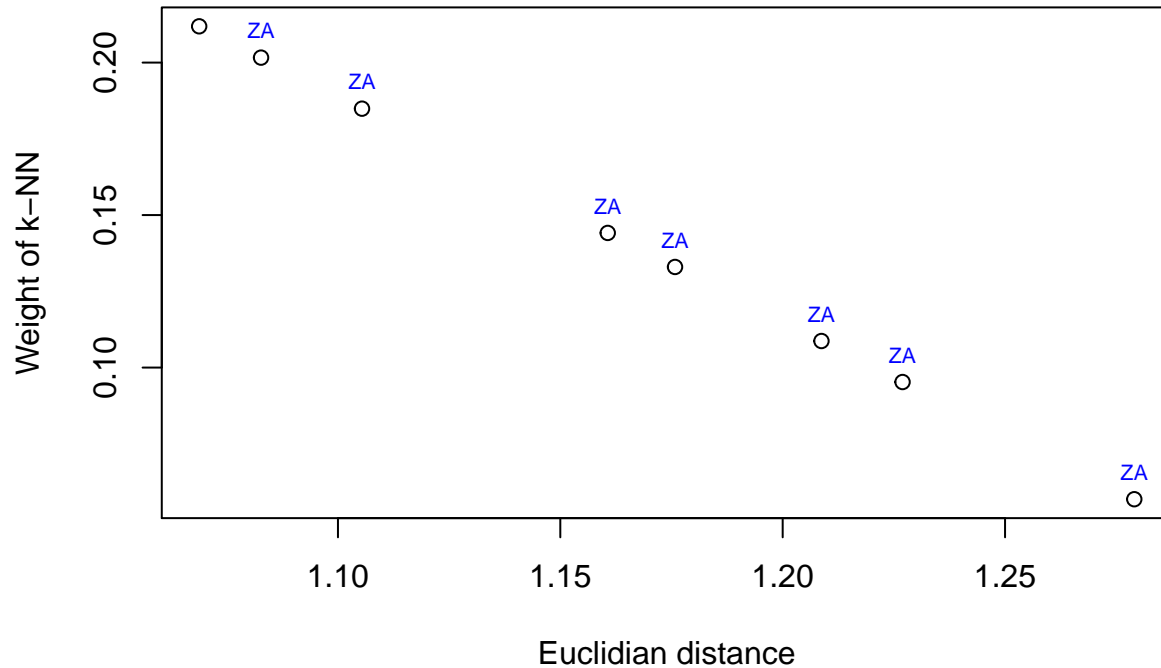
Map of best fitted reference sample



Best fitted reference sample:

- Site: South Africa, Kr ger Nord (Shangoni)
- Country: ZA
- Region: Southern Africa
- CITES: Appendix II
- Lat: -22.8333
- Lon: 31.1667

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
31.17	-22.83	South Africa, Kr ger Nord (Shangoni)	-19.4	8.8	16.6	-38.4	13.4
31.84	-28.30	South Africa, Umfolozi	-21.0	10.0	16.7	-34.4	15.1
31.17	-22.83	South Africa, Kr ger Nord (Shingwedzi)	-20.2	9.0	17.3	-28.6	16.0
31.45	-23.83	South Africa, Kr ger Mitte, westl. Grenz	-19.1	8.7	17.4	-38.5	15.9
31.17	-22.83	South Africa, Kr ger Nord (Phalaborwa)	-19.4	8.6	17.3	-26.2	14.5
31.17	-22.83	South Africa, Kr ger Nord (Olifants)	-19.4	9.0	17.7	-33.6	17.4
26.31	-24.76	South Africa, Madikwe	-18.7	8.6	17.4	-32.6	17.5
31.76	-25.12	South Africa, Kr ger	-17.9	9.2	17.5	-29.2	17.4

Country of prediction: ZA

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

“0.000177079, 0.000140693, 0.000017612, 0.000002501, 0.000002501, 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**”