

Spatial assignment of test sample

December 13, 2016

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Input

Website Identifier: 102

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-22.5	7	16.2	-44	12.4

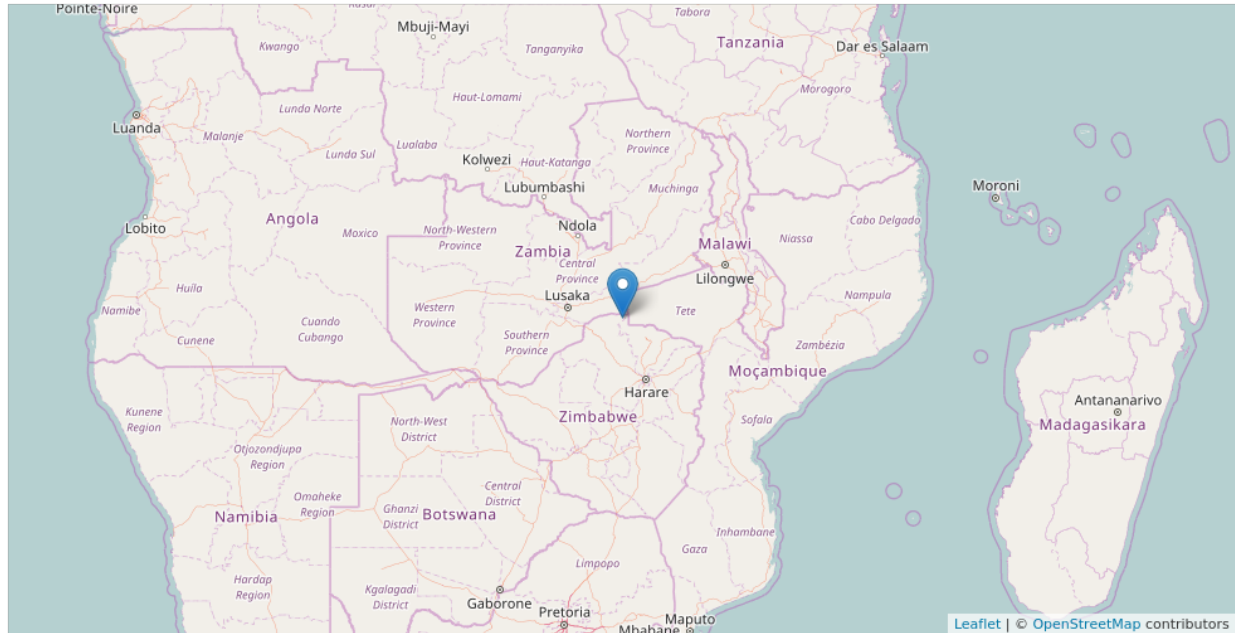
Output

Model

```
##  
## Call:  
## train.kknn(formula = fmla, data = ivory.train, kmax = 15, distance = 2, kernel = knl)  
##  
## Type of response variable: nominal  
## Minimal misclassification: 0.1889986  
## Best kernel: triangular  
## Best k: 14
```

Classifier: **region**

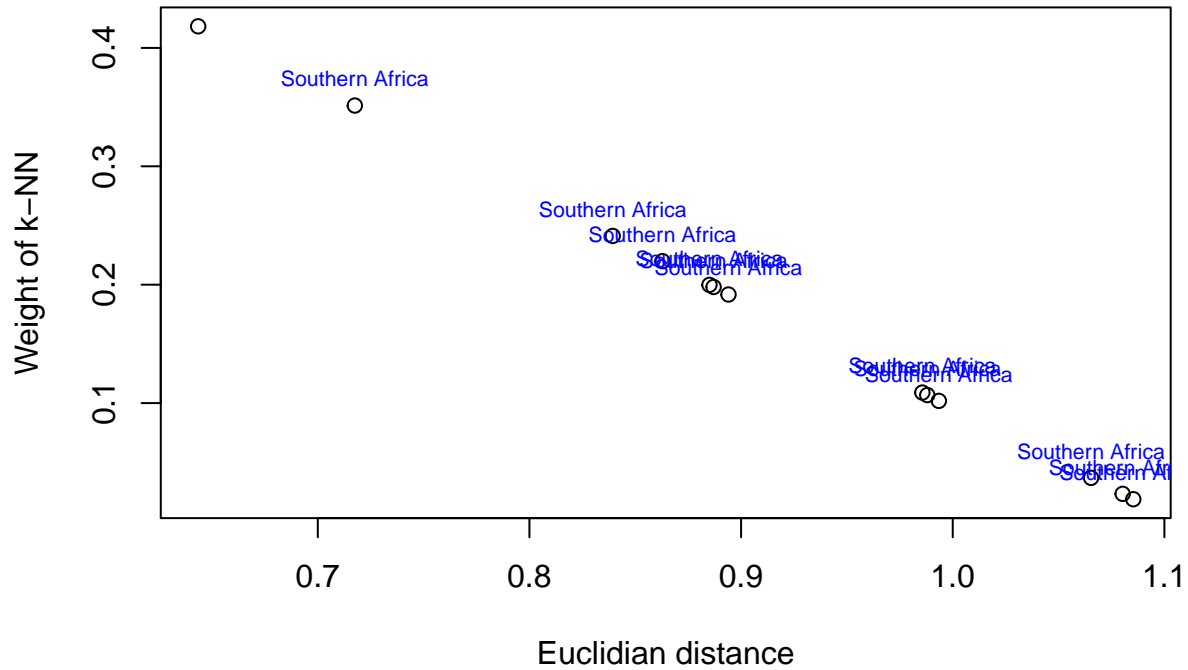
Map of best fitted reference sample



Best fitted reference sample:

- Site: Zimbabwe, in the north of the country
- Country: ZW
- Region: Southern Africa
- CITES: Appendix II
- Lat: -15.78
- Lon: 30.21

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
30.21	-15.78	Zimbabwe, in the north of the country	-22.3	8.0	16.7	-41.1	12.8
32.10	-14.70	Mozambique, Kambako block - L8	-21.5	7.1	16.2	-42.3	10.8
20.00	-17.00	Angola, Cenando-Cubango im S dosten An	-22.1	8.0	17.3	-40.5	12.6
31.29	-27.51	South Africa, Ithala	-21.4	7.1	16.9	-41.0	10.8
37.85	-11.32	Mozambique, Chipupa / Rovuma	-22.0	6.9	16.7	-37.7	10.5
36.86	-11.90	Mozambique, Chipuputa area (block L5)	-21.7	7.0	15.9	-39.0	10.3
31.29	-27.51	South Africa, Ithala	-21.4	7.2	16.0	-39.9	10.5
31.29	-27.51	South Africa, Ithala	-21.4	7.2	17.0	-37.8	11.1
38.22	-12.18	Mozambique, Lugenda south bank (block C)	-22.0	7.8	15.5	-39.5	10.1
25.13	-17.84	Botswana, Kasane/Chobe area	-21.8	8.7	16.7	-46.2	12.0
37.30	-12.00	Mozambique, Luwure (block L7) area	-22.5	6.7	16.5	-41.6	8.9
31.67	-25.23	South Africa, Kr ger S d-Ost, Grenze Mos	-21.1	7.8	17.3	-42.8	13.8
31.29	-27.51	South Africa, Ithala	-21.2	7.0	17.7	-42.2	11.1

Region of prediction: Southern Africa

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

“0.279954, 0.279954, 0.104758, 0.006618, 0.004714, 0.002747, 0.002275, 0.001019, 0.000419, 0.000090, 0.000068, 0.000068, 0.000037”

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**”