Spatial assignment of test sample

December 12, 2016

Contents

Input

Website Identifier: 194

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-27.8	11	18	-43.4	7.1

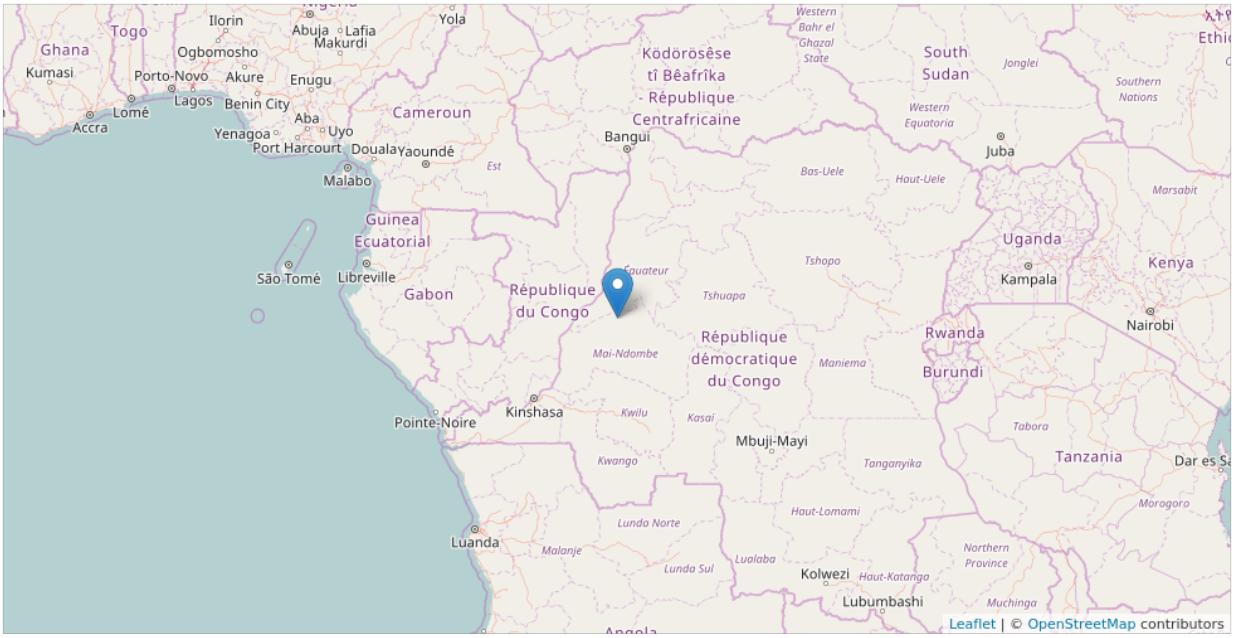
Output

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
```

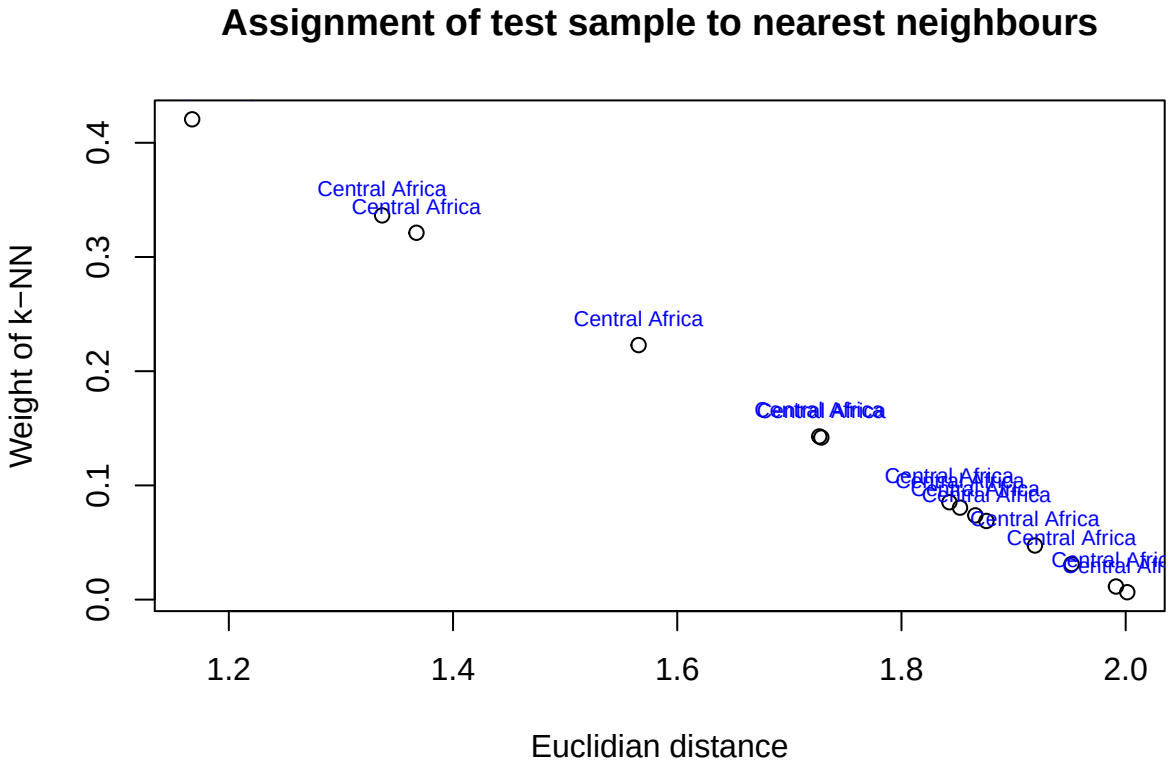
Classifier: **region**

Map of best fitted reference sample



Best fitted reference sample:

- Site: Dem. Rep. Congo, Leopold ii meer
- Country: CD
- Region: Central Africa
- CITES: Appendix I
- Lat: -1.55
- Lon: 18.2



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
18.20	-1.55	Dem. Rep. Congo, Leopold ii meer	-25.9	10.9	17.1	-39.7	6.2
23.55	-1.35	Dem. Rep. Congo, Moma	-25.6	10.8	16.9	-44.4	5.7
23.20	-1.00	Dem. Rep. Congo, Tshuapa	-26.4	12.1	16.2	-46.3	5.7
10.20	3.13	Cameroon, Lokundji	-26.7	11.1	15.5	-51.6	6.8
14.00	2.00	Cameroon, 1956N¡	-27.6	10.5	19.0	-43.2	1.5
15.24	-4.26	Congo (Brazzaville)	-24.9	10.6	19.5	-42.6	5.9
23.55	-1.35	Dem. Rep. Congo, Moma	-24.9	11.1	16.3	-48.5	5.6
29.29	0.29	Dem. Rep. Congo, Beni	-24.7	11.4	17.1	-37.3	5.3
25.09	-0.28	Dem. Rep. Congo, Loyo	-24.6	10.7	16.8	-42.7	5.1
19.00	8.00	Central African Republic	-25.7	12.8	19.8	-36.6	9.0
26.23	1.52	Dem. Rep. Congo, Panga	-24.6	12.1	17.1	-39.9	5.2
13.02	-1.43	Dem. Rep. Congo, Itoko	-24.2	10.4	18.1	-38.4	7.0
21.45	-1.00	Dem. Rep. Congo, Itoko	-24.2	10.2	16.9	-42.9	6.8
27.37	1.40	Dem. Rep. Congo, Nepoko	-24.3	10.5	18.0	-34.9	7.4

Region of prediction: Central Africa

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

"0.5826437, 0.0027473, 0.0003301, 0.0000506, 0.0000194, 0.0000007, 0.0000004, 0.0000001, 0.0000001, 0.0000001, 0.0000001, 0.0000001, 0.0000001, 0.0000001"

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**"