

# Spatial assignment of test sample

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## Input

Website Identifier: 005p562-7

## Isotope values of test sample

Table 1: Isotope values of test sample

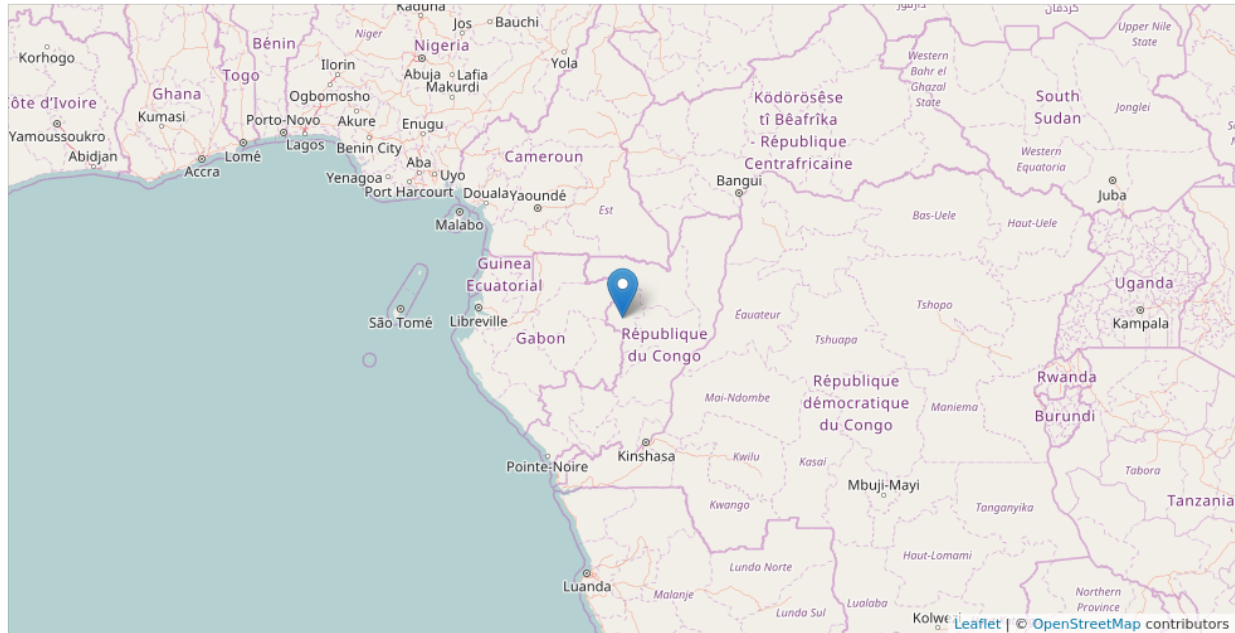
13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-26.2	11.9	14.2	-46.9	11.4

## Output

### Model

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

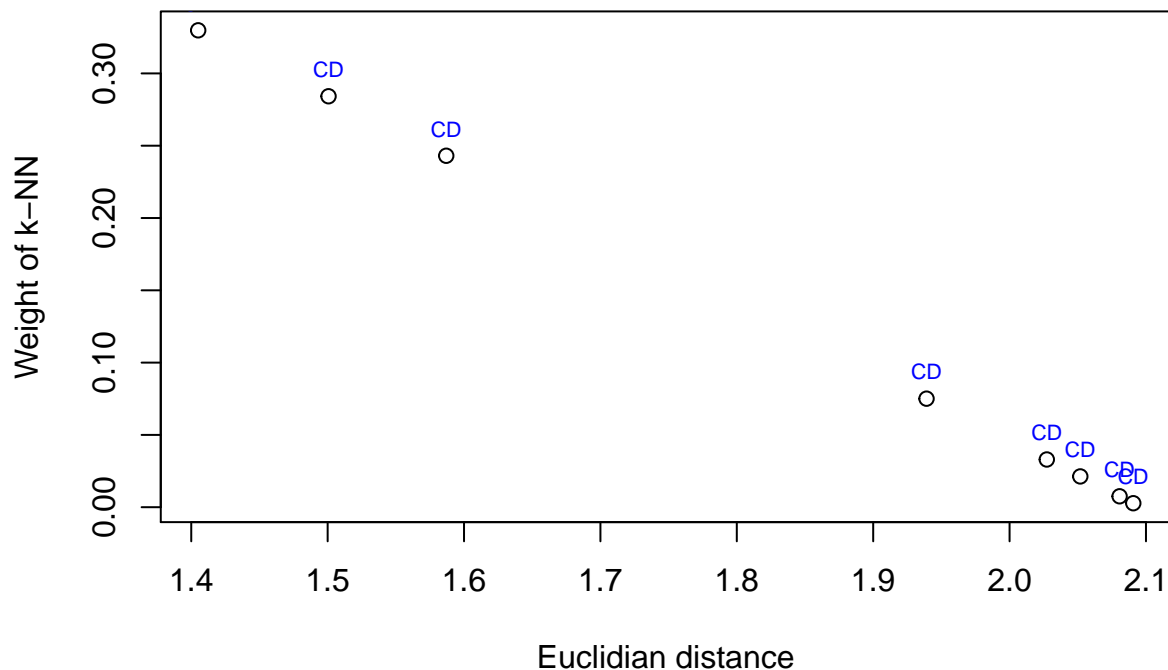
## Map of best fitted reference sample



### Best fitted reference sample:

- Site: Dem. Rep. Congo
- Country: CD
- Region: Central Africa
- CITES: Appendix I
- Lat: -0.006244
- Lon: 14.471917

## 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
14.47	-0.01	Dem. Rep. Congo	-25.0	10.2	15.8	-49.9	10.1
17.11	-1.10	Dem. Rep. Congo, Lukolela	-24.8	10.5	15.4	-43.4	8.4
14.57	-0.08	Dem. Rep. Congo	-24.9	10.3	16.4	-49.5	10.0
23.20	-1.00	Dem. Rep. Congo, Tshuapa	-26.4	12.1	16.2	-46.3	5.7
21.31	-2.34	Dem. Rep. Congo	-27.1	11.2	13.7	-62.0	6.9
29.50	0.45	Dem. Rep. Congo, Beni	-23.5	10.9	15.9	-43.2	7.7
16.20	-2.06	Dem. Rep. Congo, Mongende	-25.0	11.4	15.2	-49.2	4.9
16.20	-3.40	Dem. Rep. Congo, Tua	-22.8	10.2	14.8	-42.0	9.8

Country of prediction: CD

### 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

“0.7471924, 0.0001112, 0.0001112, 0.0000873, 0.0000682, 0.0000050, 0.0000025, 0.0000012”

**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**”