

# Spatial assignment of test sample

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## Input

Website Identifier: 107

## Isotope values of test sample

Table 1: Isotope values of test sample

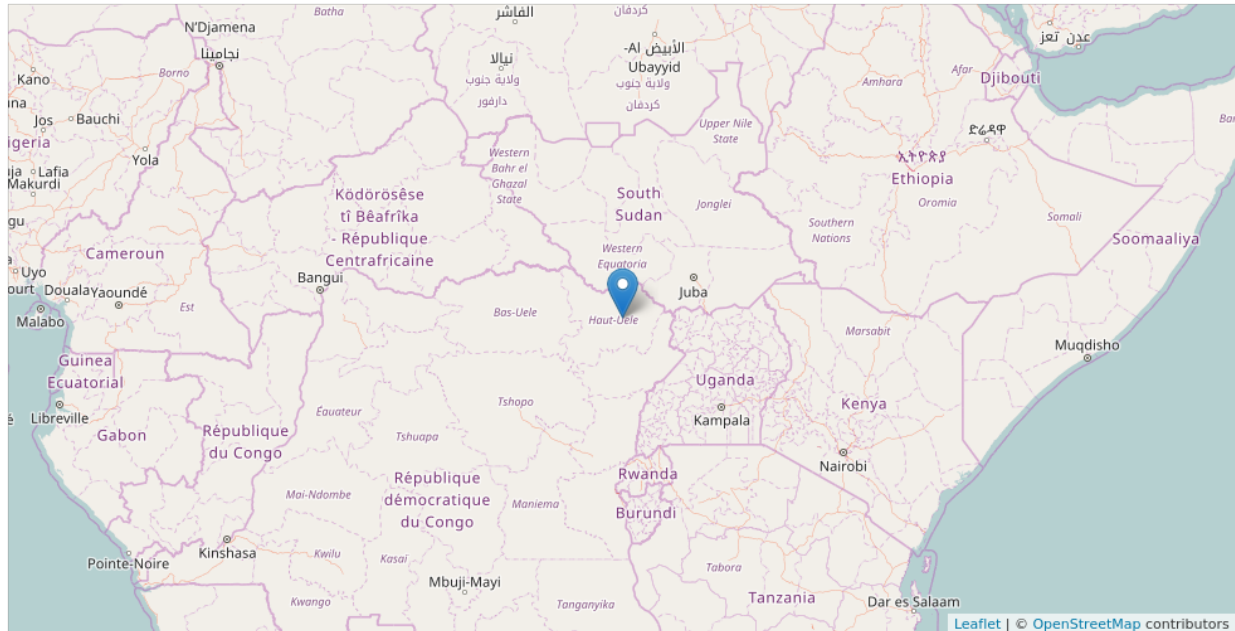
13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-21.1	8.3	15.9	-29.8	5.3

## 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
```

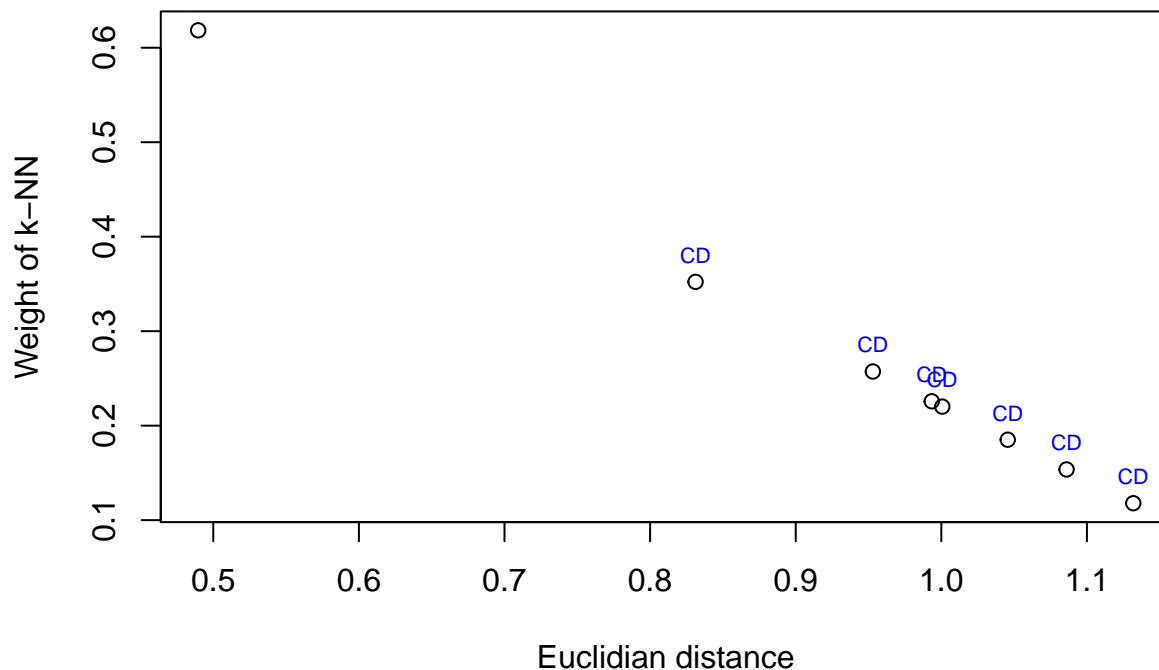
## Map of best fitted reference sample



### Best fitted reference sample:

- Site: Dem. Rep. Congo, Gangala na Bodio
- Country: CD
- Region: Central Africa
- CITES: Appendix I
- Lat: 3.4
- Lon: 29.09

## 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
29.09	3.40	Dem. Rep. Congo, Gangala na Bodio	-20.6	8.2	16.7	-29.0	5.0
27.43	-4.42	Dem. Rep. Congo, Kabambare	-21.9	8.1	16.1	-37.2	4.8
25.26	3.40	Dem. Rep. Congo, Api	-20.2	8.1	17.4	-33.6	5.1
30.26	1.23	Dem. Rep. Congo, Kasenyi	-19.6	9.2	16.0	-30.5	3.9
28.56	-4.18	Dem. Rep. Congo, Mukunga-Capita	-22.8	9.1	16.1	-31.8	5.7
29.12	3.71	Dem. Rep. Congo, Gangala	-20.1	7.5	17.0	-33.0	7.1
27.43	-4.42	Dem. Rep. Congo, Kabambare	-22.0	8.7	16.5	-38.2	3.7
29.09	3.40	Dem. Rep. Congo, Gangala na Bodio	-20.5	9.1	17.5	-23.1	5.5

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

“0.98286, 0.74719, 0.53255, 0.08476, 0.02588, 0.00589, 0.00160, 0.00076”

**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**”