

# Spatial assignment of test sample

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## Input

Website Identifier: 005p562-15

## Isotope values of test sample

Table 1: Isotope values of test sample

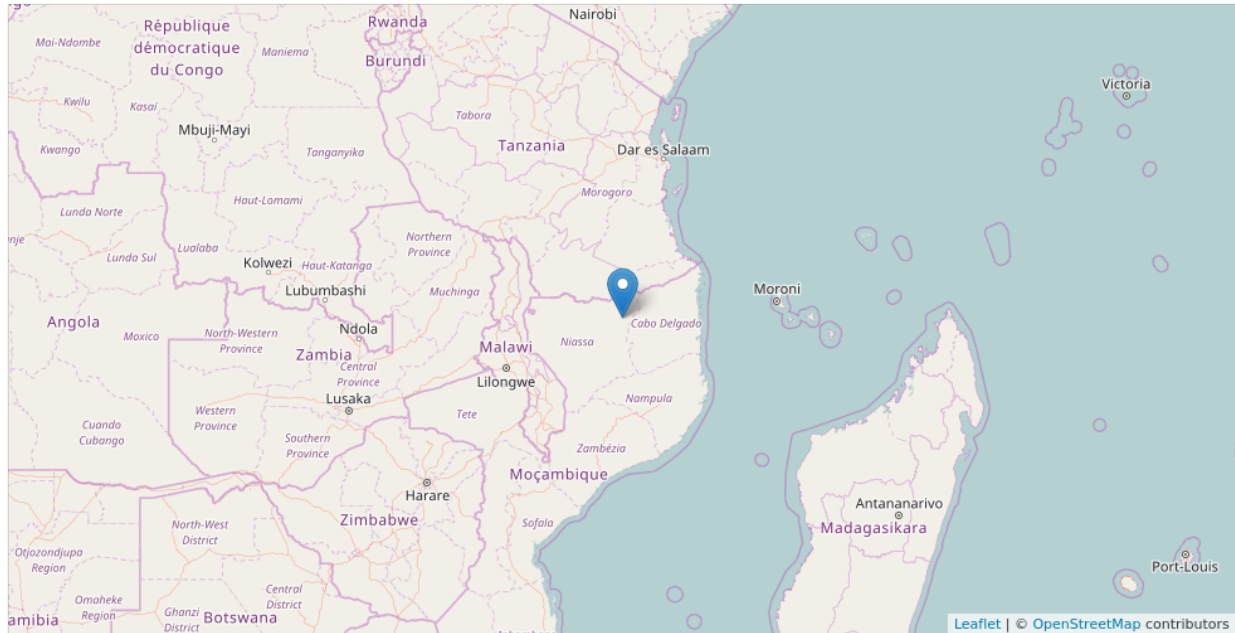
13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-24.4	6.5	15.7	-47.3	10.8

## 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
```

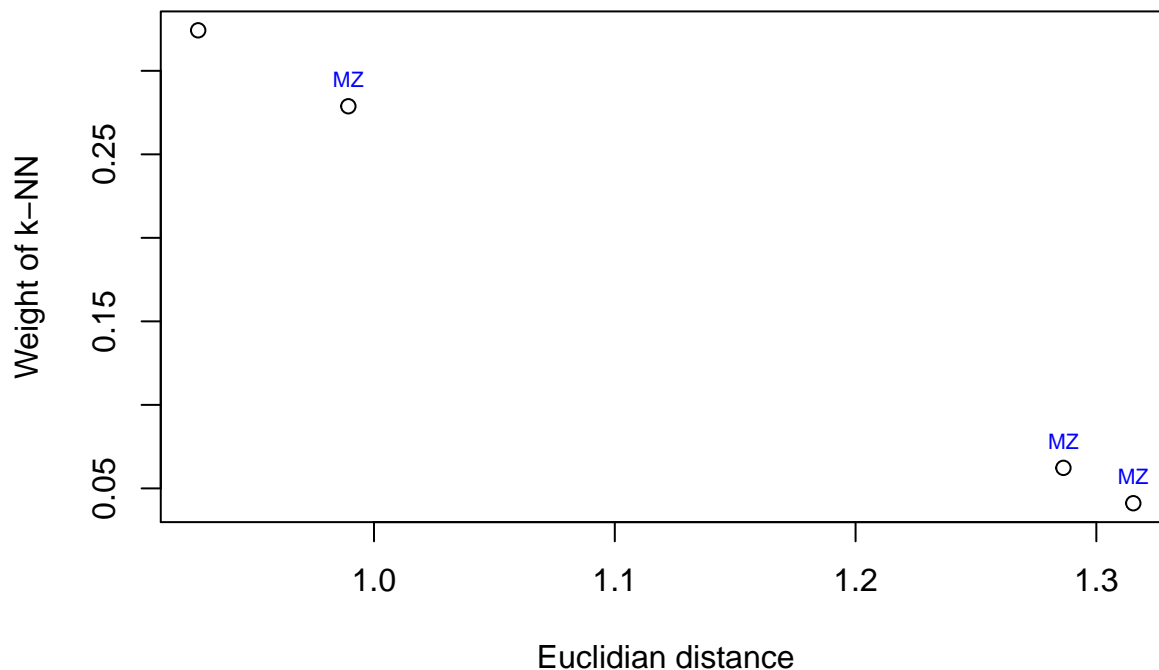
## Map of best fitted reference sample



### Best fitted reference sample:

- Site: Mozambique, Lugenda
- Country: MZ
- Region: Southern Africa
- CITES: Appendix I
- Lat: -12.308
- Lon: 37.84

## 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
37.84	-12.31	Mozambique, Lugenda	-23.3	7.4	15.2	-45.8	9.1
37.84	-12.31	Mozambique, Block L7 - Lugenda south ban	-23.1	7.0	15.5	-45.2	8.6
31.86	-14.75	Mozambique, Kambako	-23.4	7.9	16.8	-46.0	8.2
37.30	-12.00	Mozambique, Luwure (block L7) area	-22.5	6.7	16.5	-41.6	8.9

Country of prediction: MZ

### 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

“0.000017612, 0.000013100, 0.000003584, 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**”