Spatial assignment of test sample

December 10, 2016

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Input

Website Identifier: 38

Isotope values of test sample

Table 1: Isotope values of test sample

<table>
<thead>
<tr>
<th></th>
<th>13C/12C</th>
<th>15N/14N</th>
<th>18O/16O</th>
<th>2H/1H</th>
<th>34S/32S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values</td>
<td>-21.1</td>
<td>8.4</td>
<td>19</td>
<td>-28.3</td>
<td>8.9</td>
</tr>
</tbody>
</table>

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: South Sudan
- Country: SS
- Region: East Africa
- CITES: Appendix I
- Lat: 7.446508
- Lon: 33.046919
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

<table>
<thead>
<tr>
<th>lon</th>
<th>lat</th>
<th>location</th>
<th>13C/12C</th>
<th>15N/14N</th>
<th>18O/16O</th>
<th>2H/1H</th>
<th>34S/32S</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.05</td>
<td>7.45</td>
<td>South Sudan</td>
<td>-21.5</td>
<td>7.6</td>
<td>19.2</td>
<td>-24.9</td>
<td>8.9</td>
</tr>
<tr>
<td>33.05</td>
<td>7.45</td>
<td>South Sudan</td>
<td>-21.3</td>
<td>7.3</td>
<td>18.4</td>
<td>-28.5</td>
<td>10.2</td>
</tr>
</tbody>
</table>

Country of prediction: SS

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

“0.28978, 0.00063”

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”