Using WALS

Prospects of quantitative approaches
for linguistic typology

Wow !

WALS is just great

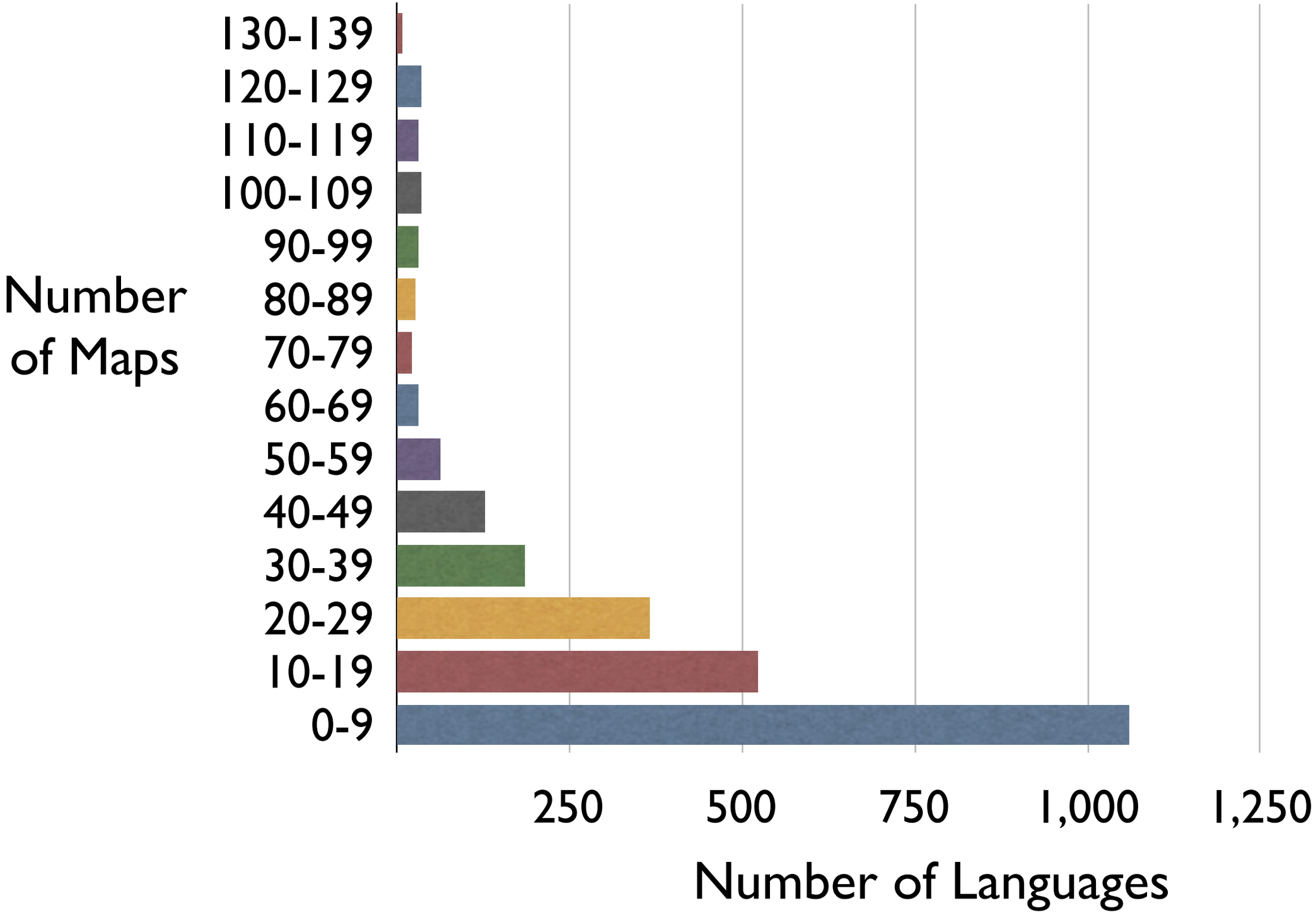
- Linguistic data is very expensive
  (estimated 6,000,000 EUR)
- but now we have so much data
- and so well organized !

Problems

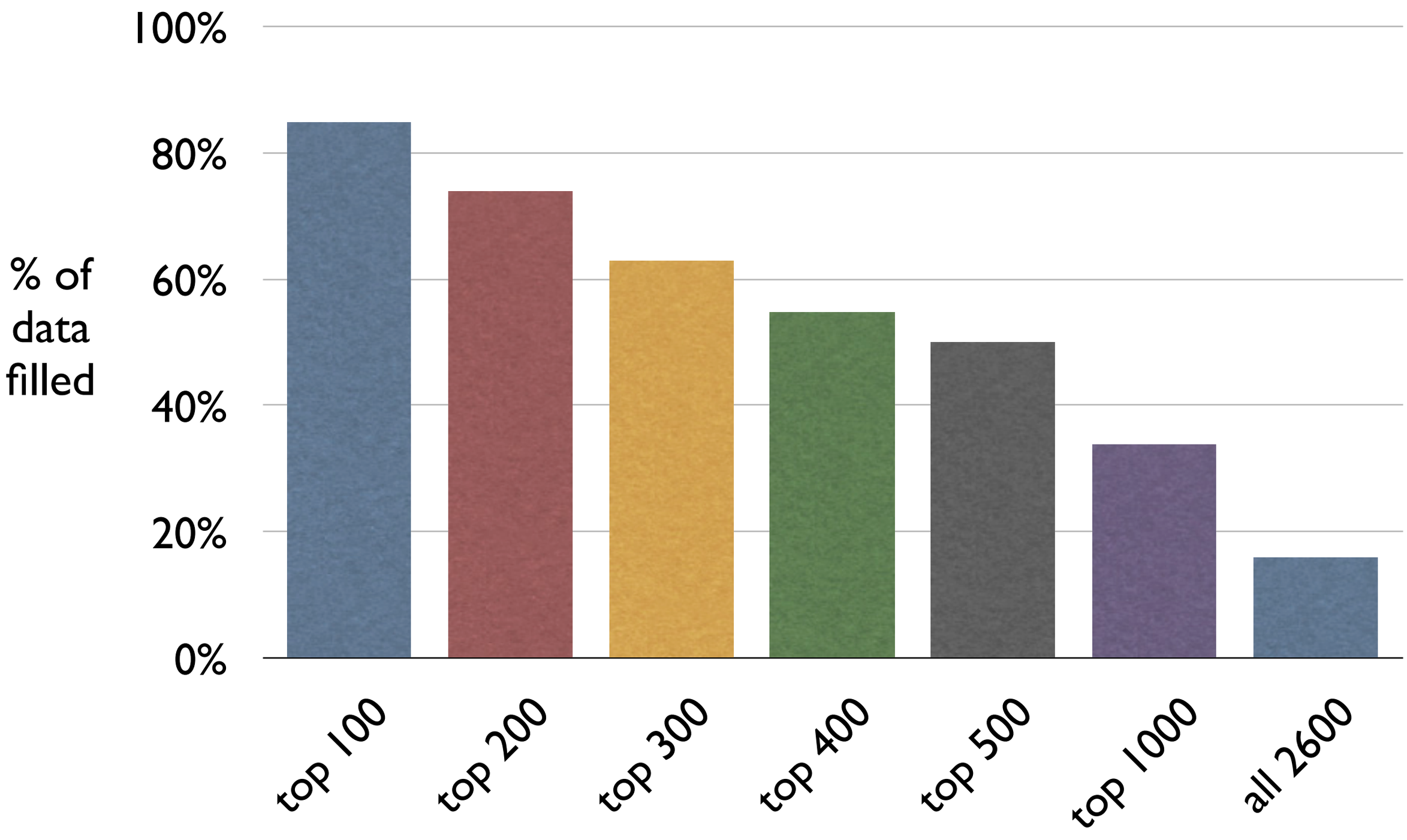
So much data ...

- 2,600 Languages
- 140 characteristics
- almost 60,000 datapoints
- wait a minute: 60,000/2,600*140 = 0.165
- the datatable is only 16.5 % filled

Most languages occur in few maps



Choosing the best languages



Reliability

- Latvian was checked (by B. Wälchli)
- 109 coding point in WALS
- 2 ‘technical’ errors (= 1.8 %)
- 5 ‘interpretative’ errors (= 4.6 %)

Coding problems

- Some maps combine independent dimensions: they have to be recoded
- Unwanted categories marking ‘leftovers’ have to be recoded
- Many maps have (hidden) definitional dependencies to other maps
- There is much structure in the data that is not coded

Exploration

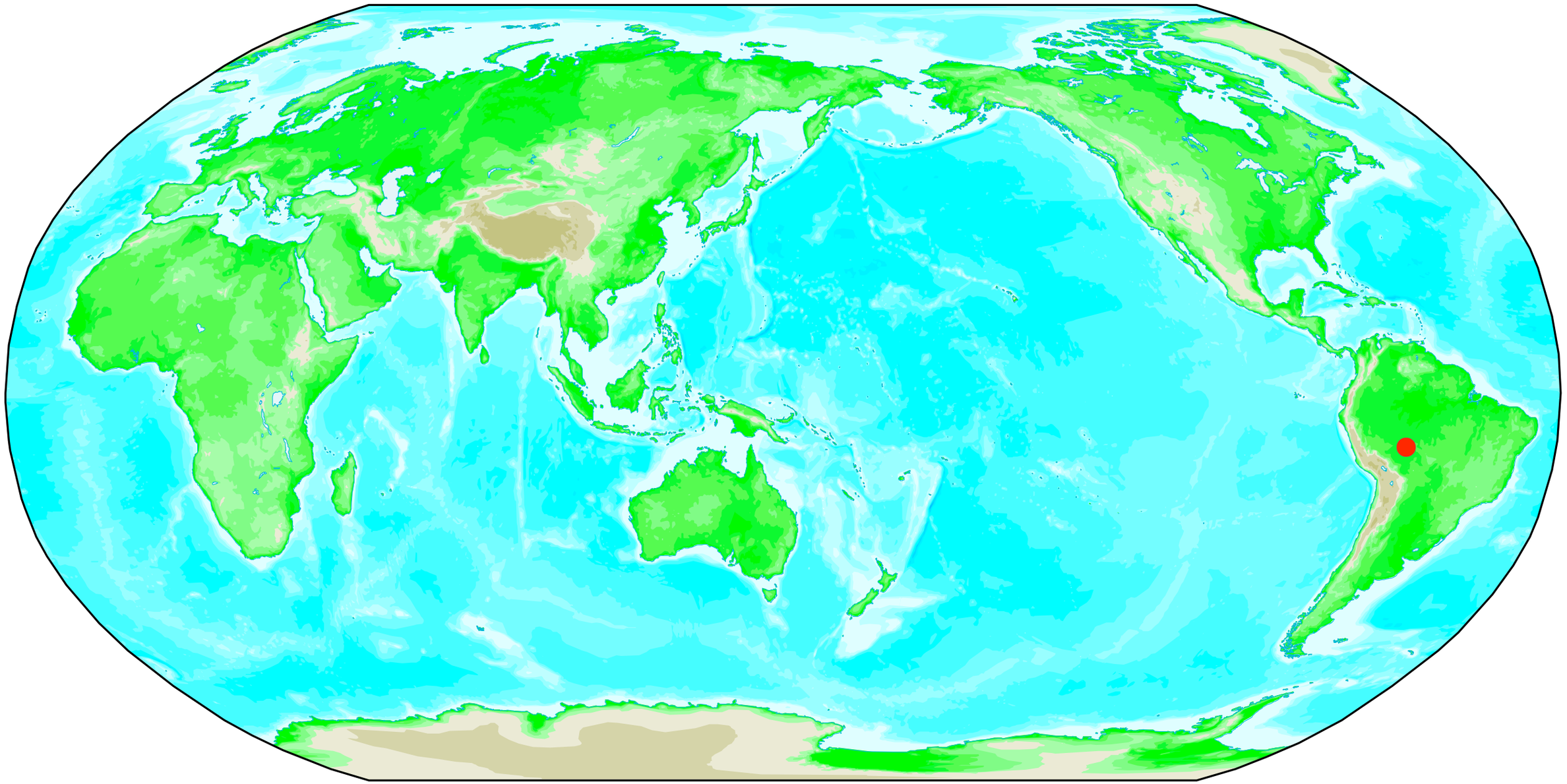
Distribution of **rare** characteristics

And the winners are:

In the category:

‘Most Unusual Individual Language’

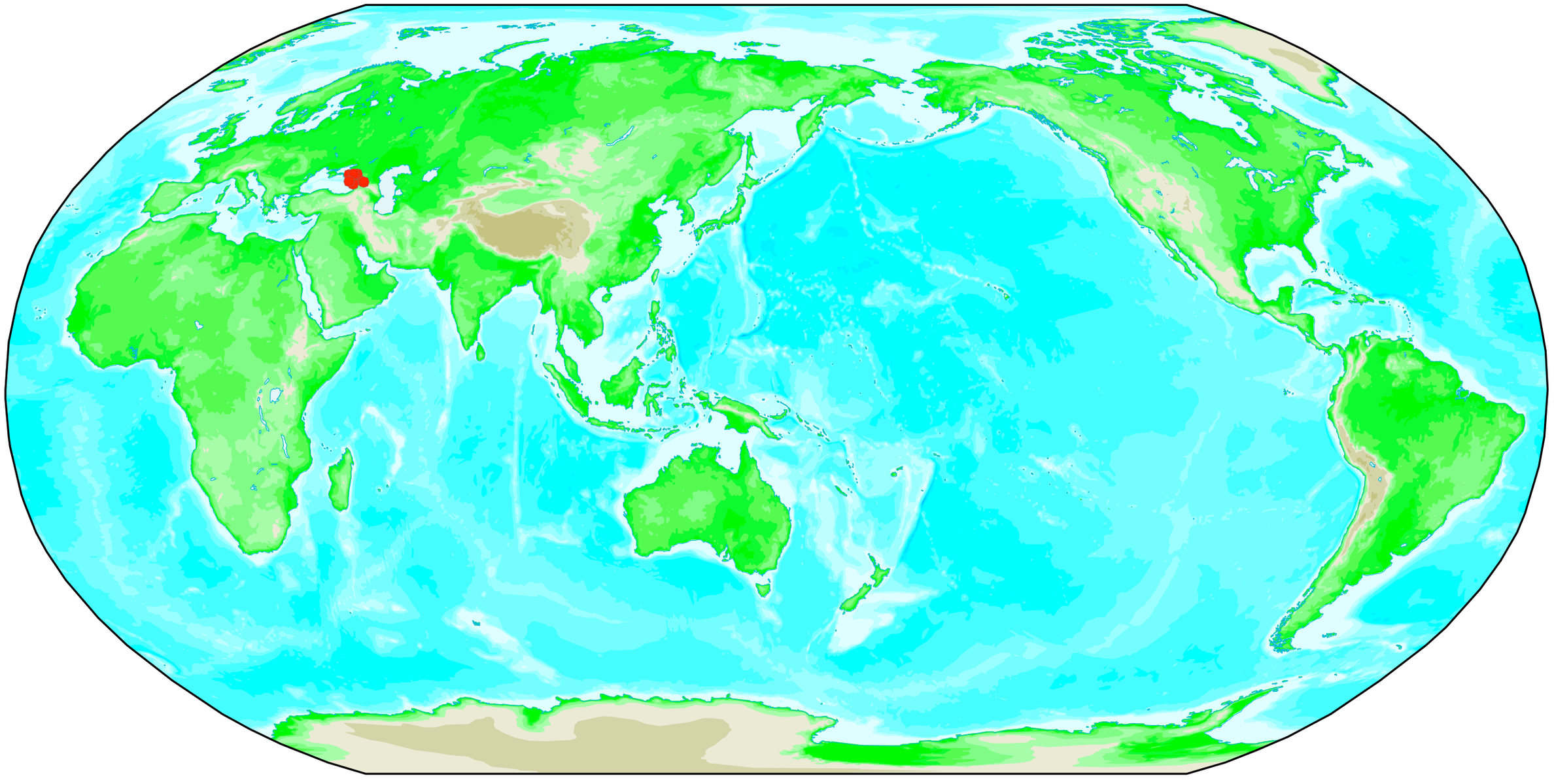
Wari’



In the category:

‘Most Unusual Genealogical Group’

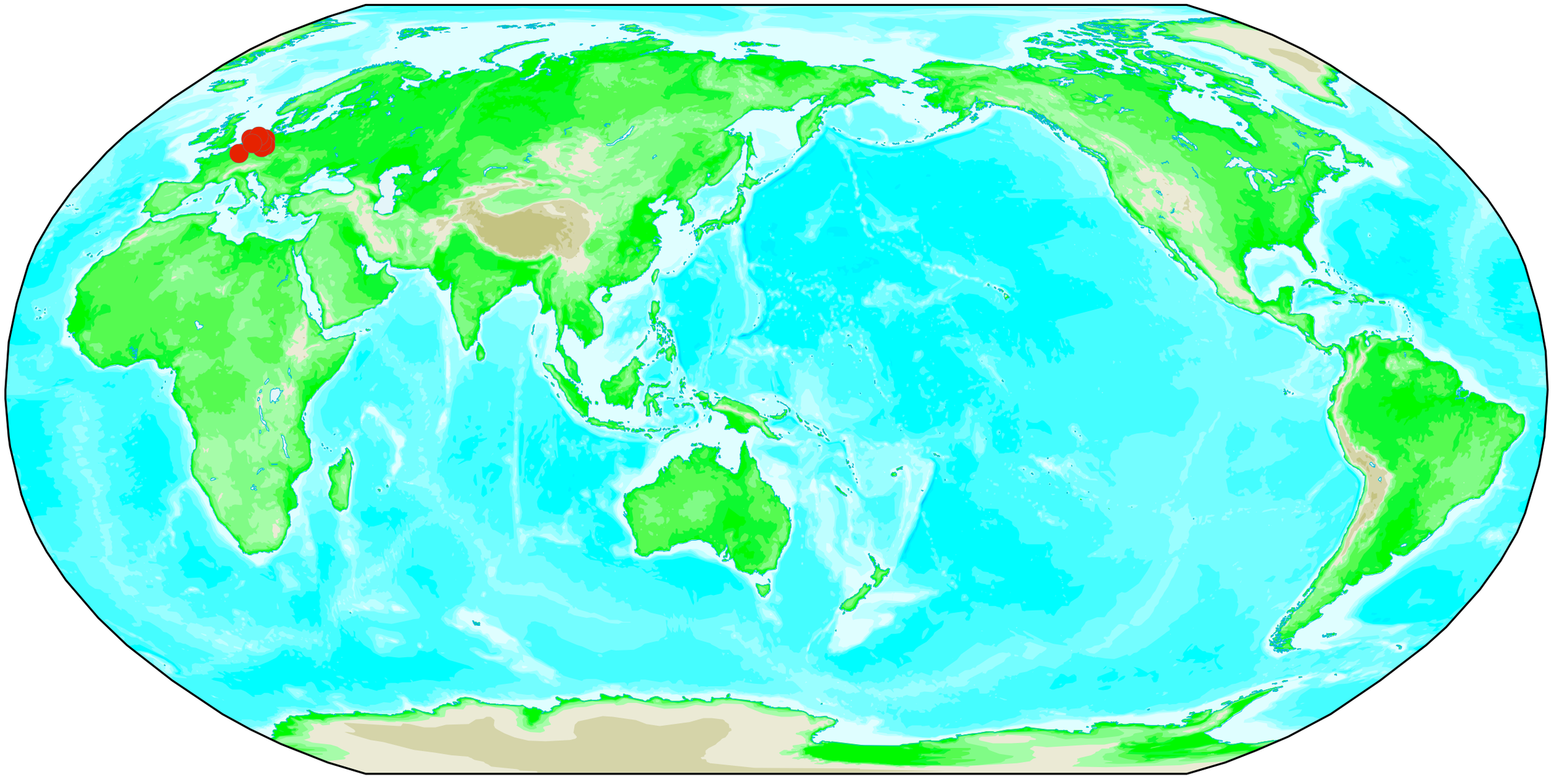
Northwest Caucasian



In the category:

‘Most Unusual Geographical Area’

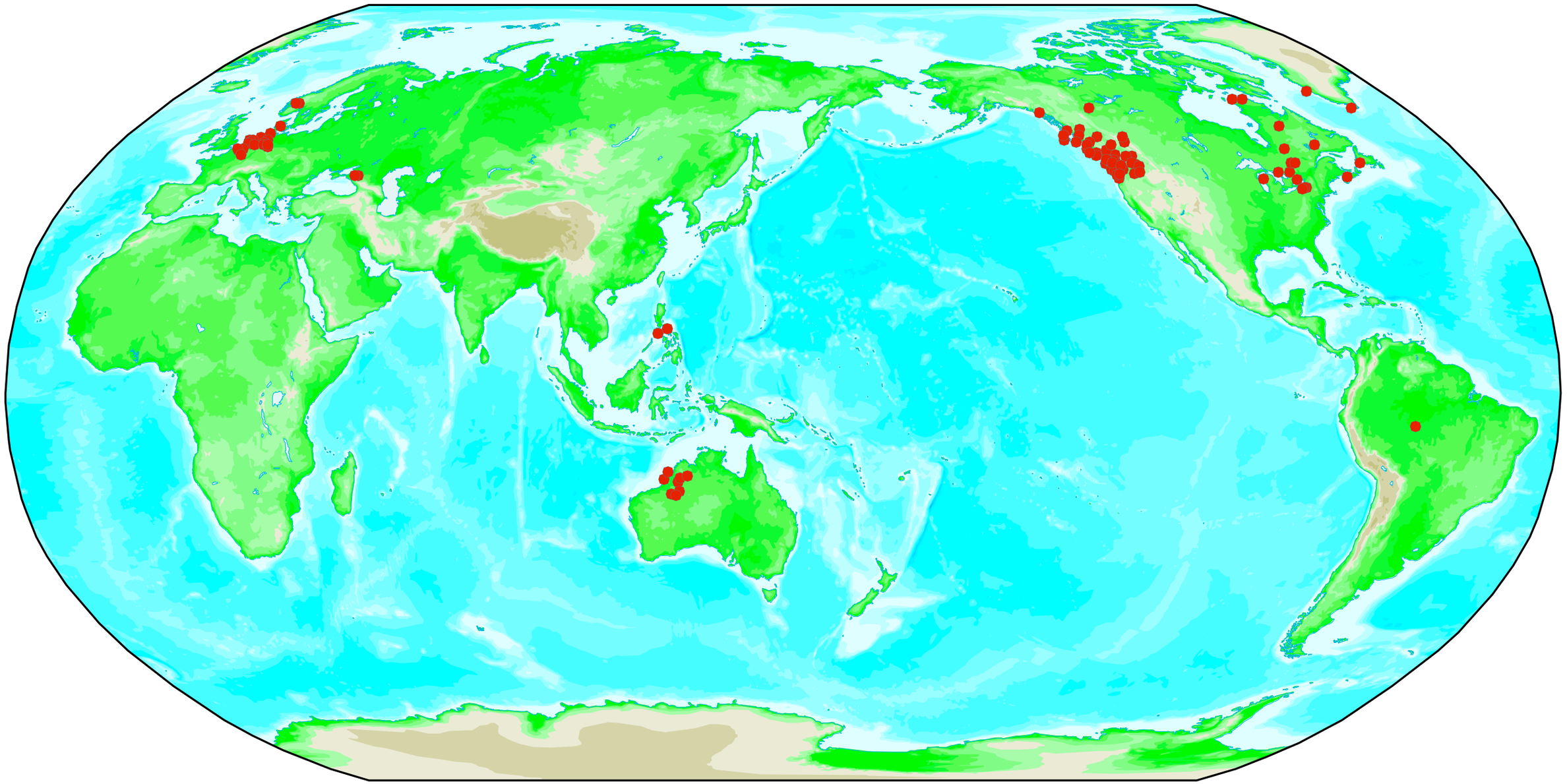
Northwest Continental Europe



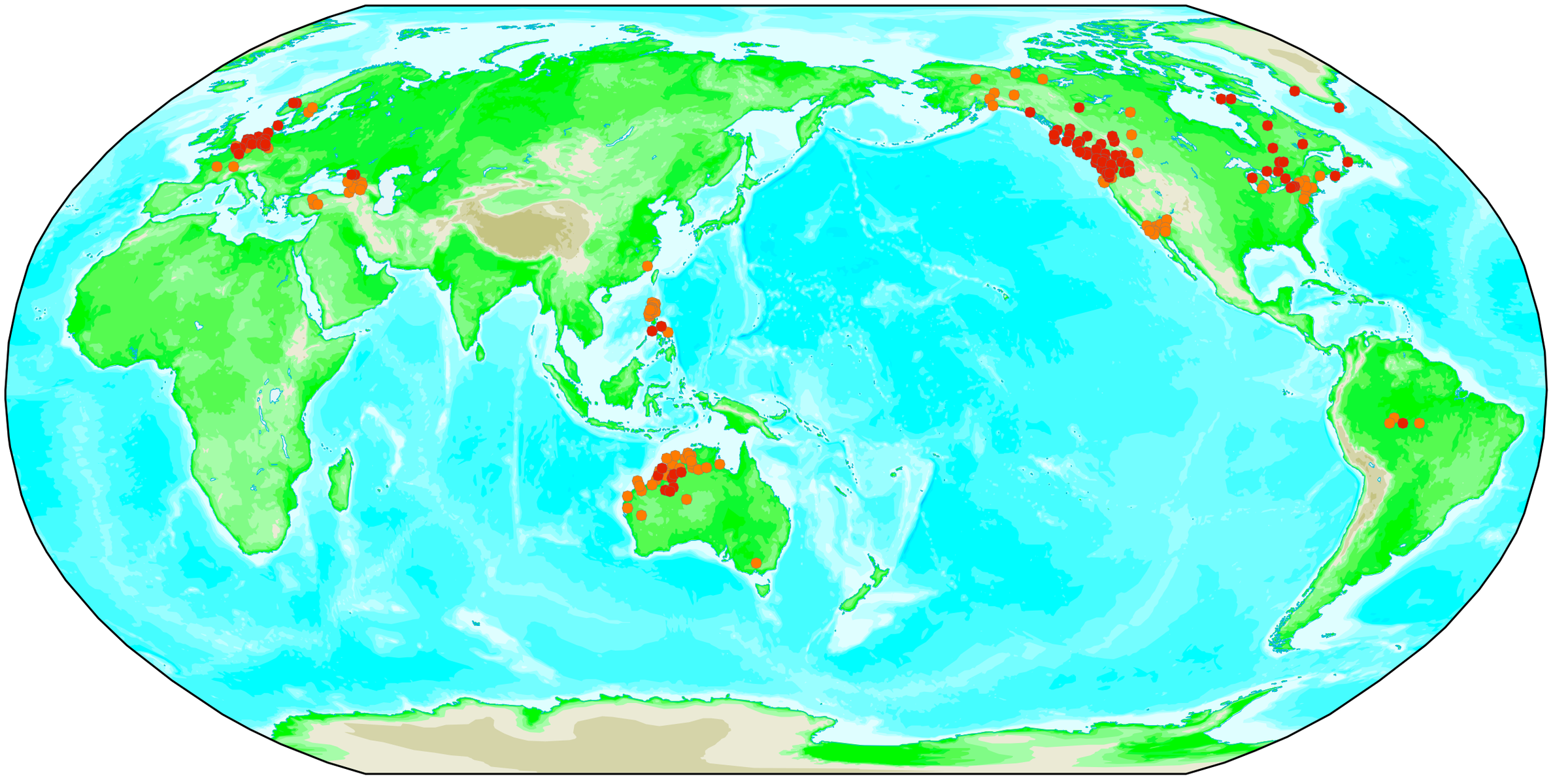
Areal groups

- For each language, take the 30 geographically nearest languages
- Compute *Group Indices of mean Rarity* for the surrounding area of each language
- Such a measure should by definition be areally consistent, but it can indicate geographical centers of 'rarity'

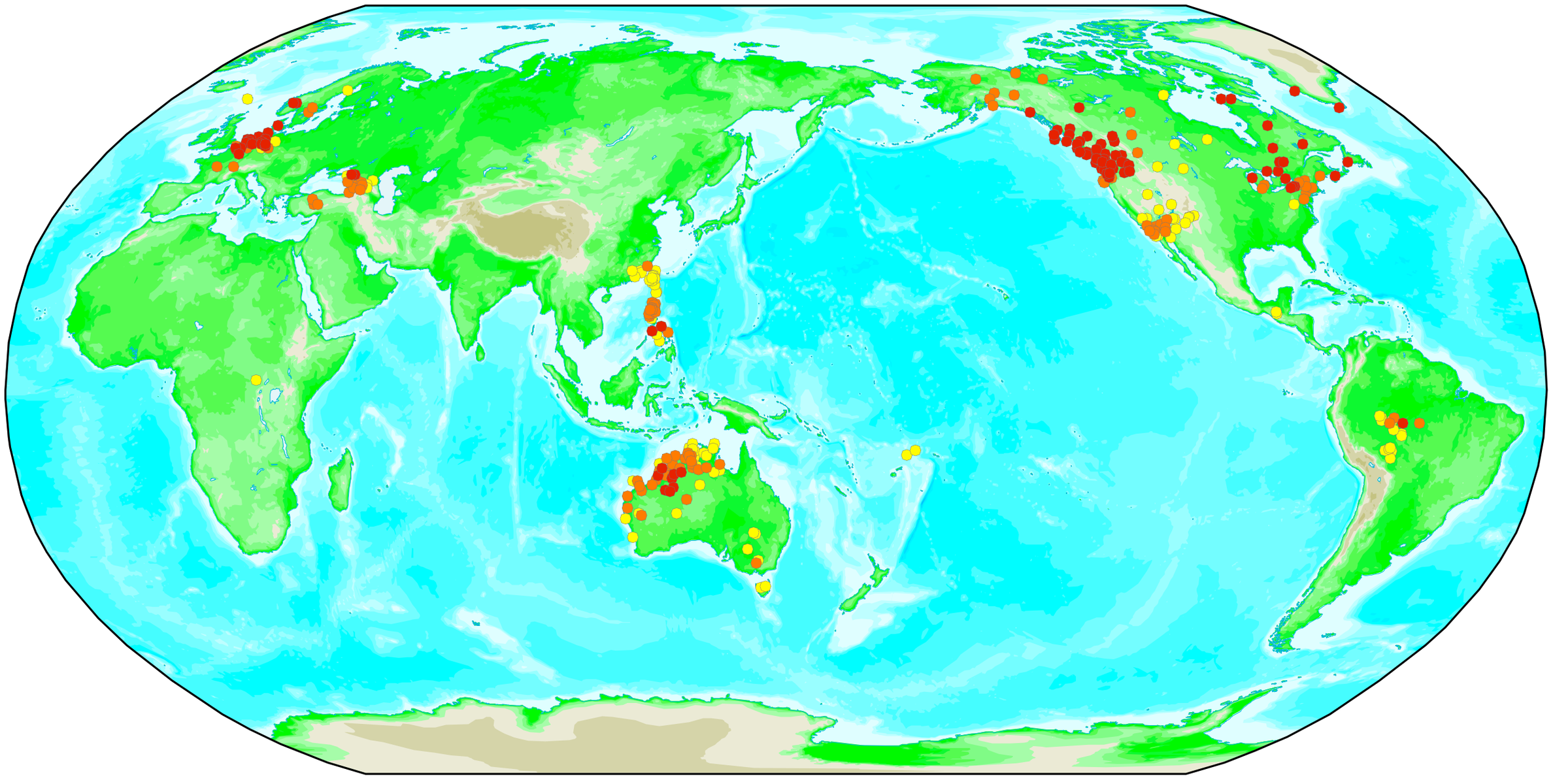
Top 100



Top 200

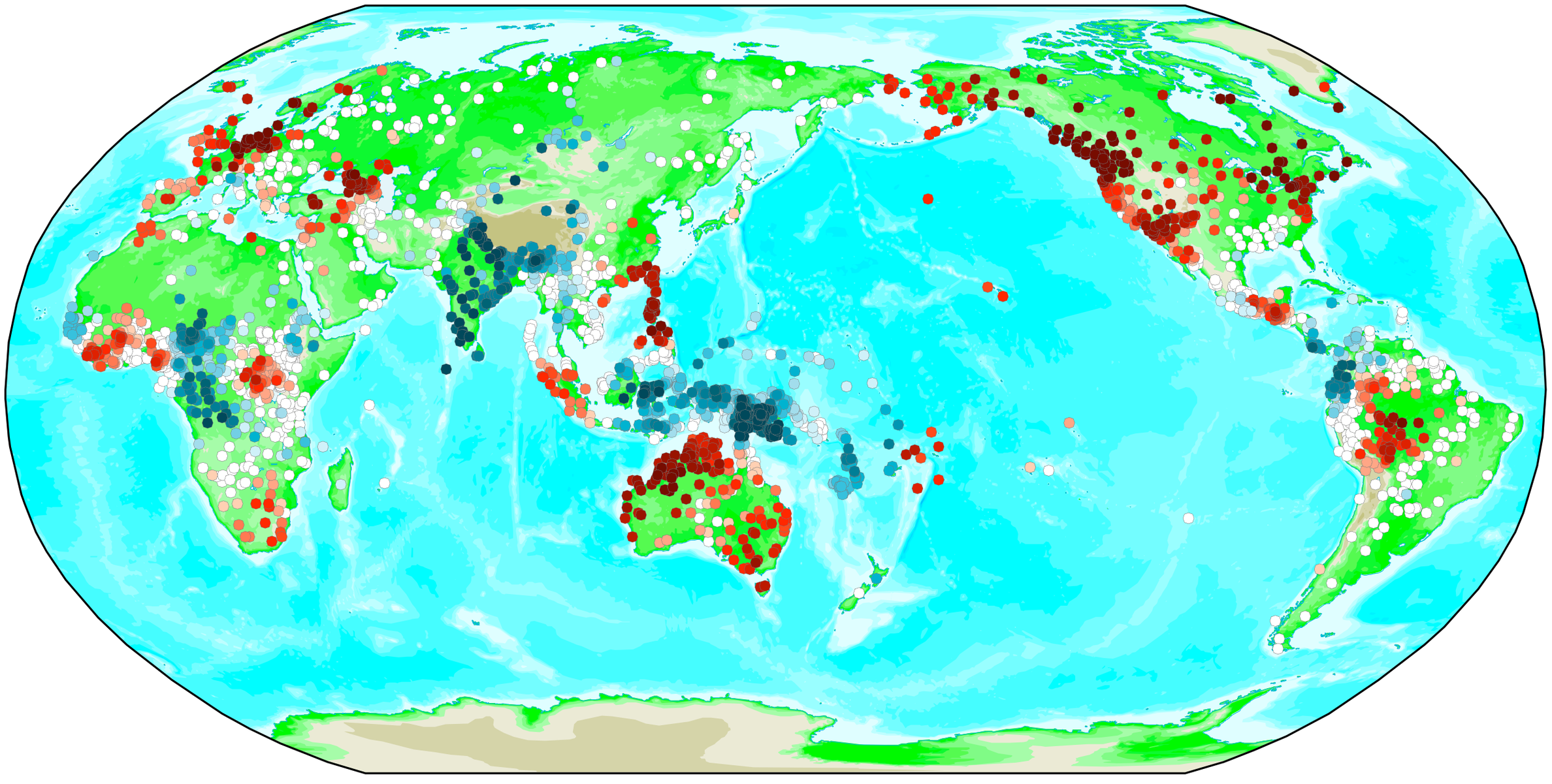


Top 300

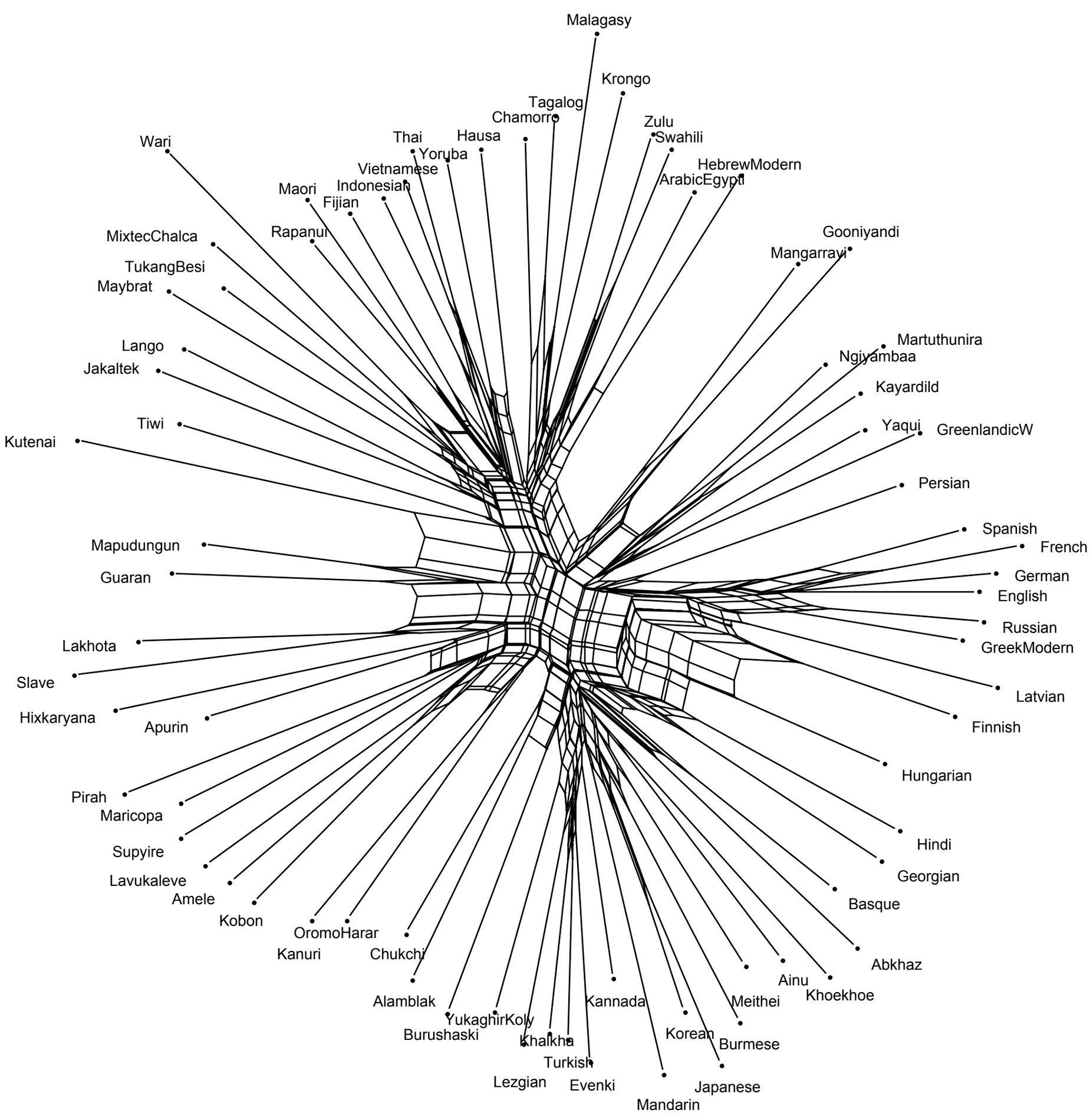


All languages

(red = rare, blue = common)



How **tree-like** is the WALS-data?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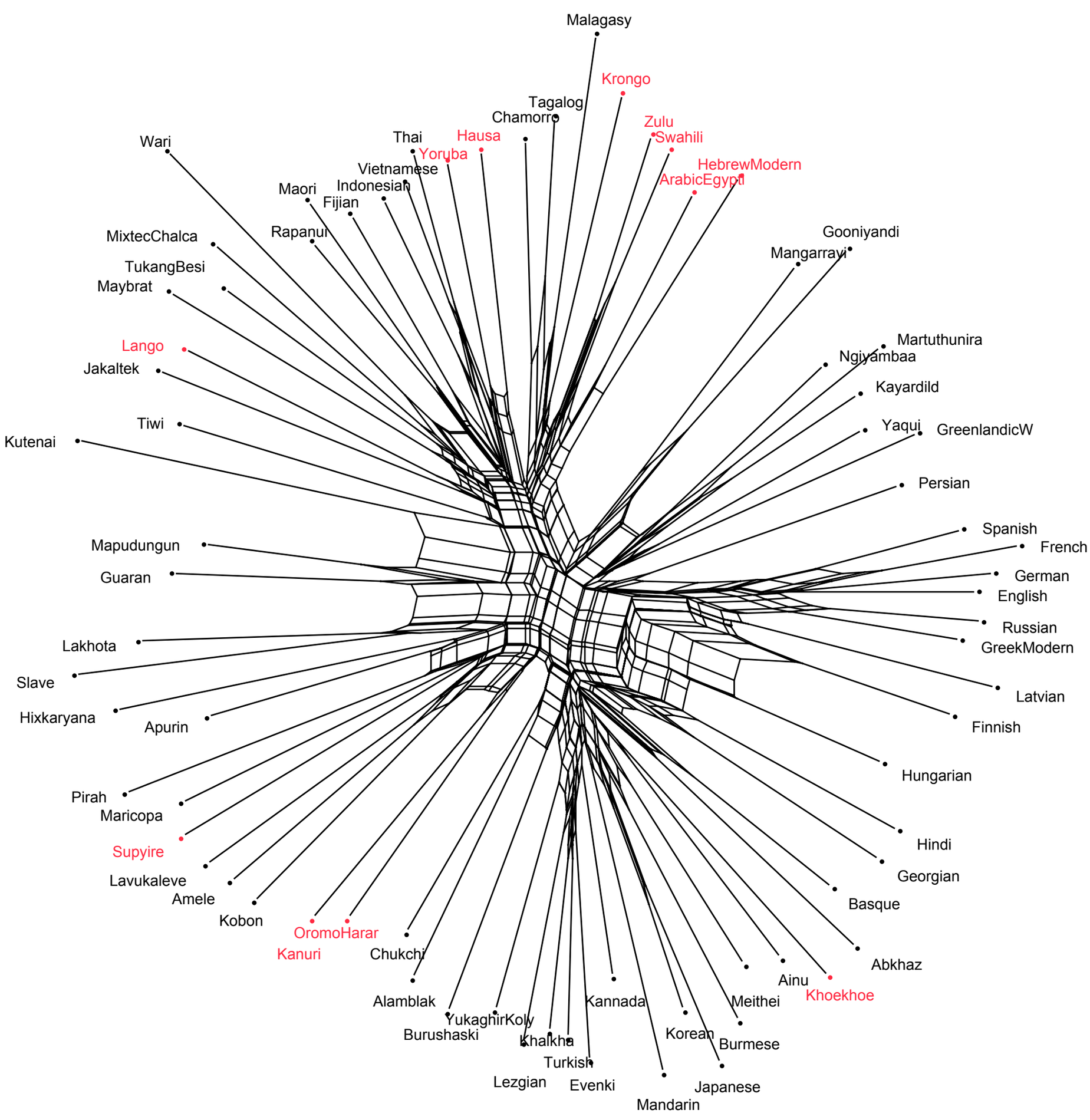
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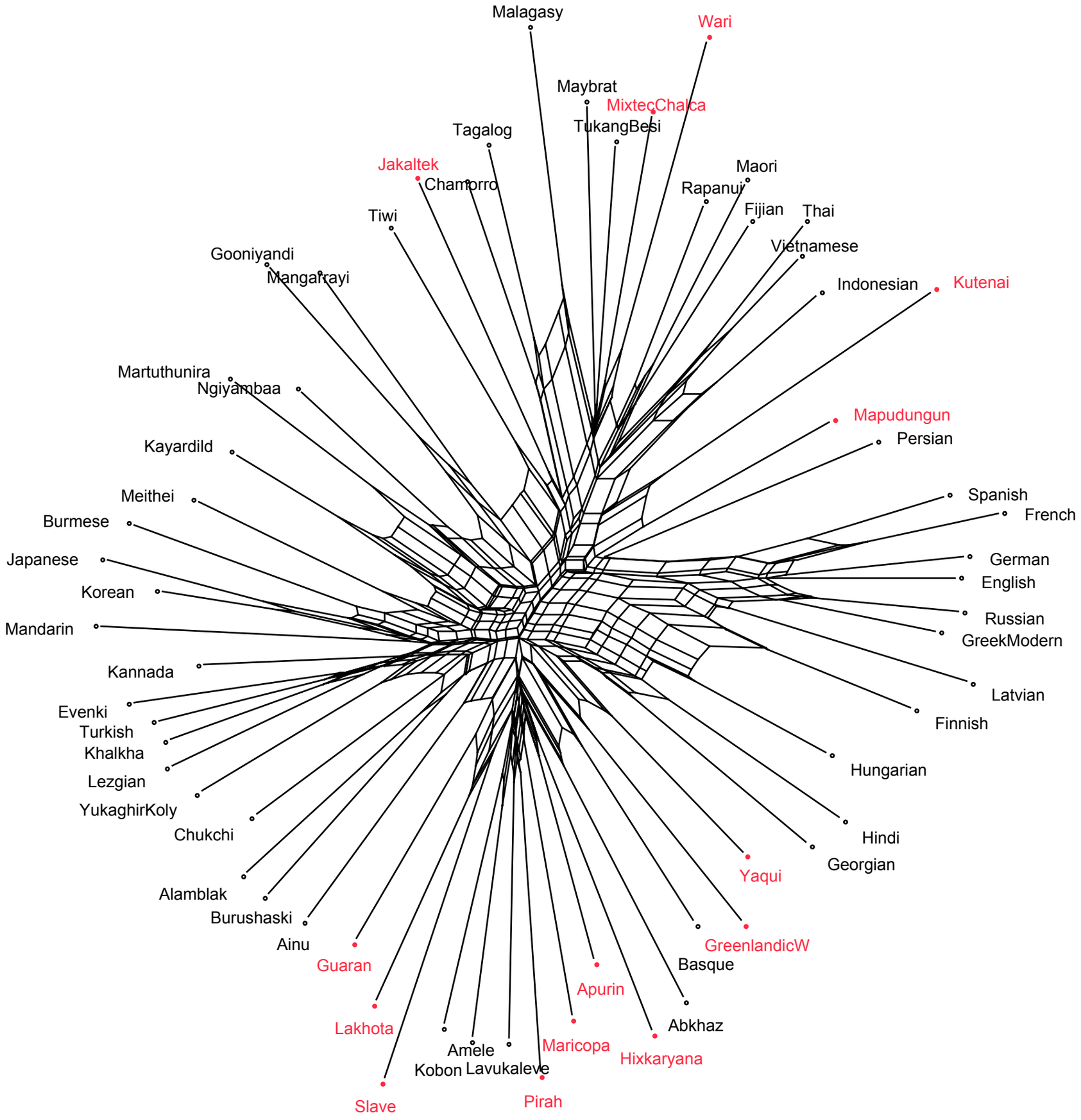
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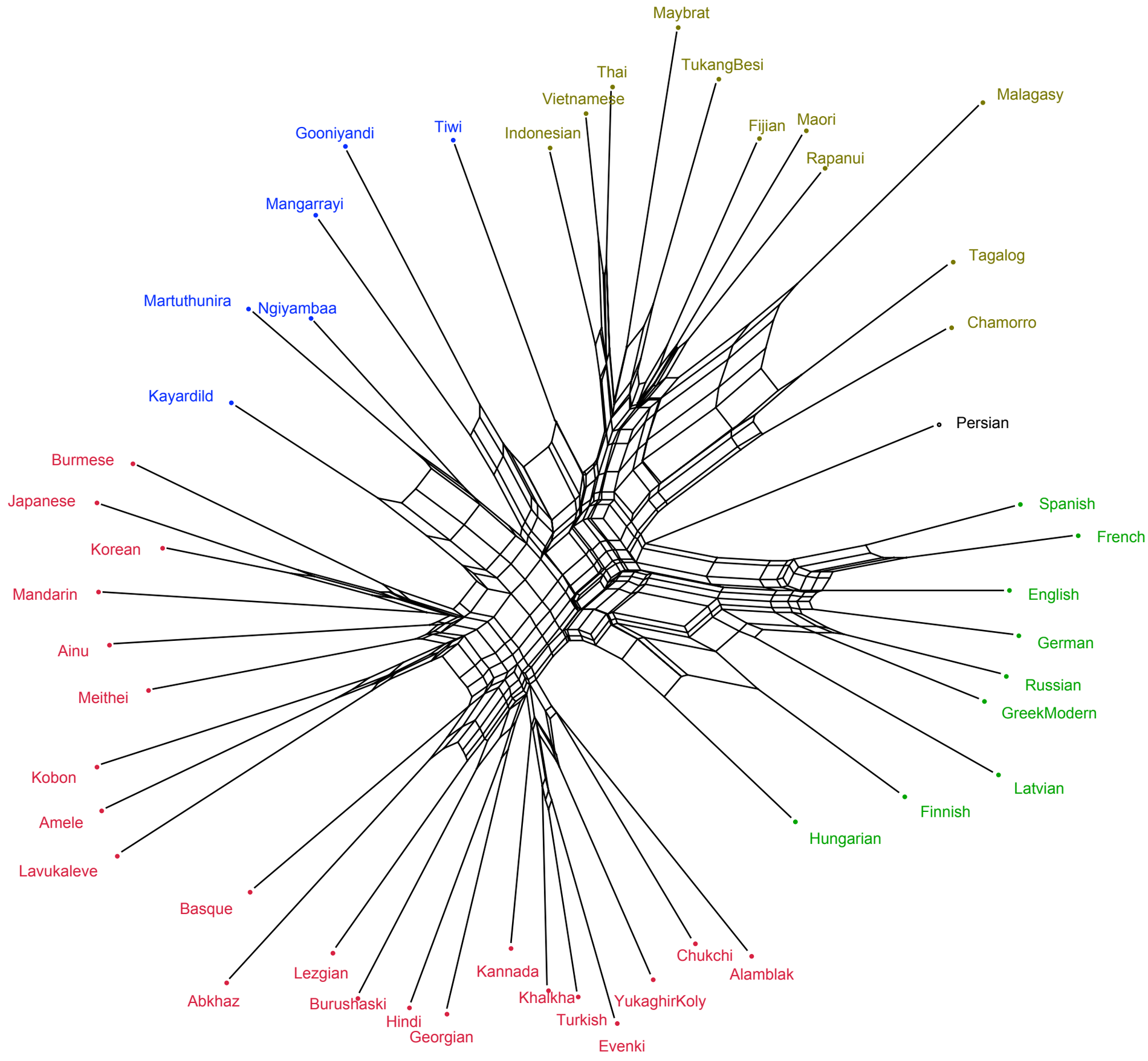
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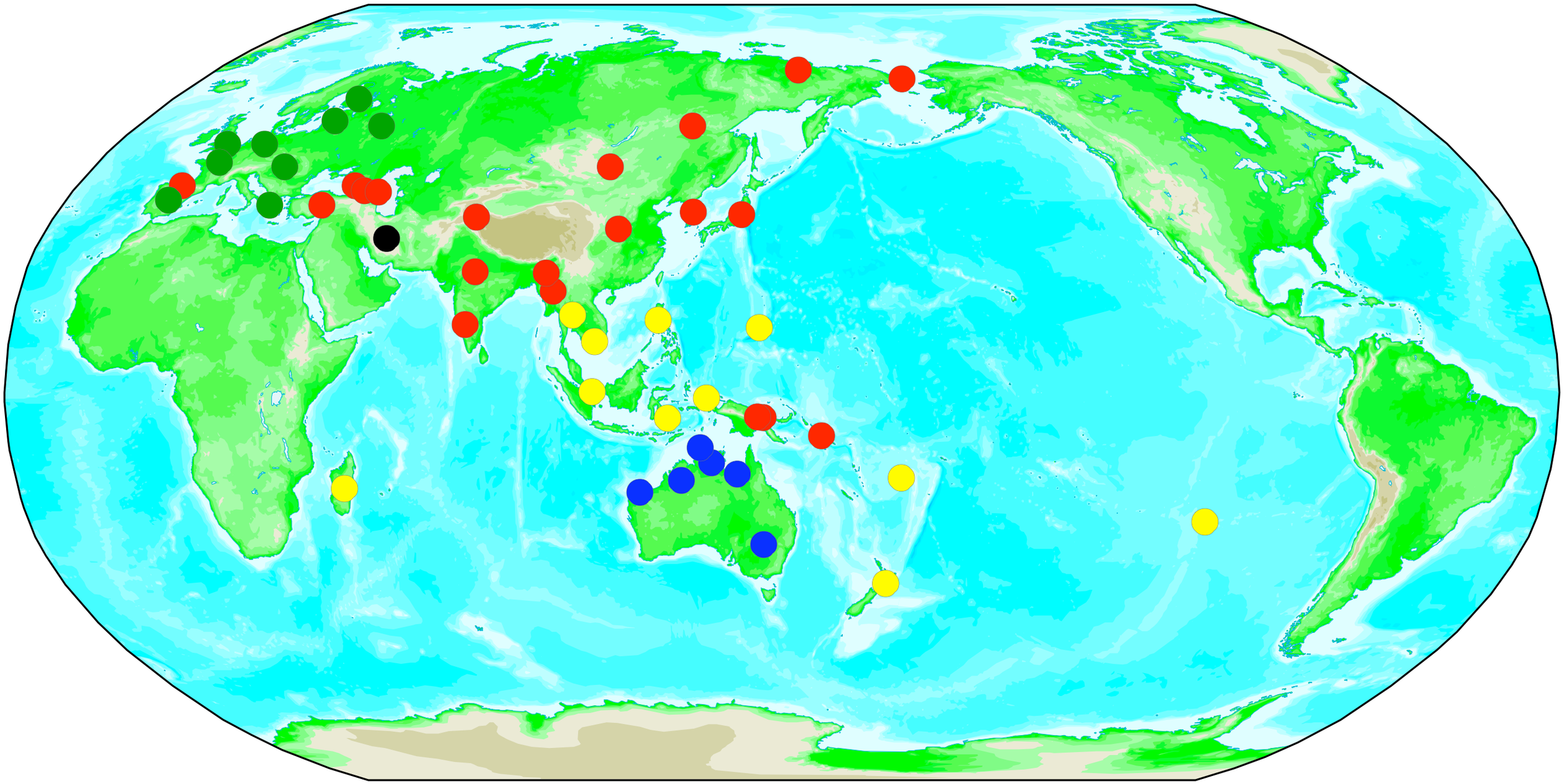
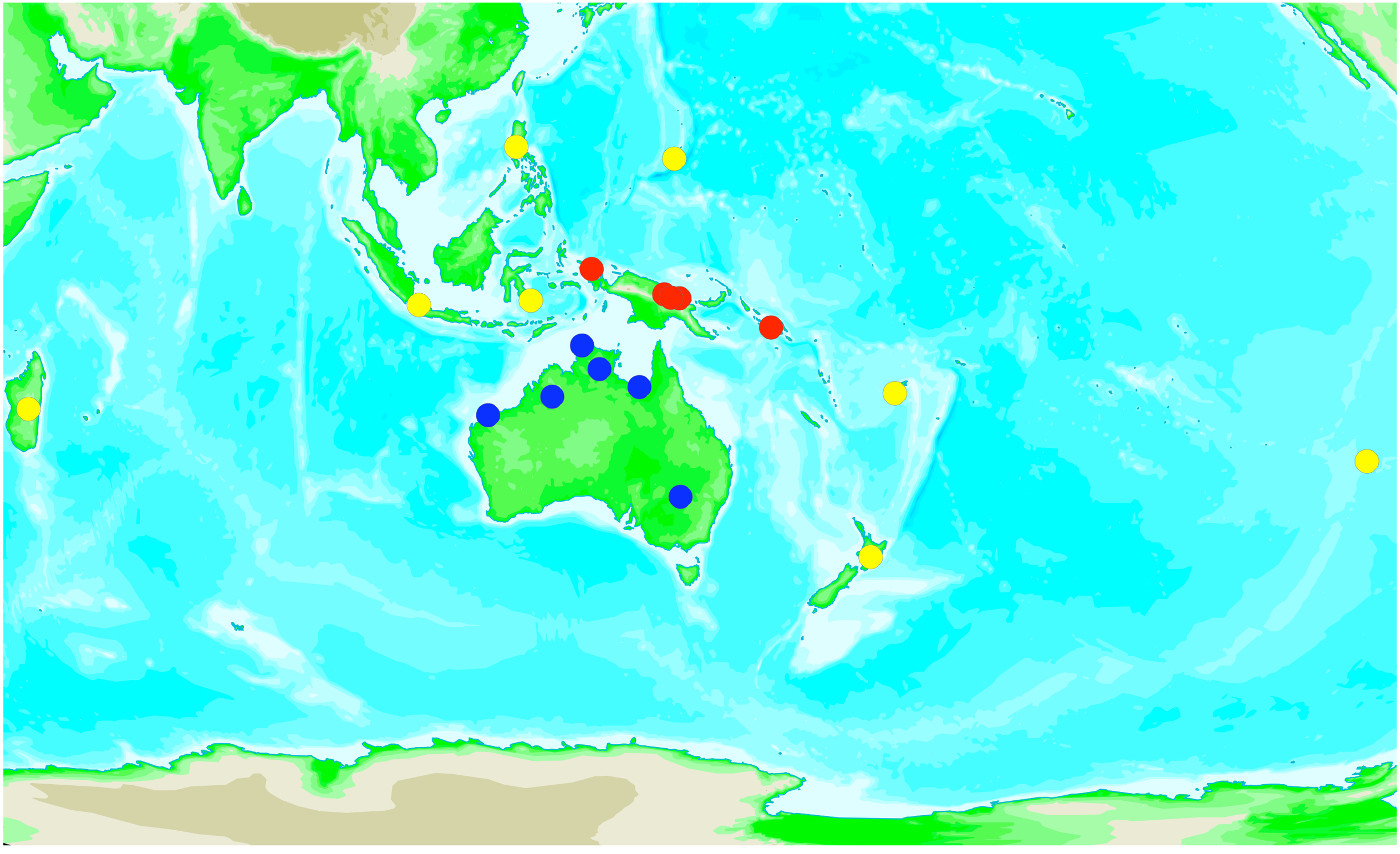
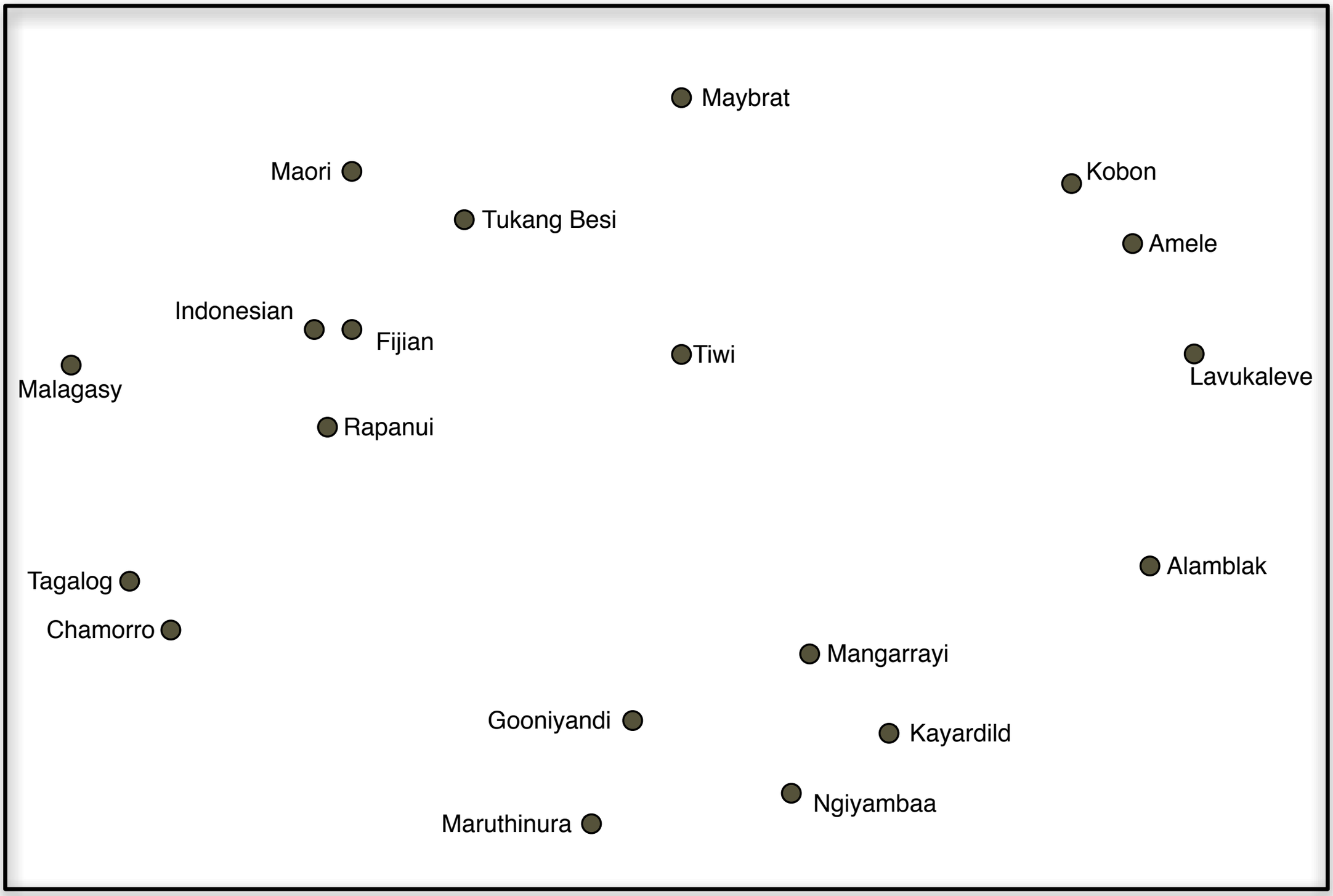


A closer look at geography: the case of **Oceania**



MDS of typological distances



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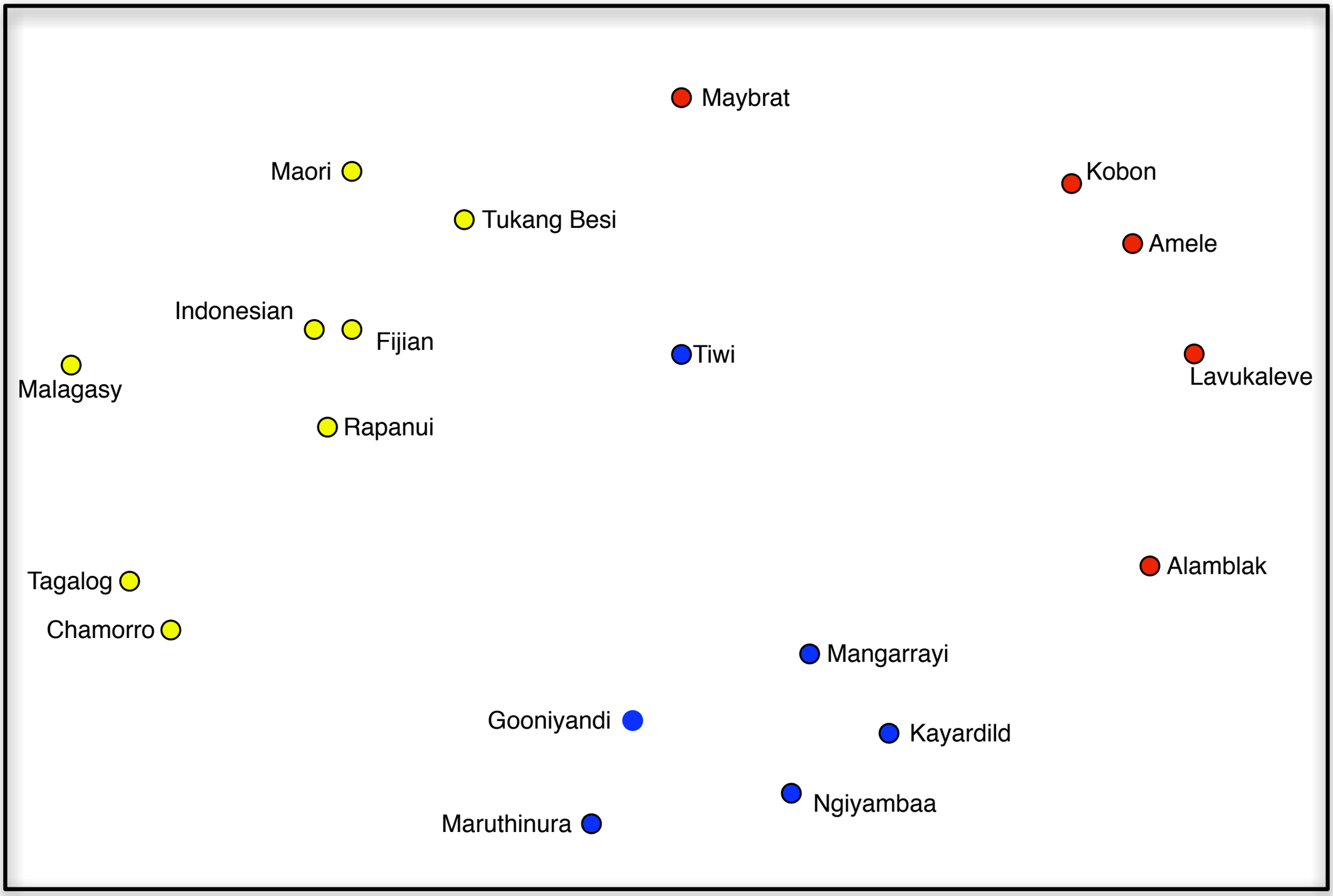

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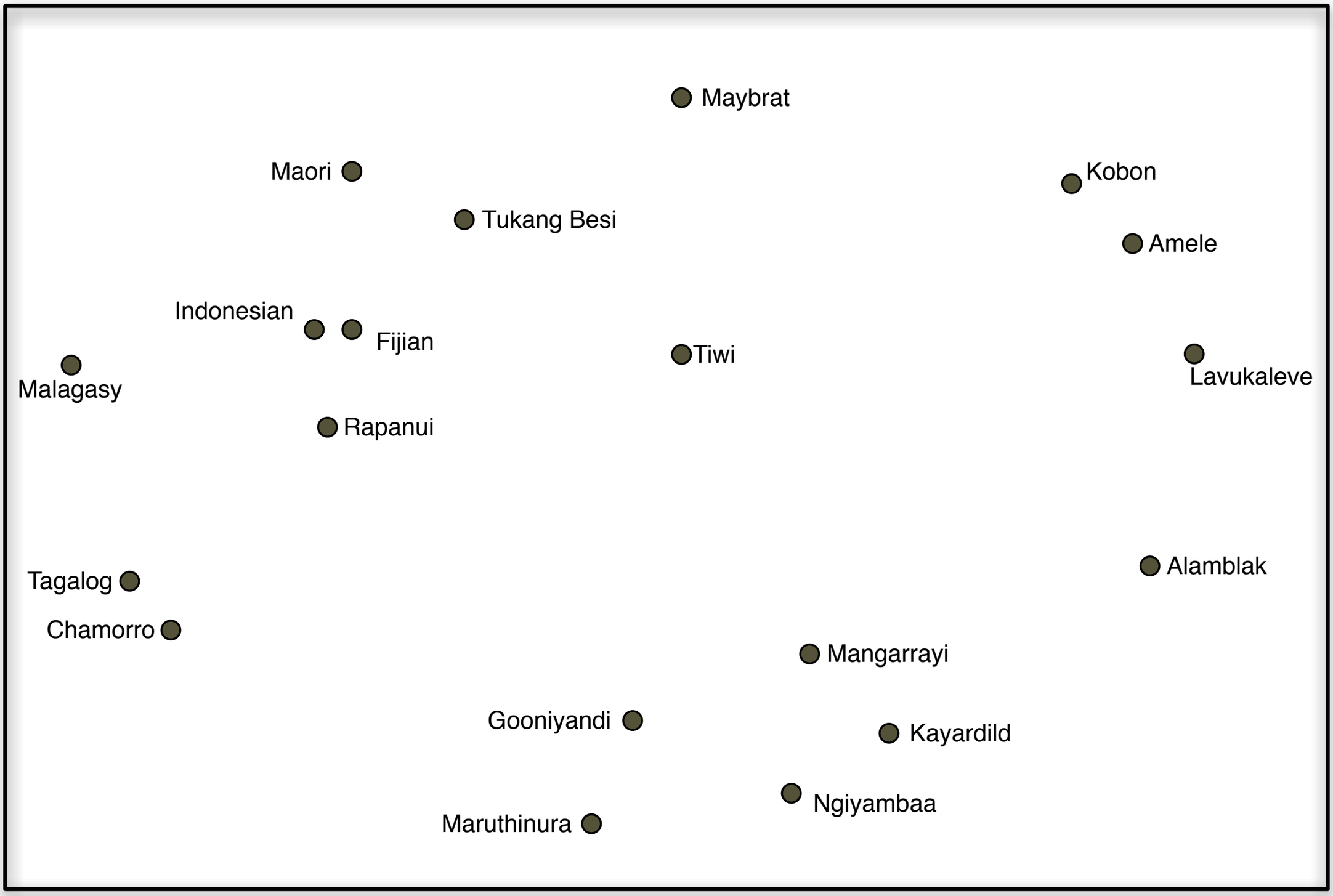
Exploring the language-geography relations

- remove the biggest distances (distortion)
- take the extremes of typology/geography
- very low values: linguistically (too) similar
- very high values: linguistically (too) diverse

MDS of typological distances



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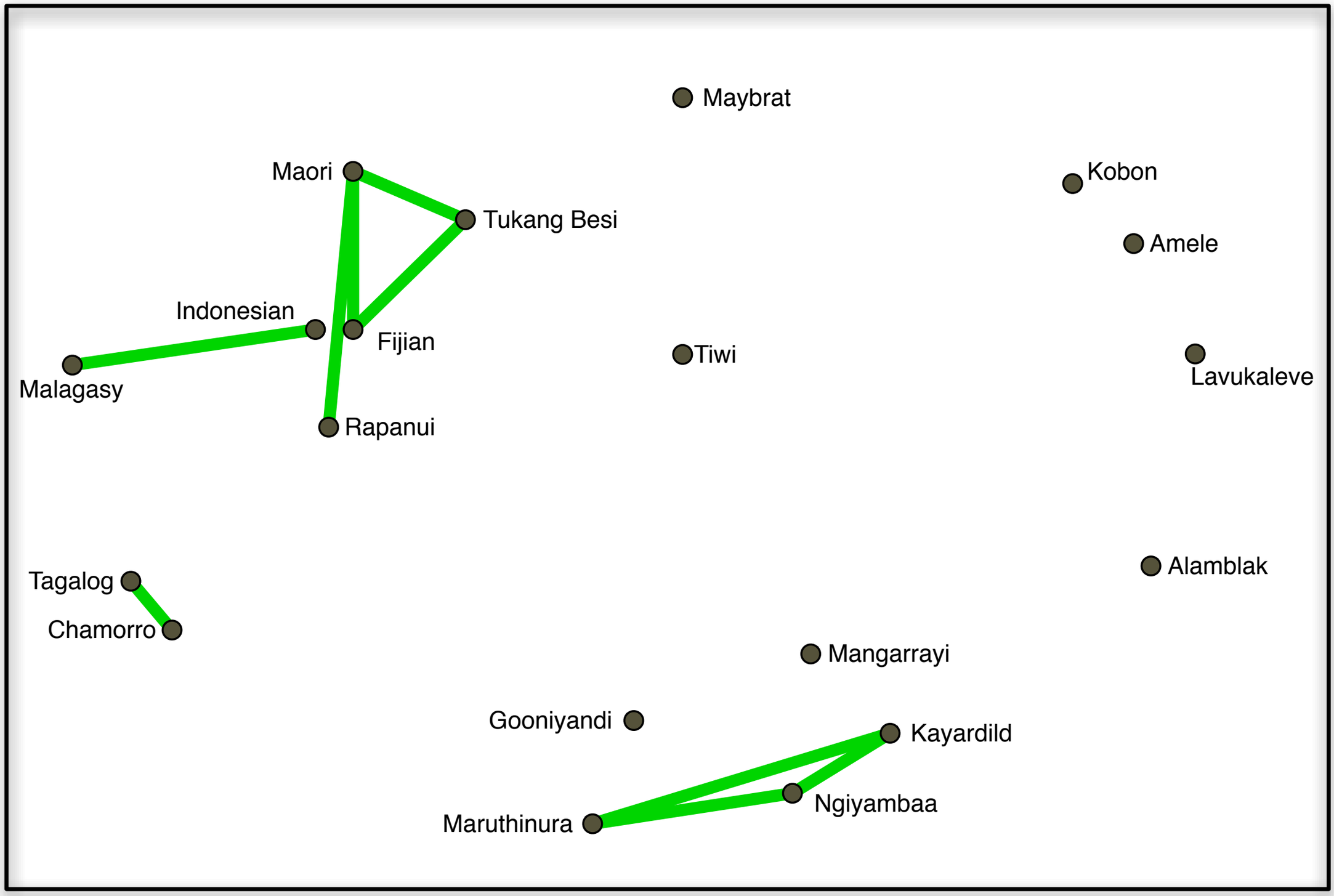
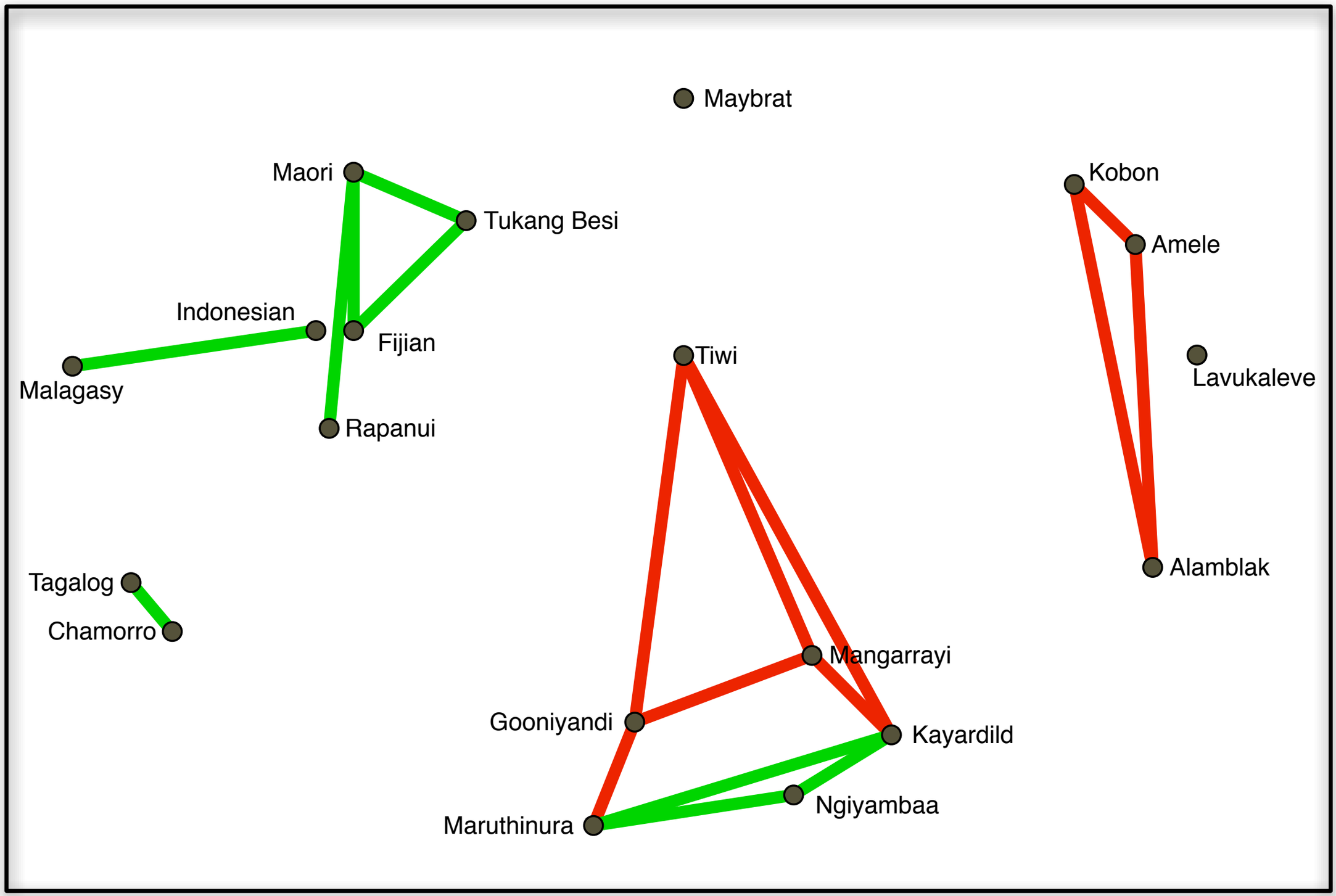


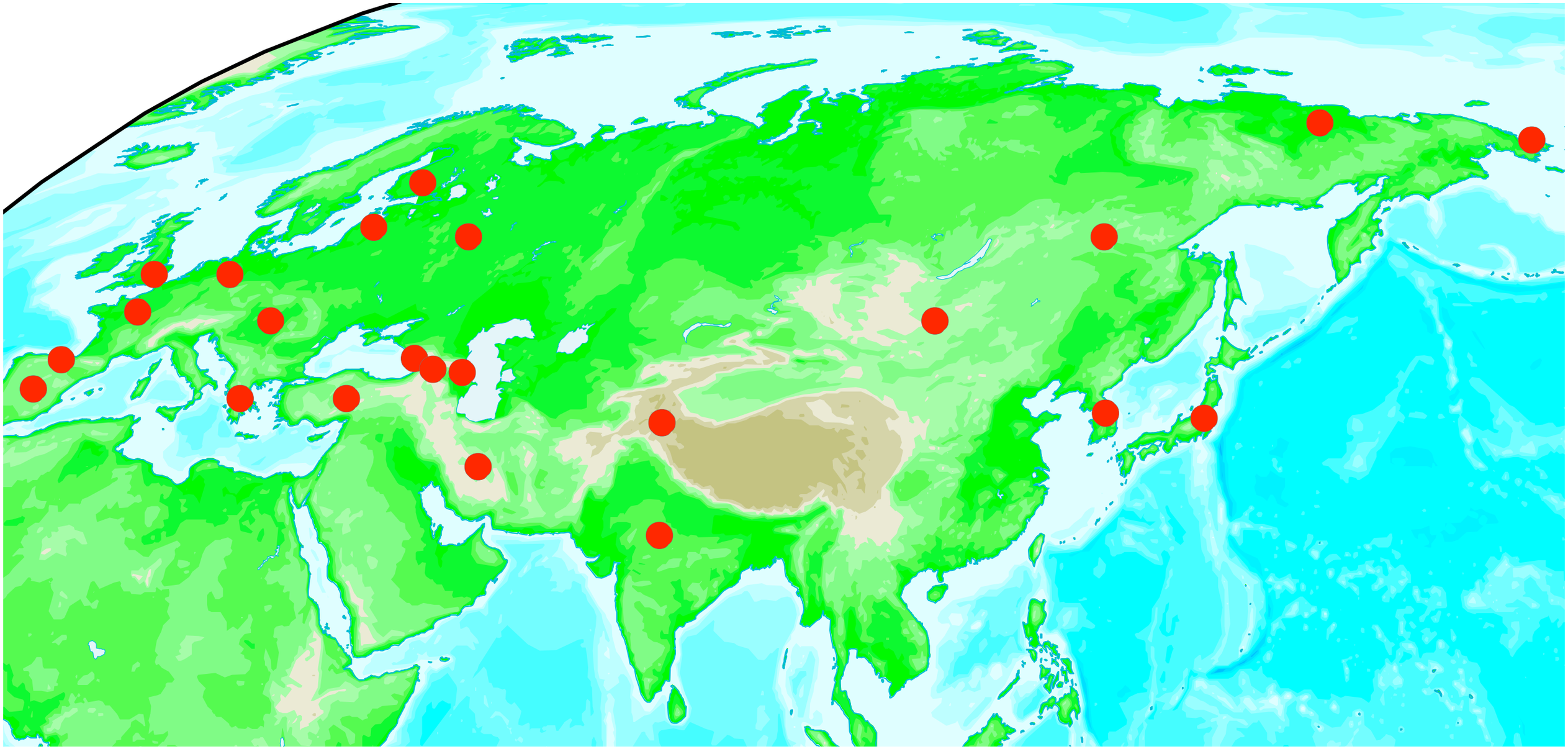
— Pairs of linguistically (too) similar languages

MDS of typological distances



– Do not interpret them as a group

A closer look at geography: the case of **Eurasia**



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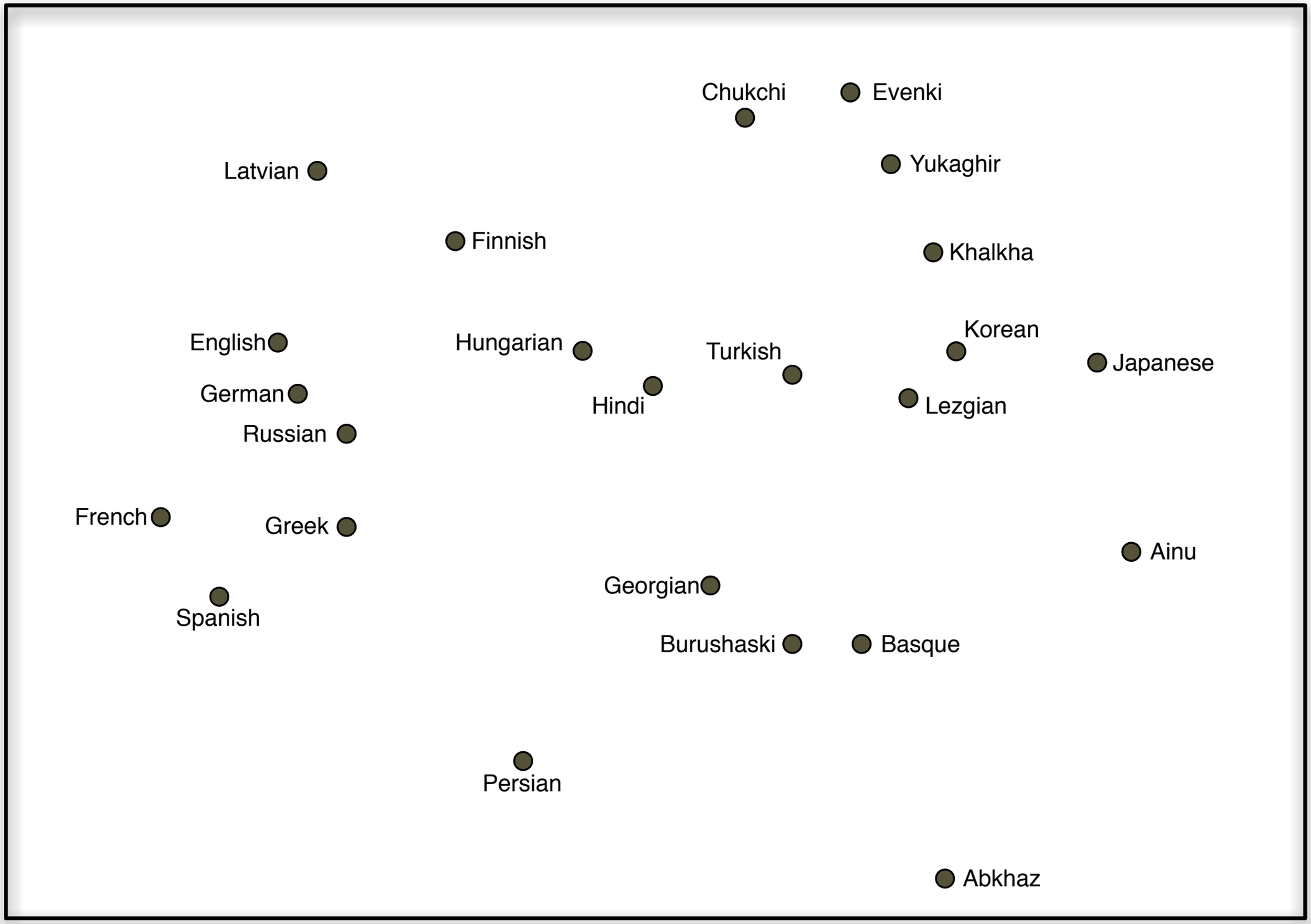

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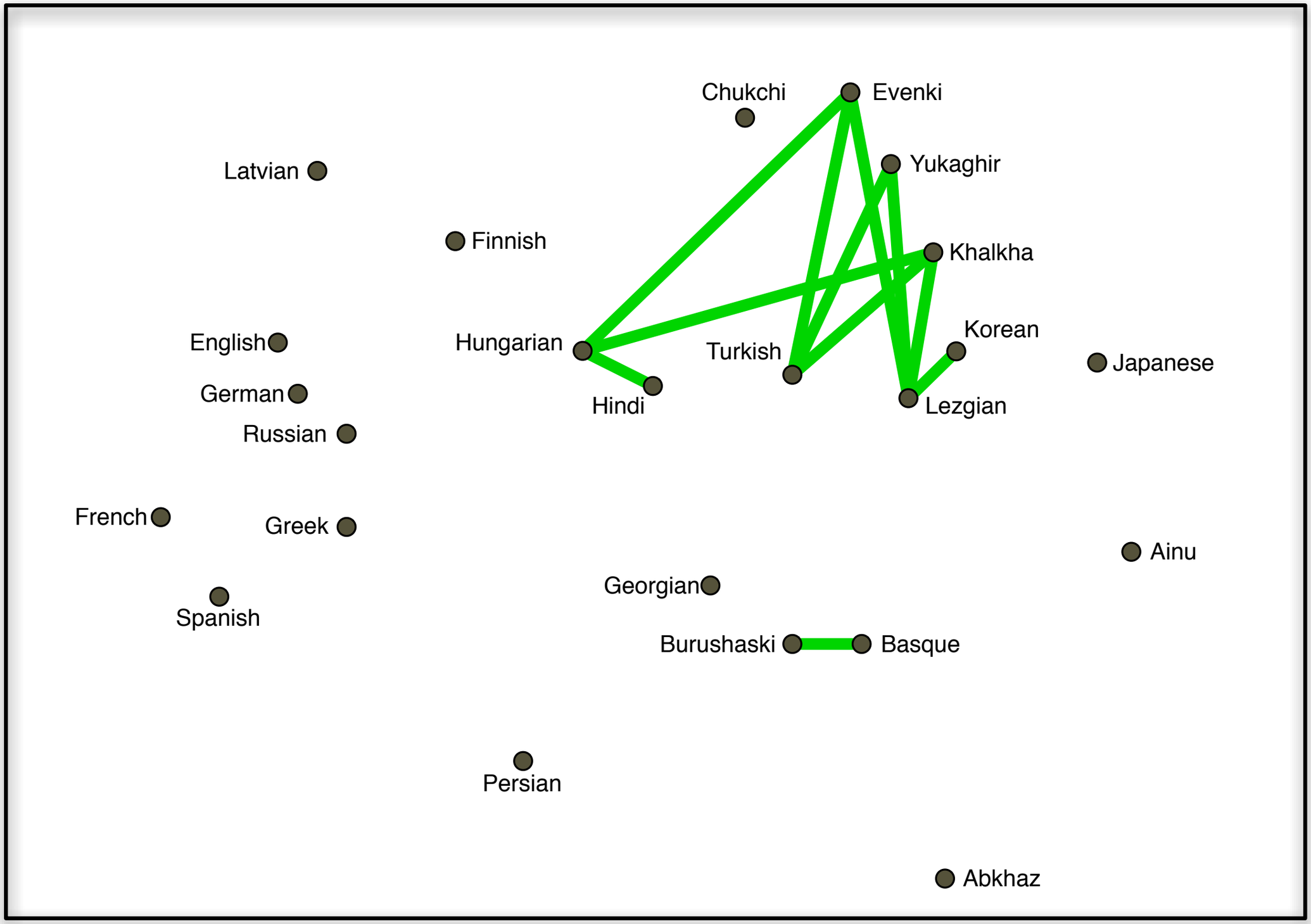

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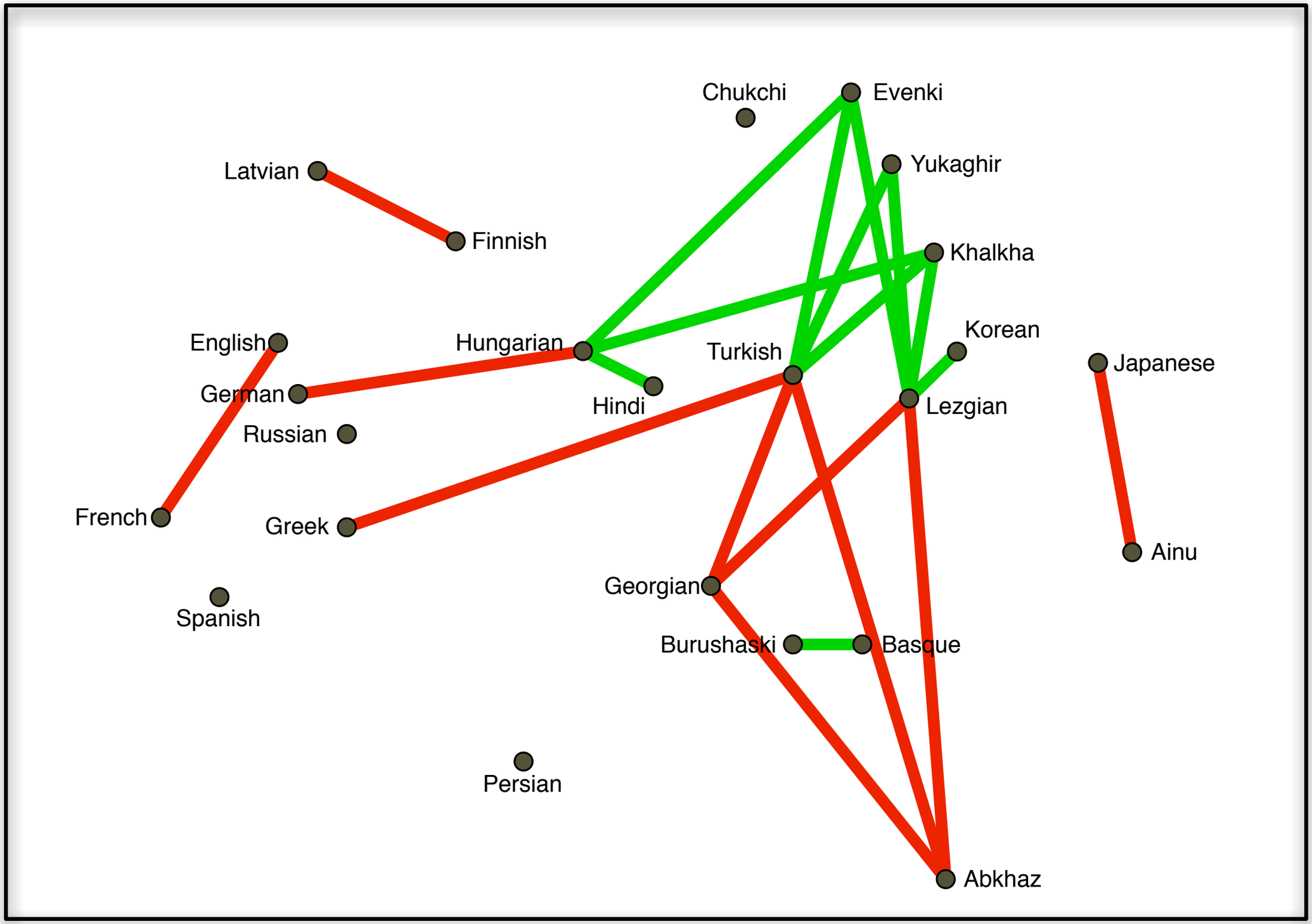


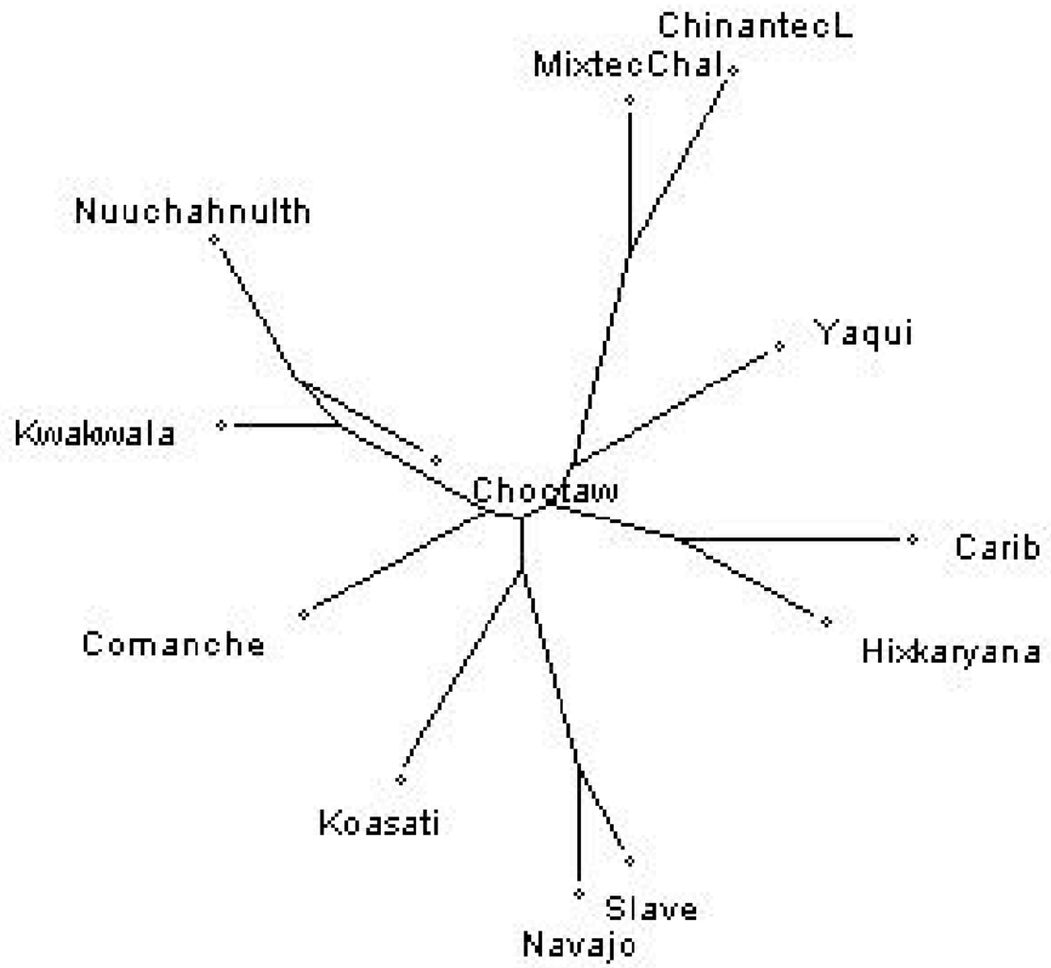
– Do not interpret them as a group

Selection of suitable characteristics

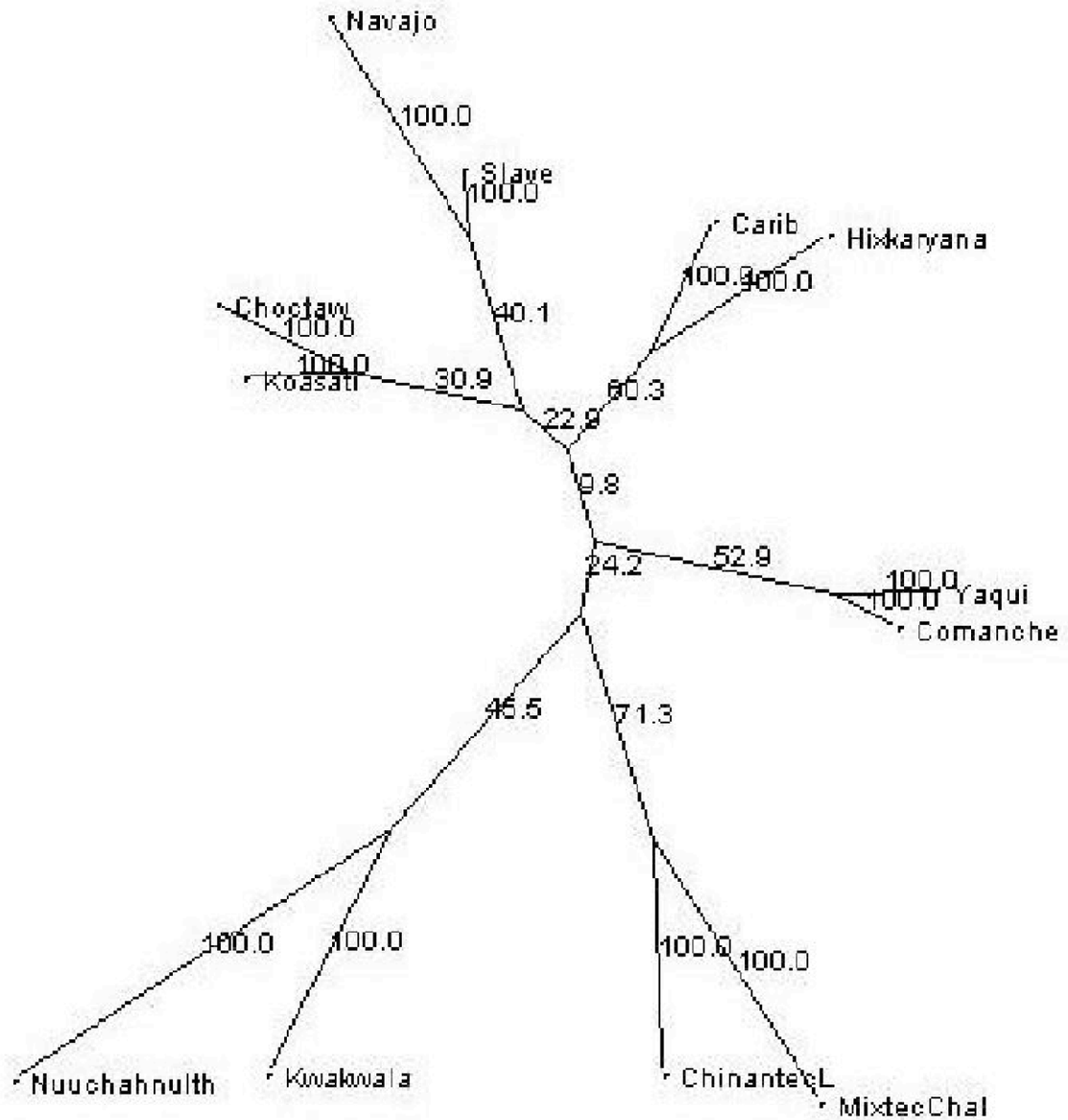
Usable for phylogeny

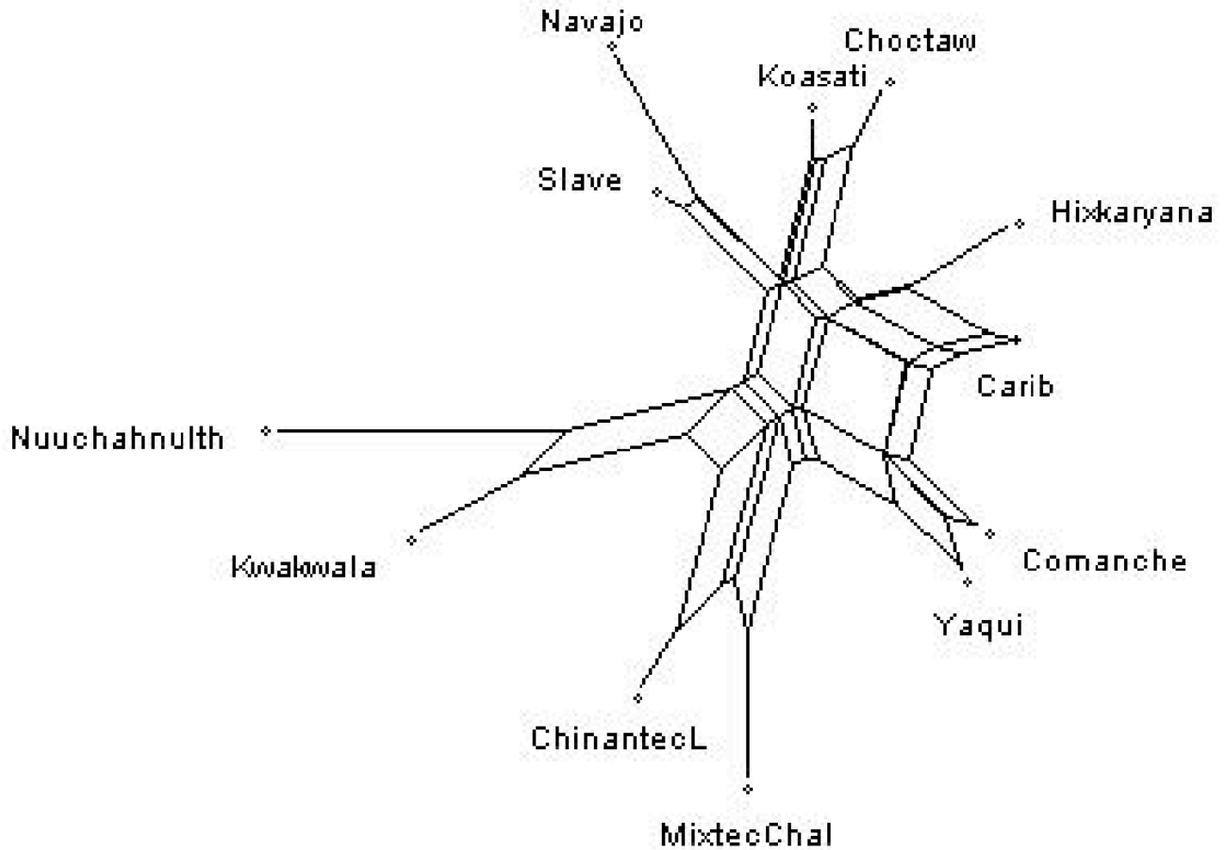
- Various approaches comparing each feature to the complete WALS dataset (A. Dress)
- Consistency/Retentions Indices (R. Gray)
- Consistency-measure within lower-level linguistic subgrouping (S. Wichmann)
- Energy-based consistency on a known partial tree (M. Albu)

Using the WALS data

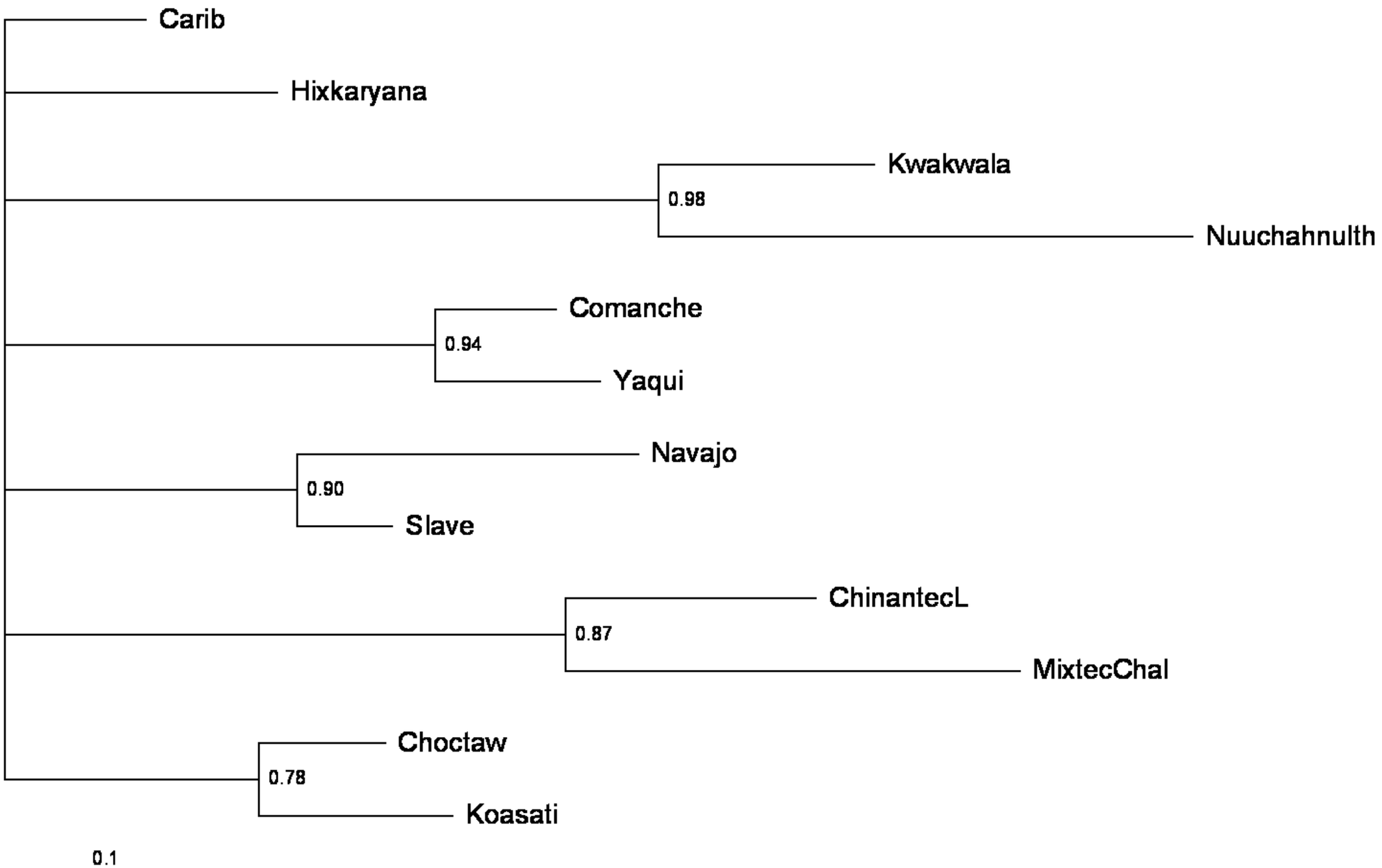


Using only the ‘best’ data is better





Bayesian-approach works best



WALS forever !

Party Downstairs