Understanding landscape through microtoponyms: The case of *Riet* and *Moos*

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Landscape is conceptualized in different ways according to culture and language (Mark and Turk, 2003). Here, we propose using place names to explore landscape concepts using the example of *Riet* and *Moos* referring to marshy areas in Switzerland.
We argue that by exploring the location (where), properties (what) and semantics (how) of those terms, we can understand how these concepts vary in Switzerland.

WHERE?

Data selection :
SWISSNAMES 3D SwissTopo : Selection of *Flurnamen* and *Localnamen*
Microtoponyms containing *Riet*, *Ried* and with *Moos*, *Mos*, *Möös* and *Mös*
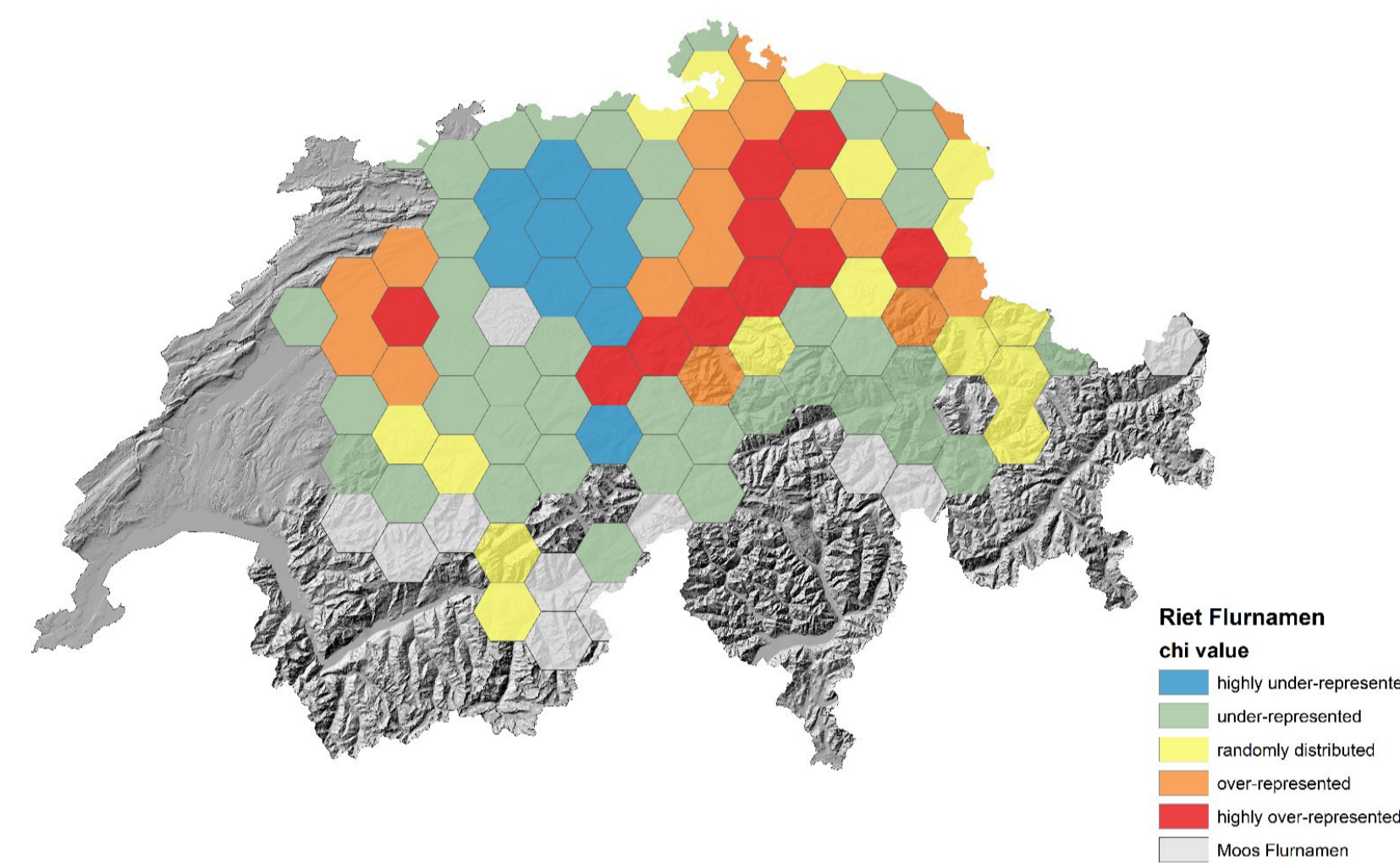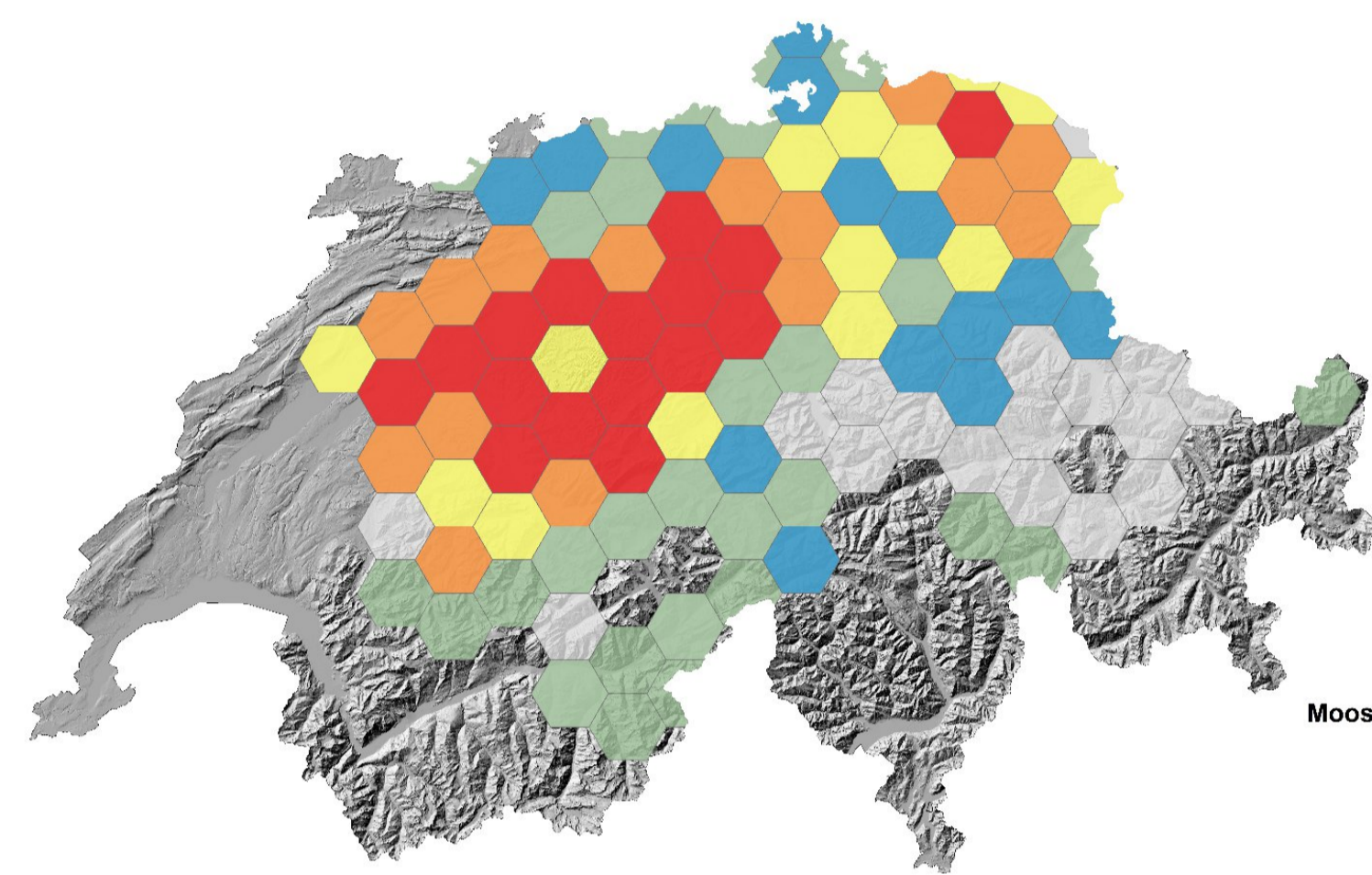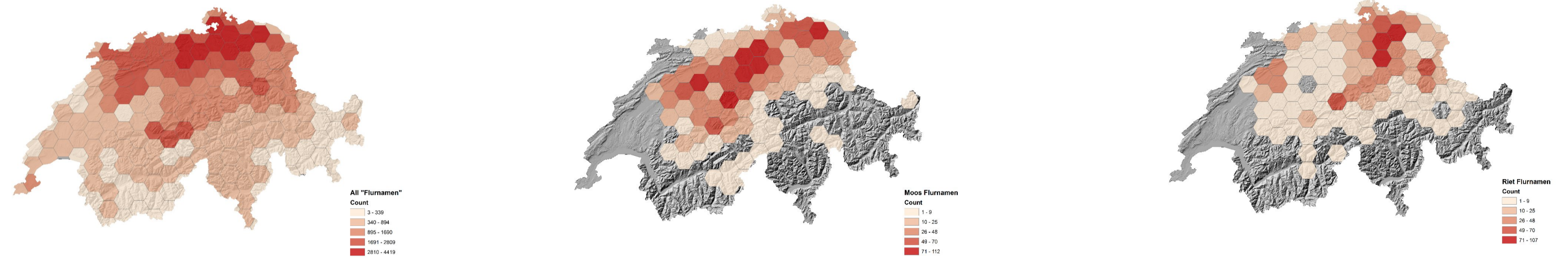
Spatial distribution : Exploration of microtoponym density using χ-value based on overall microtoponym density:

$$\frac{Observed - Expected}{\sqrt{Expected}}$$

Result: Both are over-represented in the Swiss Mittelland, but with distinct distributions. *Moos* is over-represented in the west, while *Riet* is used more in the east.

WHAT ?

Physical properties : We used terrain models to extract average elevation (H) and the and Topographical Wetness Index (TWI).
Results: *Moos* broadly follows the general morphology of Switzerland. However, *Riet* has a cluster of higher elevations and lower TWI in the north west, perhaps indicative of forest clearance.
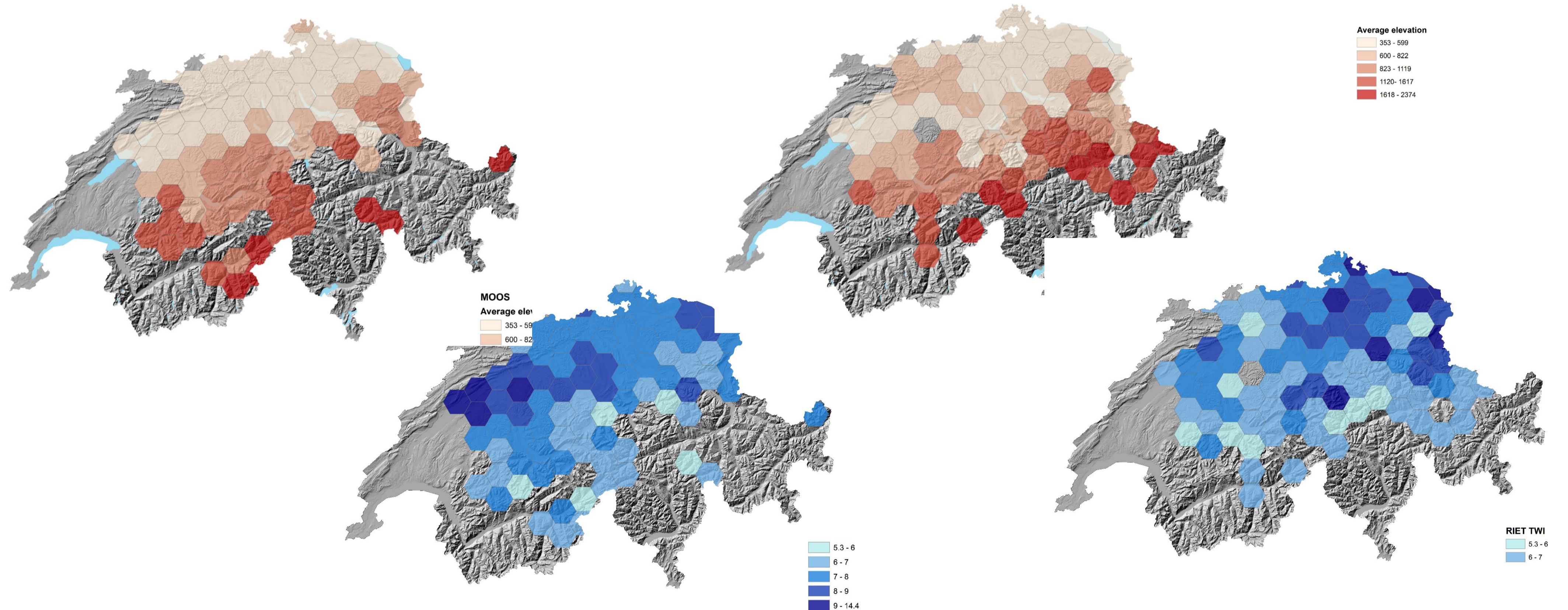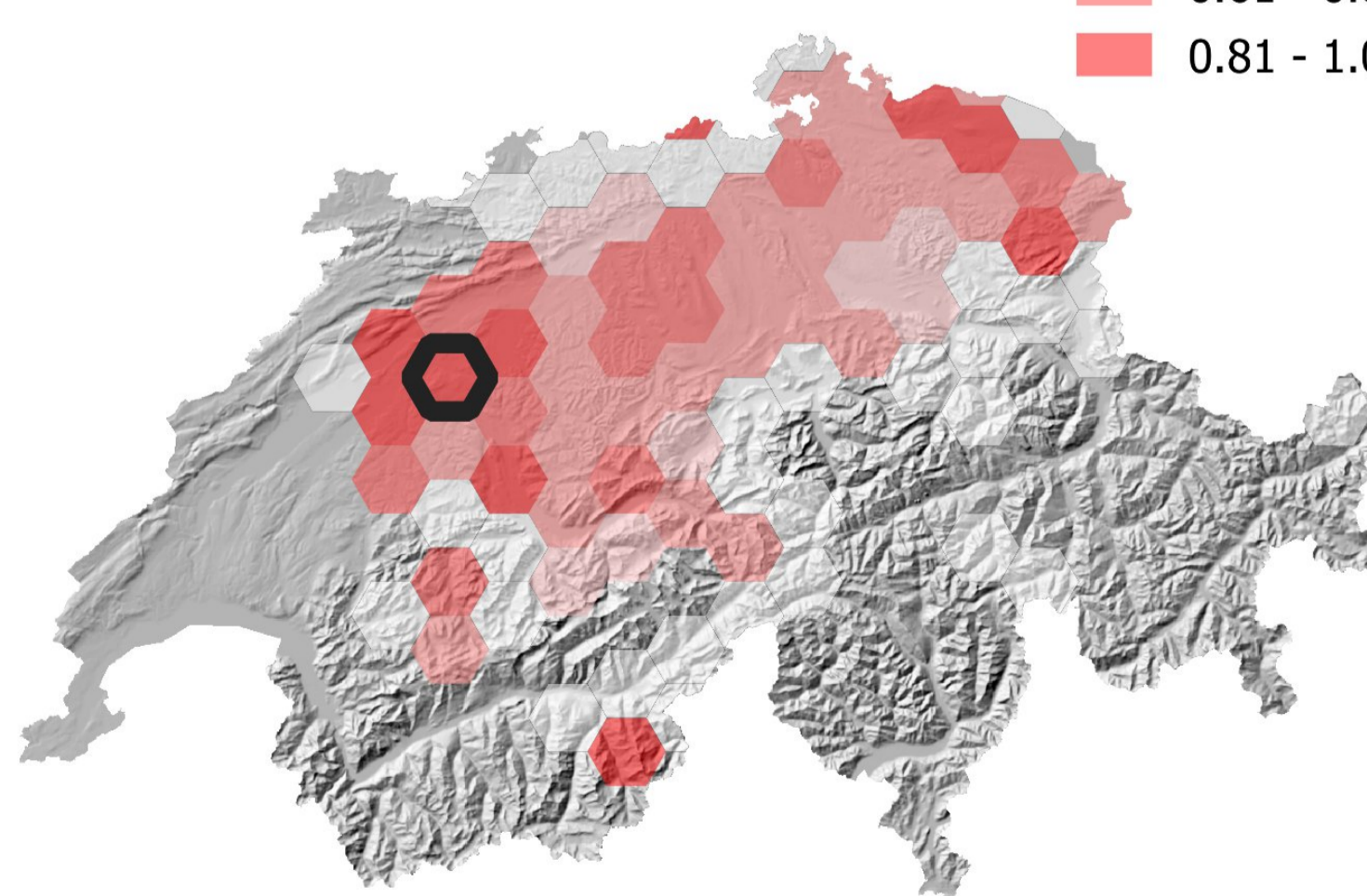

HOW ?
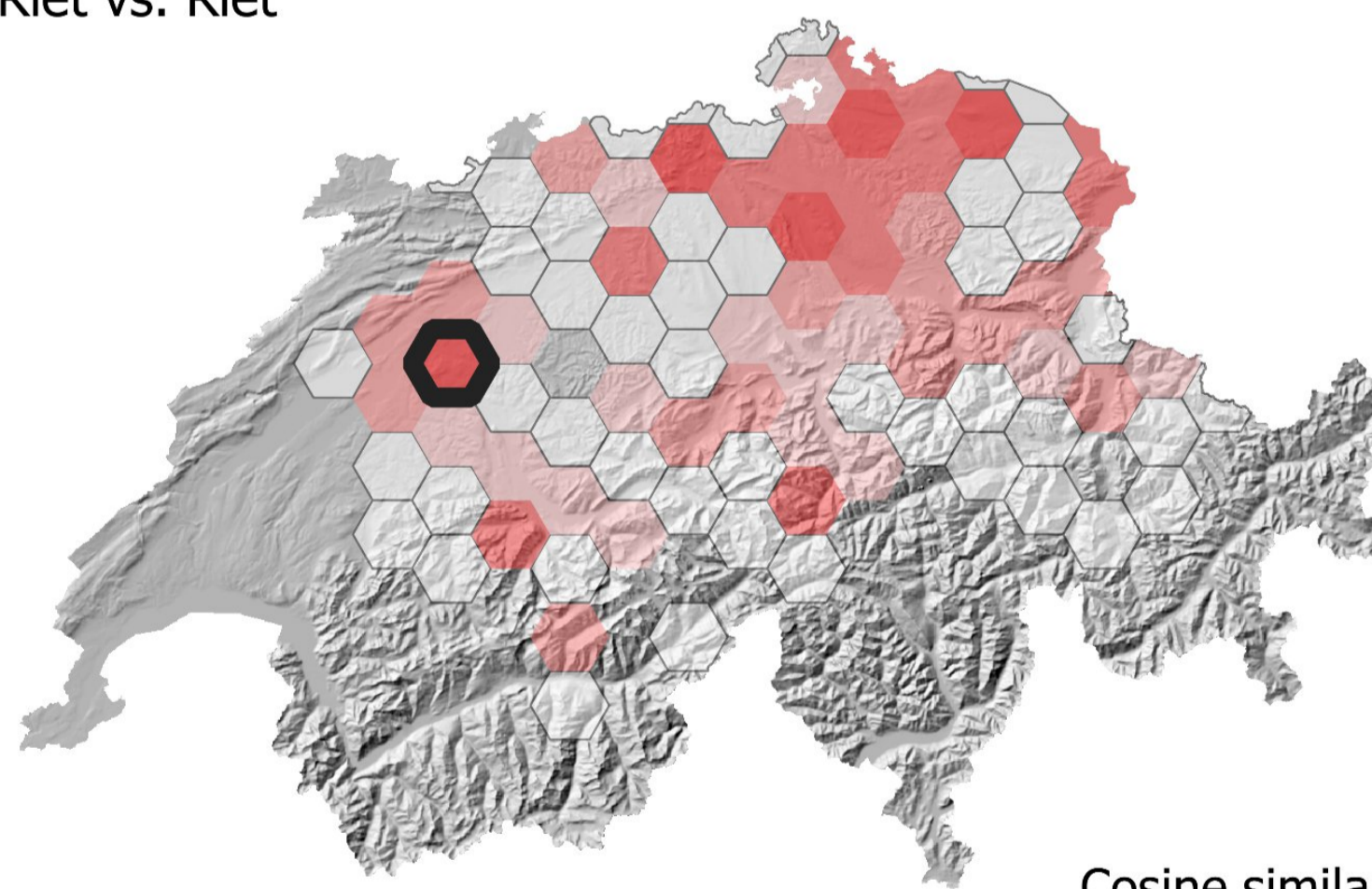
Semantics: We extract meaningful elements (e.g. *Gross*, *Wolf* or *Grun*) associated with *Riet* and *Moos* and classified them according to Gammeltoft's taxonomy (2005).
Using cosine similarity we can compare properties of hexagons according to the taxonomy in space with respect to a specific location.
Results: *Moos* shows strong spatial autocorrelation, following the 1st law of geography with higher similarities found close to the source hexagon (Tobler, 1970). However, *Riet* shows a different pattern, supporting the argument for forest clearance in some eastern part.
Moreover, the word clouds of the individual terms per taxonomy class show specificity for the terms appearing at a very low frequency and a high similarity for the most frequent ones. This suggests that even if the most common terms are shared they could have a distinct frequency highlighted different general aspect of this landscape and the local specificity may be explored using the rare associated terms.

Riet vs. Riet

Moos vs. Moos

Taxonomy with the meaningful elements associated with *Moos* in black and *Riet* in orange: "Usage" and "geographical feature"

Conclusion: *Riet* and *Moos* show distinctive spatial and semantic patterns in their use in Switzerland. Furthermore, the properties associated with *Riet* suggest two distinct patterns of use, with differing spatial footprints. Large collections of microtoponyms data enable new approaches to the study of microtoponyms integrating a variety of spatial data sources.

References:
- Mark, D. M., and A. G. Turk. 2003. Ethnophysiography. Paper presented in: Workshop on Spatial and Geographic Ontologies, Kartause Ittingen, Switzerland, September 23.
- Gammeltoft, P. 2005. In Search of the Motives behind Naming. A Discussion of a Name-Semantic Model of Categorisation. Paper presented in Proceedings of the 21st International Congress of Onomastic Sciences, Uppsala, 19-24 August 2002.
- Tobler, W. R. 1970. A computer movie simulating urban growth in the Detroit region. *Economic geography*, 46(sup1), 234-240.