

Geomorphons Austria

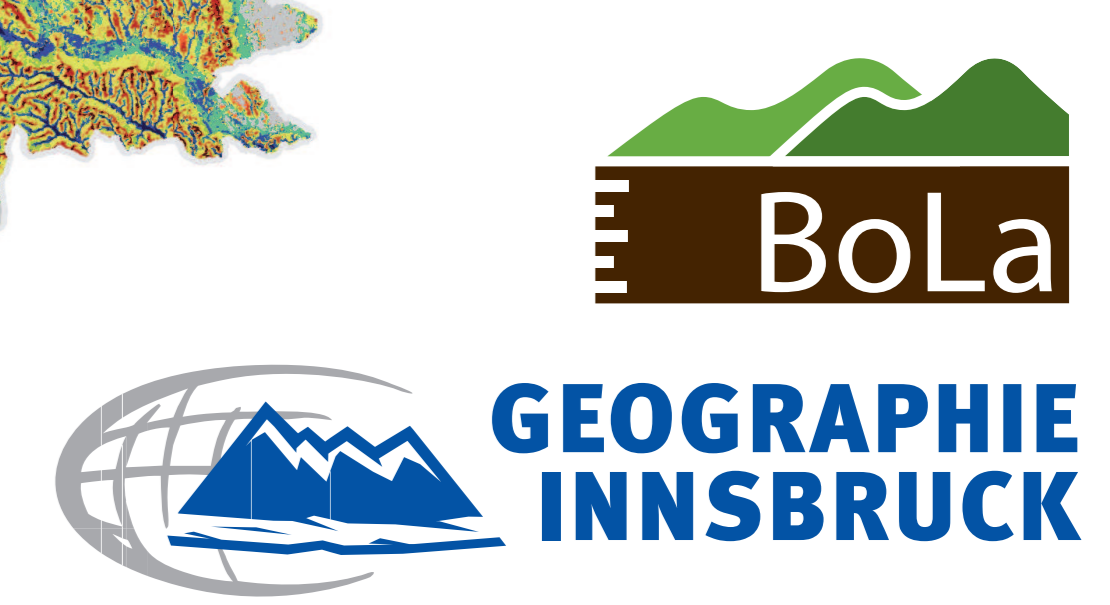
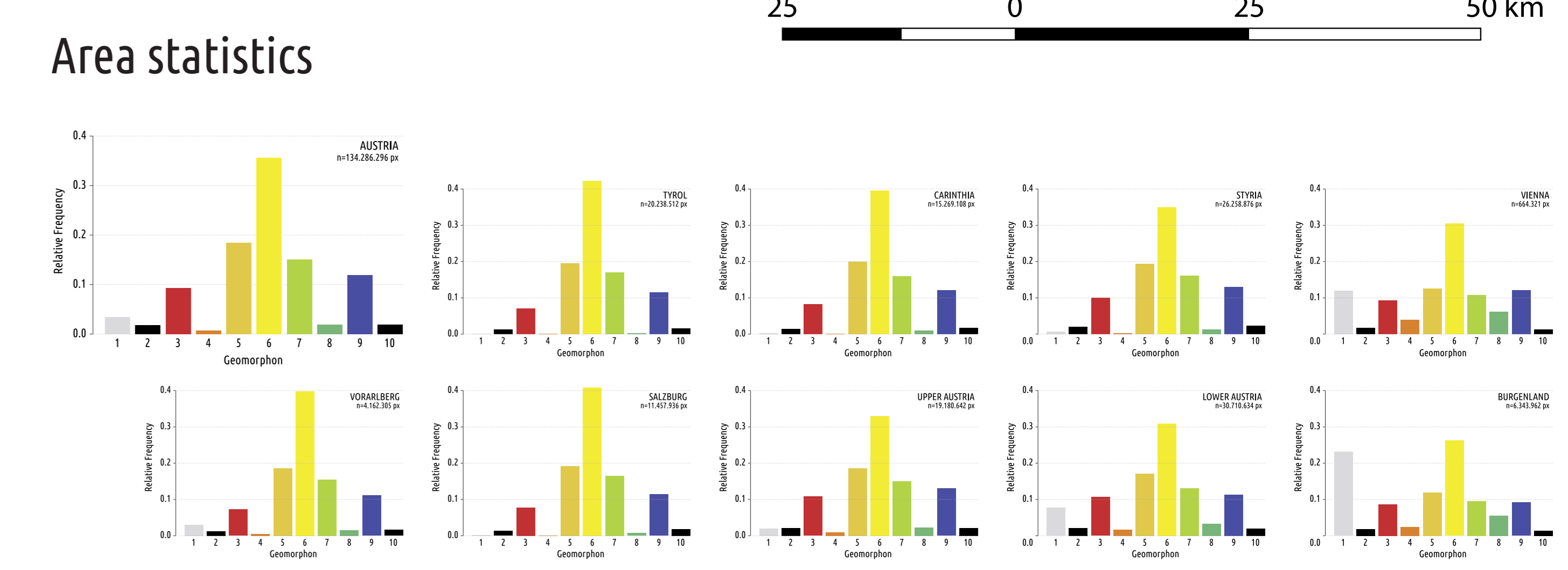
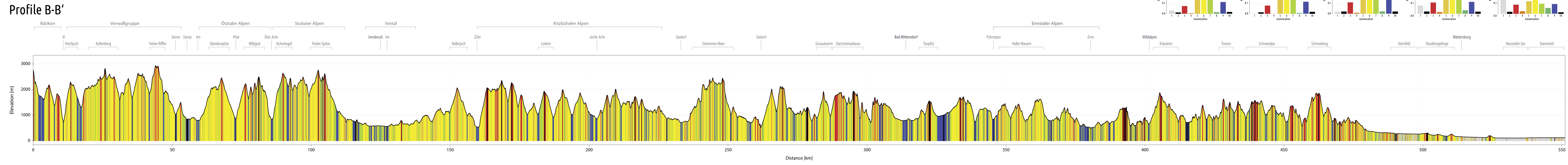
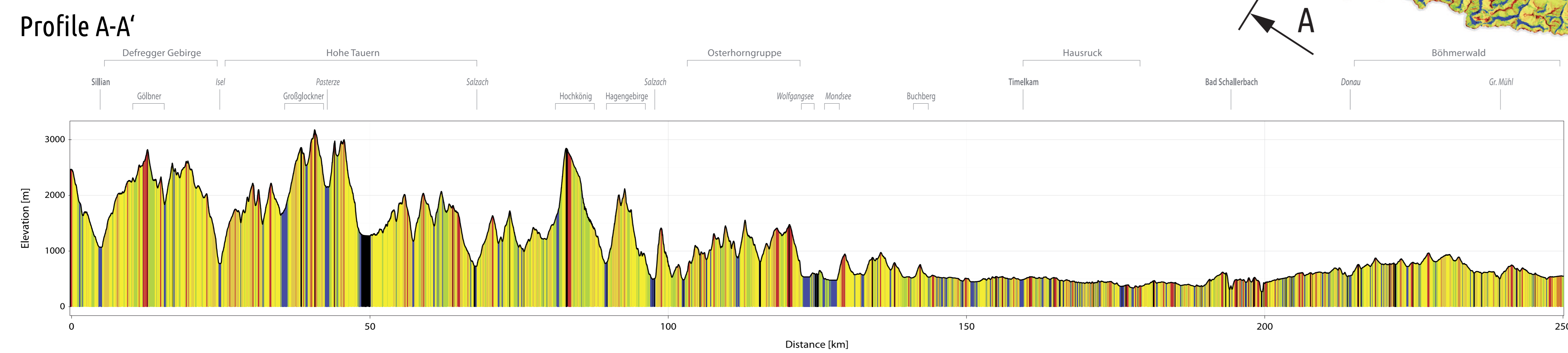
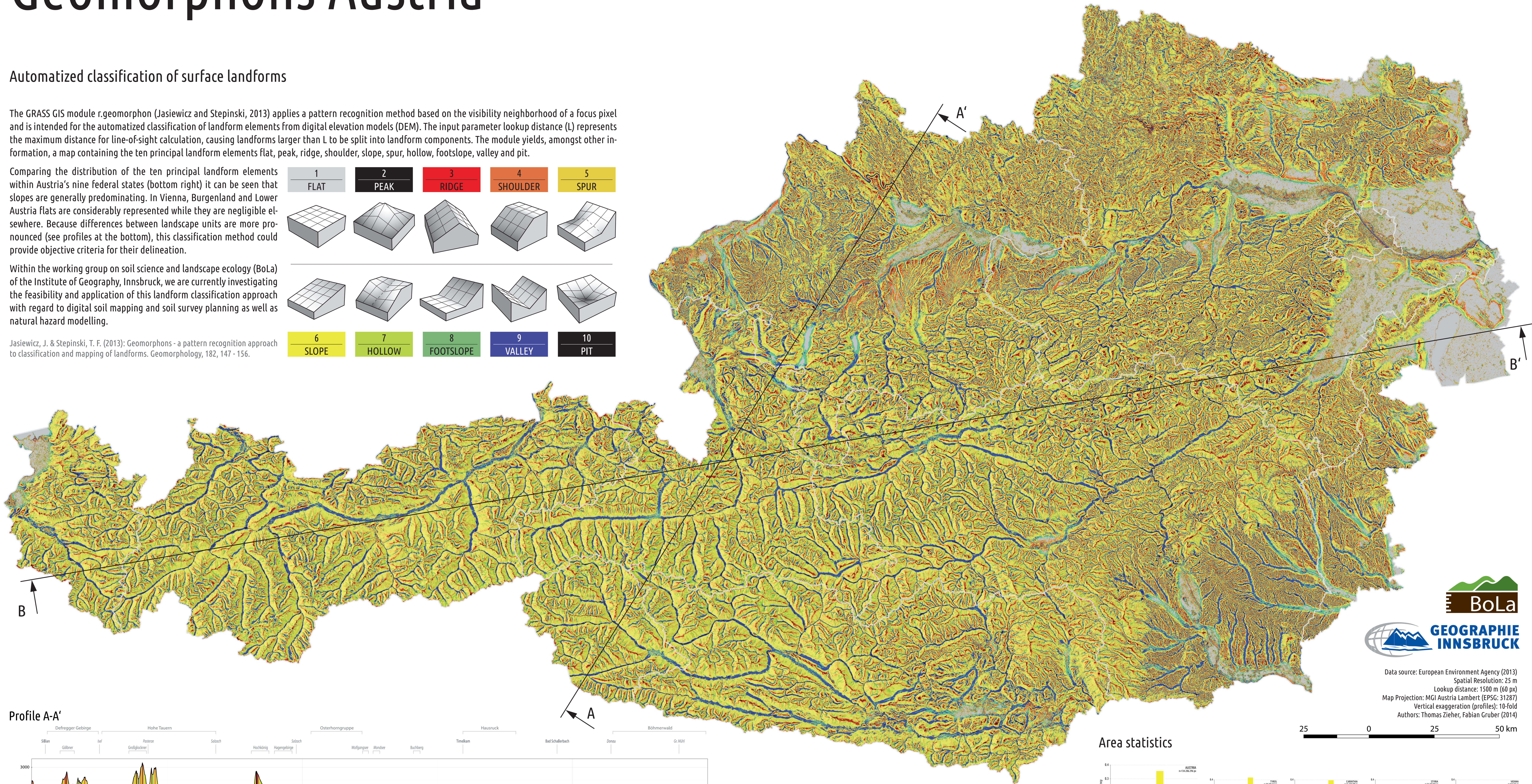
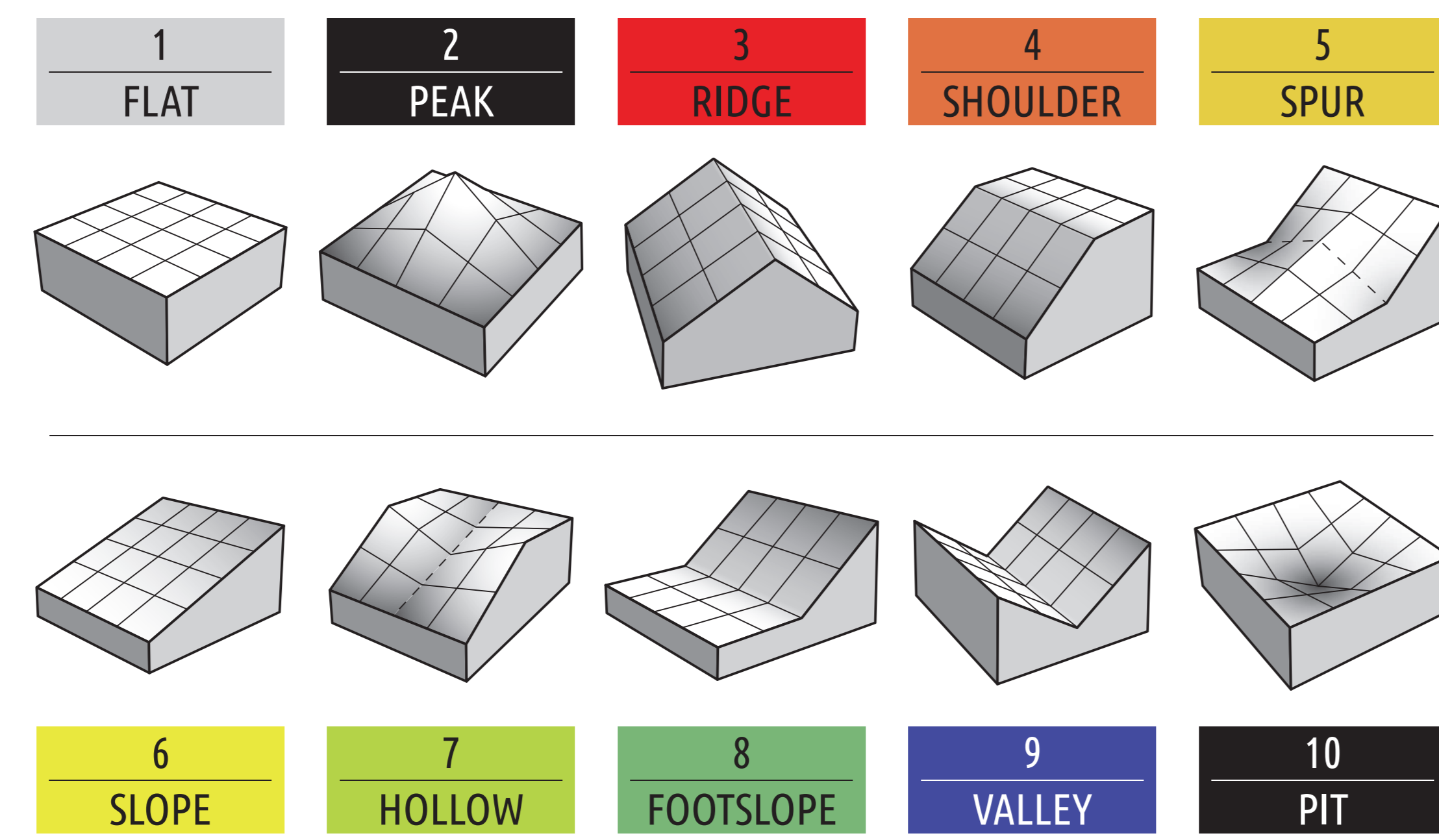
Automatized classification of surface landforms

The GRASS GIS module `r.geomorphon` (Jasiewicz and Stepinski, 2013) applies a pattern recognition method based on the visibility neighborhood of a focus pixel and is intended for the automatized classification of landform elements from digital elevation models (DEM). The input parameter lookup distance (L) represents the maximum distance for line-of-sight calculation, causing landforms larger than L to be split into landform components. The module yields, amongst other information, a map containing the ten principal landform elements flat, peak, ridge, shoulder, slope, spur, hollow, footslope, valley and pit.

Comparing the distribution of the ten principal landform elements within Austria's nine federal states (bottom right) it can be seen that slopes are generally predominating. In Vienna, Burgenland and Lower Austria flats are considerably represented while they are negligible elsewhere. Because differences between landscape units are more pronounced (see profiles at the bottom), this classification method could provide objective criteria for their delineation.

Within the working group on soil science and landscape ecology (BoLa) of the Institute of Geography, Innsbruck, we are currently investigating the feasibility and application of this landform classification approach with regard to digital soil mapping and soil survey planning as well as natural hazard modelling.

Jasiewicz, J. & Stepinski, T. F. (2013): Geomorphons - a pattern recognition approach to classification and mapping of landforms. *Geomorphology*, 182, 147 - 156.



Data source: European Environment Agency (2013)
 Spatial Resolution: 25 m
 Lookup distance: 1500 m (60 px)
 Map Projection: MGI Austria Lambert (EPSG: 31287)
 Vertical exaggeration (profiles): 10-fold
 Authors: Thomas Zieher, Fabian Gruber (2014)

