

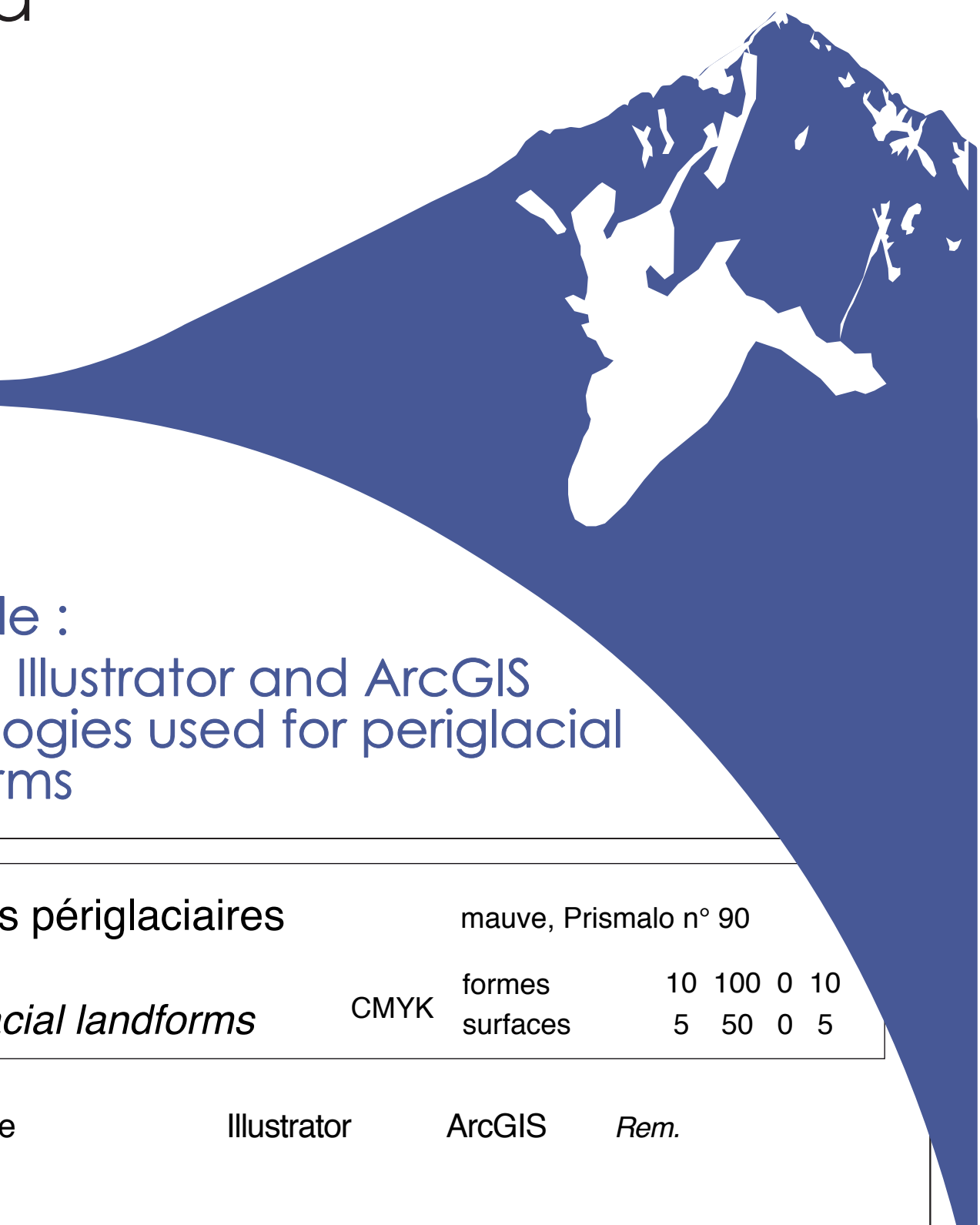
Adaptation of the geomorphological mapping system of the University of Lausanne for ArcGIS

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The legend

The geomorphological mapping legend of the University of Lausanne has been used for more than 20 years for detailed mapping especially in high and middle mountain regions. It is a **morphogenetic** mapping system built on the following principles:

- The **colours represent process categories**;
- The **signatures have a genetic significance** and are drawn in the colour of the related process;
- The morphodynamic **differentiation of erosion and accumulation** areas is achieved by white and coloured surfaces respectively;
- The morphography, the slope gradient and the lithology are not represented.

The legend was developed first for mapping by hand with colour pencils in the field. In the 1990s, several attempts were made for developing computer-assisted maps, especially by using Adobe Illustrator software.

The improvement of the graphical performance of GIS in the last years permitted the adaptation of the legend for GIS to be considered. Through various geomorphological mapping projects, a new version could be developed in ArcGIS 10.0.

The ArcGIS version

The legend consists in a **geodatabase** composed by three Feature Datasets containing respectively the **Feature Classes “points”, “lines” and “surfaces”**. Specific symbols were developed using the **Representation** tool in ArcGIS 10.0. For some landforms (e.g. alluvial fans, rockglaciers, deltas), it was necessary to combine two or three point, line or surface symbols.

The legende is available at :
www.unil.ch/igul/page19238.html

and is called : *carto_geomorph_IGUL.gdb*

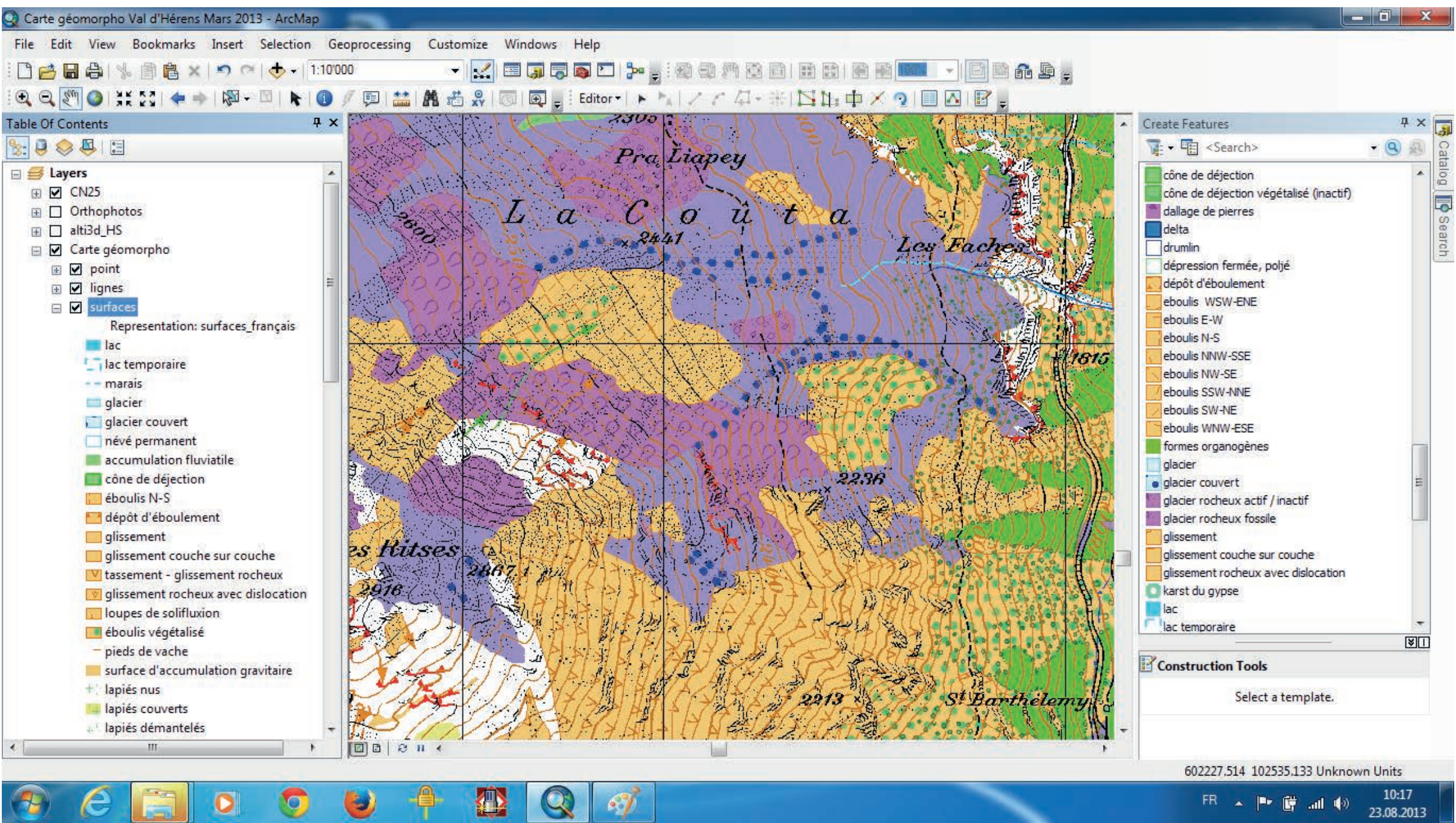
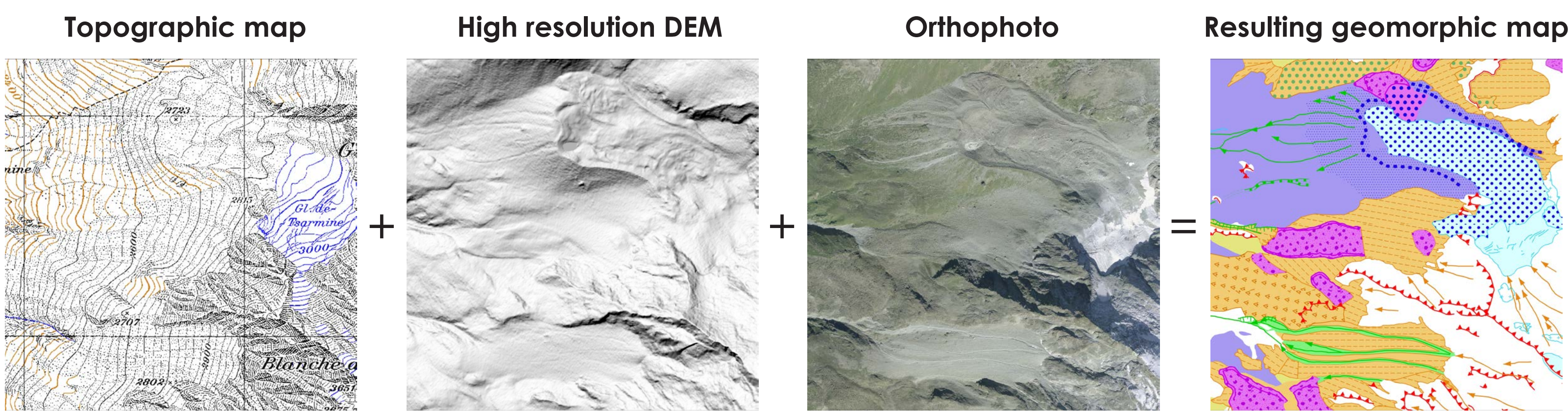
- To use the legend :
- Load the 3 Feature Classes “points”, “lines” and “surfaces” in the ArcGIS project.
 - Choose the language (english or french) in the properties of the Feature Classes (*Symbology - Representations*).
 - Start the edition by selecting the wished symbol that appears on the edition window. When drawing the right symbology appears directly.

Thanks to the ArcGIS version of the legend, it is now possible to map the geomorphology in a GIS environment from the combination of orthophotos, topographical maps and high resolution DEM, that is with reduced field survey. The geomorphological map of the Hérens valley (Poster 870) was realized with this mapping system.

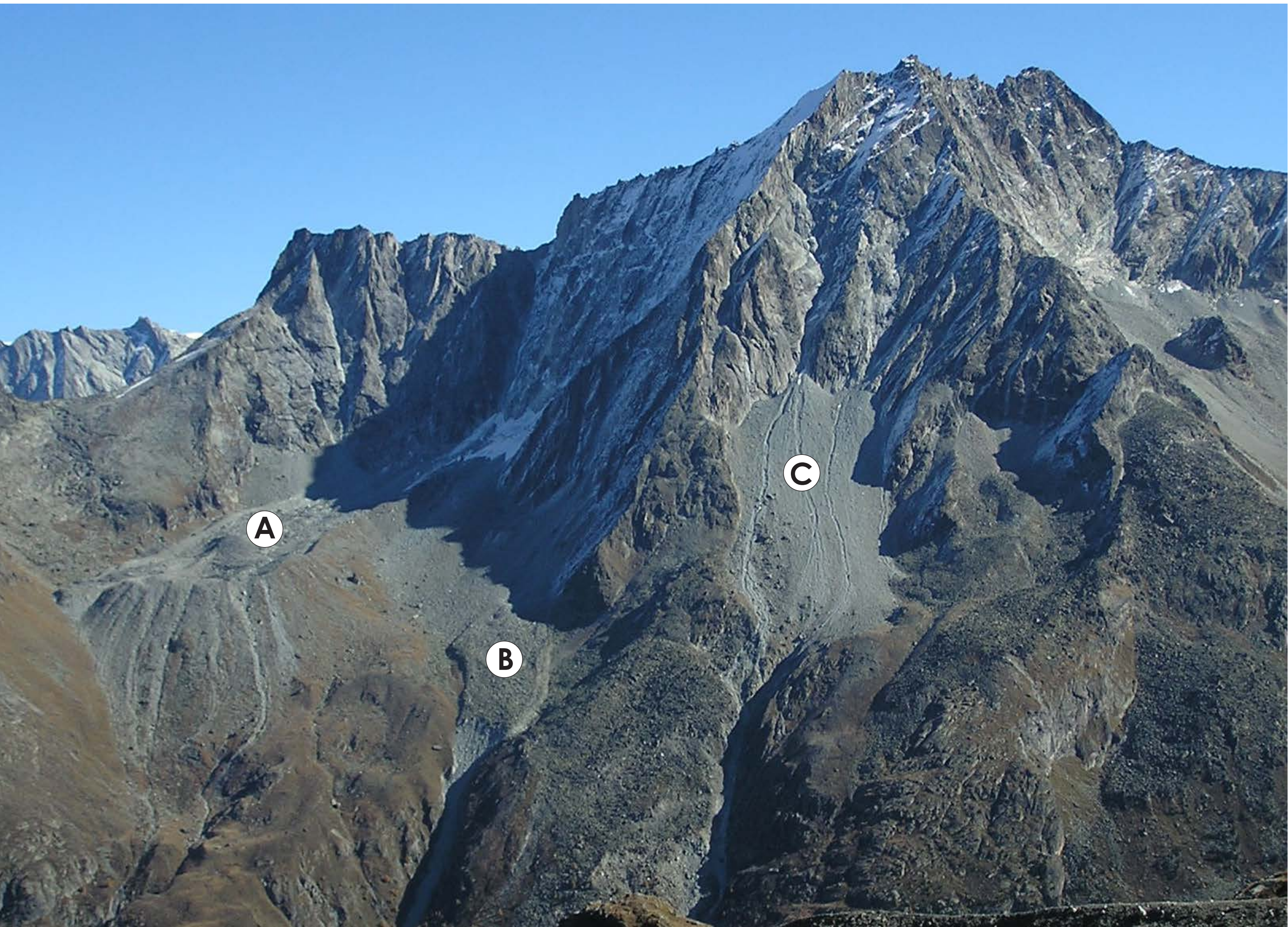
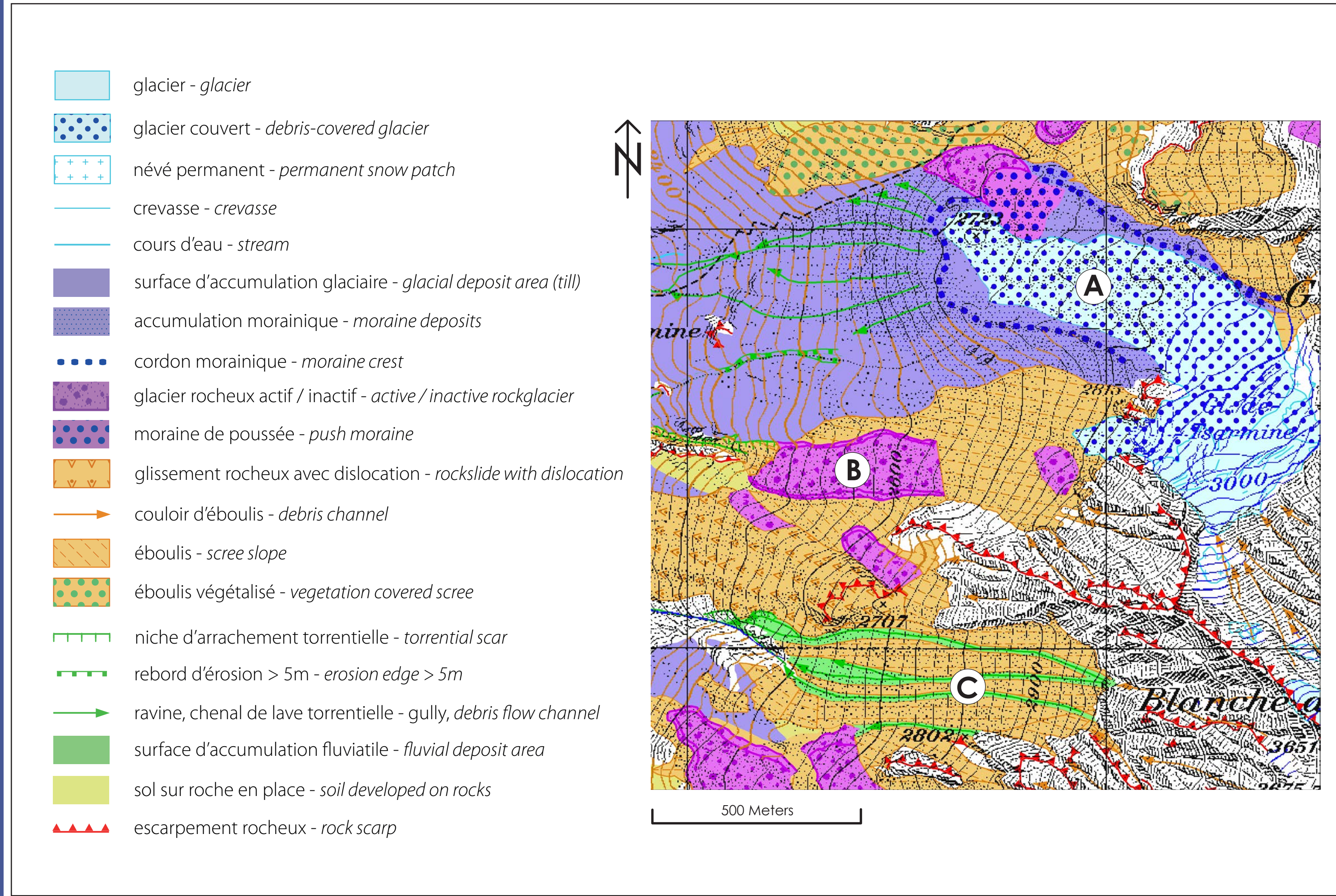
Example :
Adobe Illustrator and ArcGIS
symbolologies used for periglacial
landforms

Formes périglaciaires			
		mauve, Primaldo n° 90	
		CMYK	formes surfaces 10 100 0 10 5 50 0 5
Periglacial landforms			
Forme	Illustrator	ArcGIS	Rem.
coulée de gélifluxion gelifluxion deposit			lin.
loupe de gélifluxion gelifluxion lob			surf. orient.
glacier rocheux actif / inactif active / inactive rockglacier			glacier rocheux (surf.) + front glacier rocheux (lin.)
glacier rocheux fossile relict rockglacier			glacier rocheux fossile (surf.) + front glacier rocheux (lin.)
éboulis fluant creeping scree			surf. orient.
terrassettes small terrace			surf. orient.
sols structurés patterned ground			surf.
pierres redressées sorted ground			surf.

Mapping process



Example : Tsarmine area, Arolla valley (VS)



References

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