

Controllable Lighting Model for Designing Digital Panorama Maps in the Style of Novat



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Analytical Shading

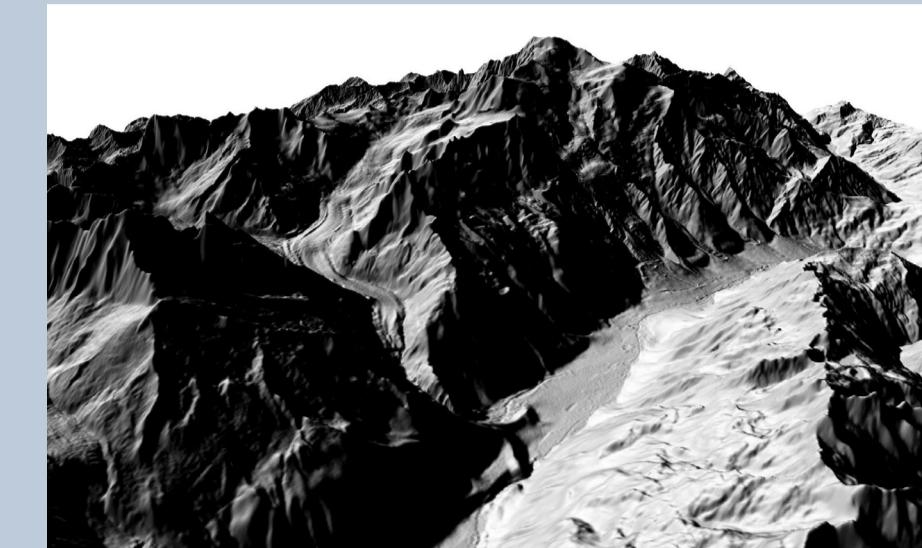
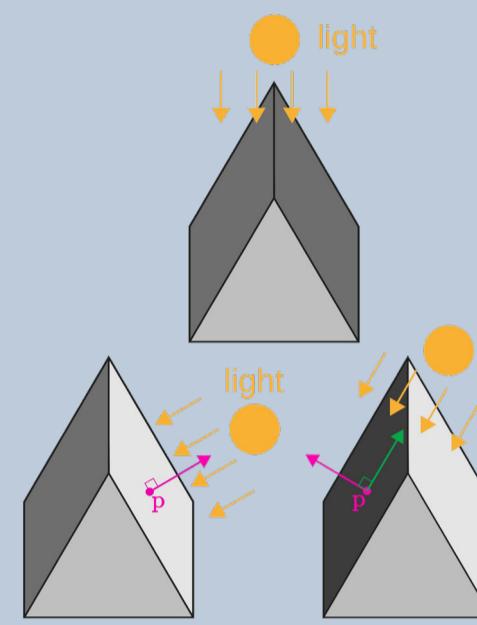
Whatever the shading model (diffuse, aspect based, global illumination,...) having a single light direction results in masking effects and contrast issues.



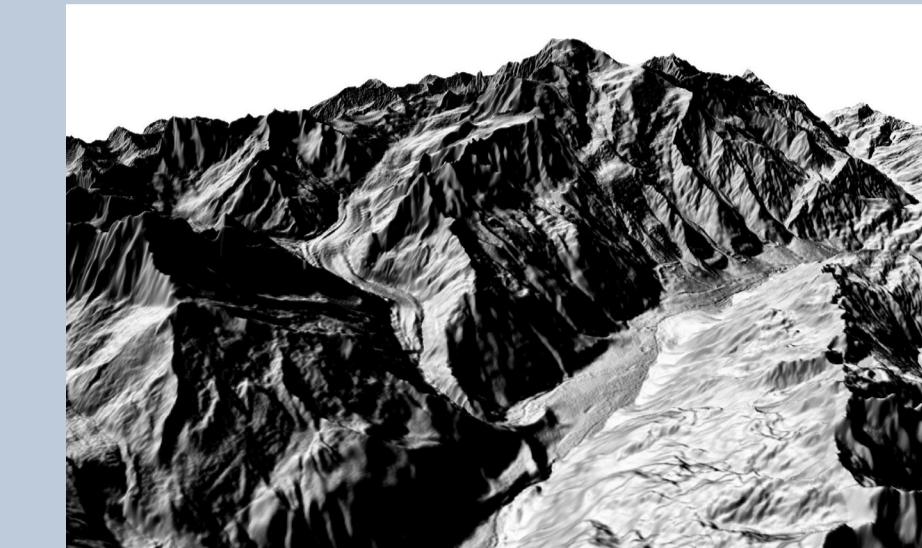
Shading with shadow map and simple color model

Multi-scale Local Light Alignment

For each detail scale, we move the light at each point of the surface to maximize contrast between both sides of features.

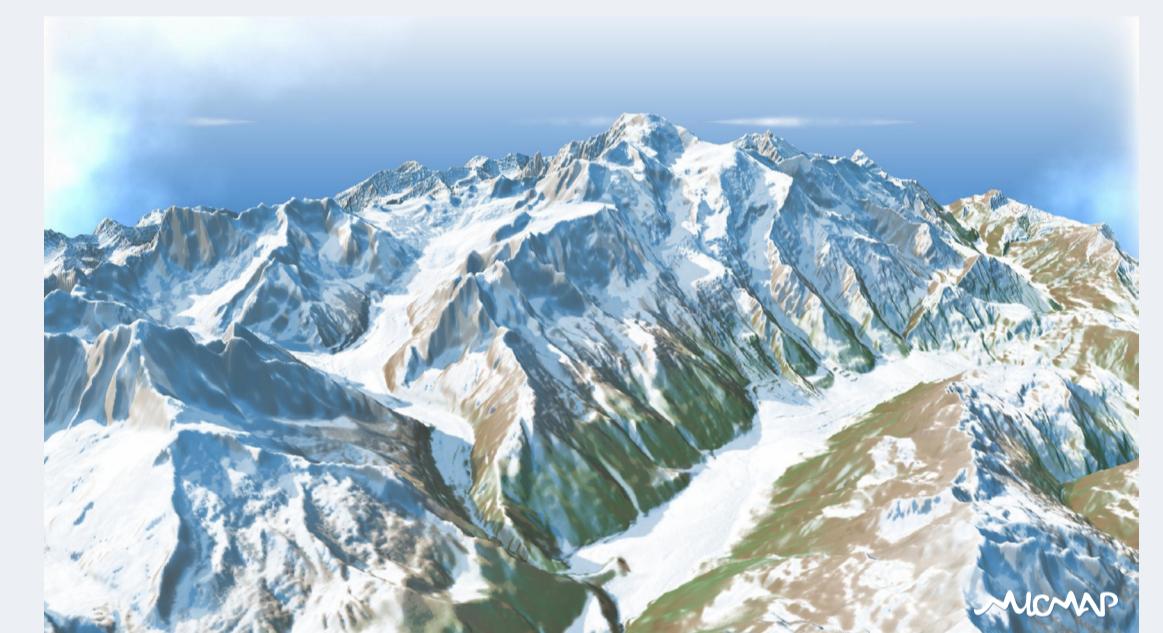
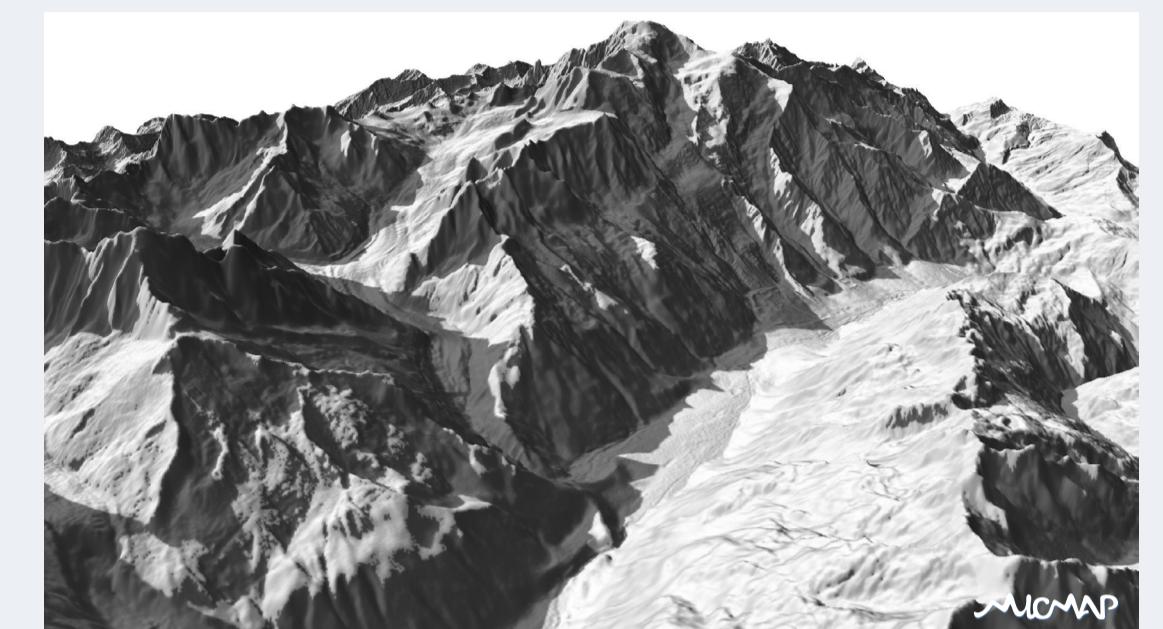


Lambert diffuse rendering



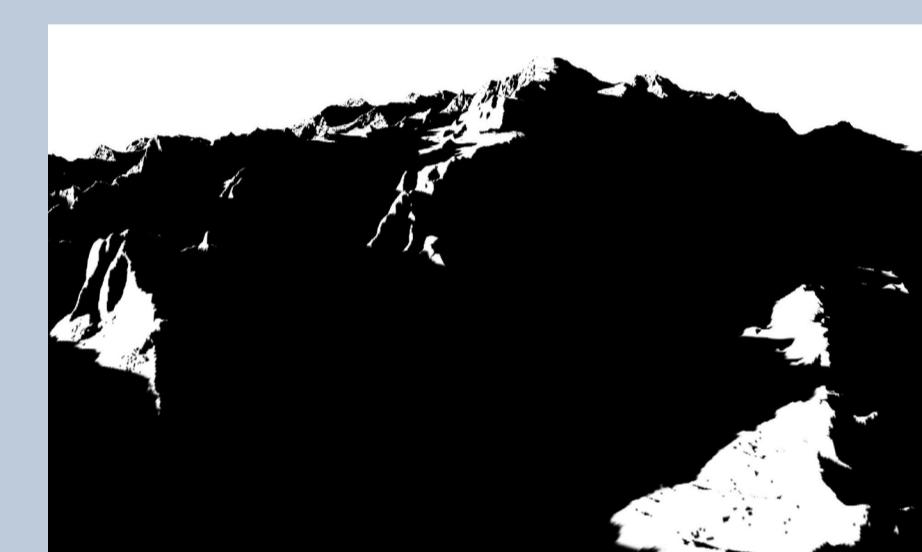
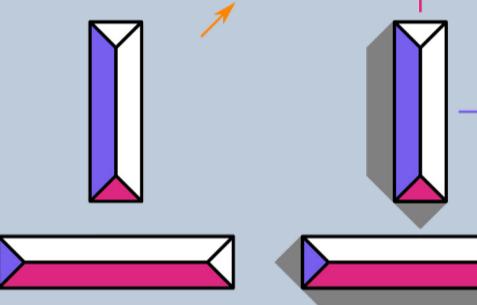
Our result with Local Light Alignment

Combined Result

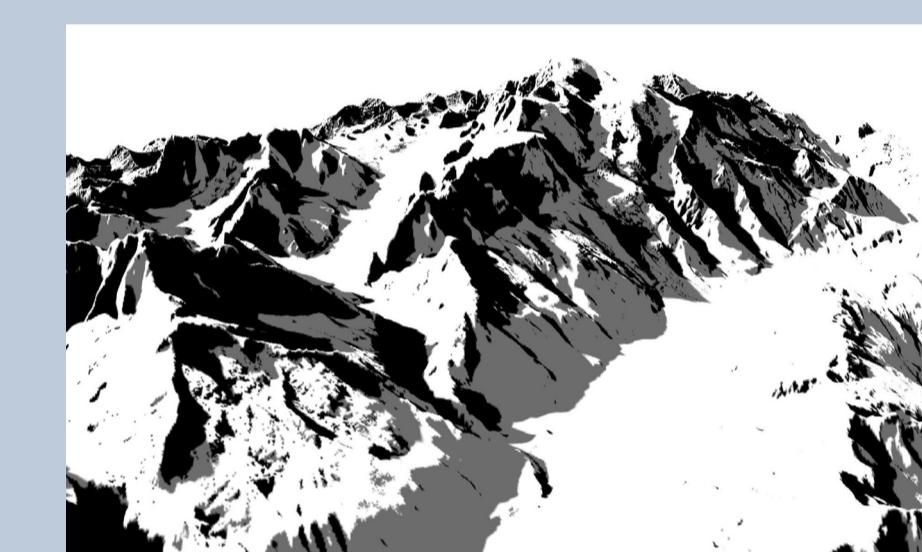


Multi-scale Adjusted Shadows

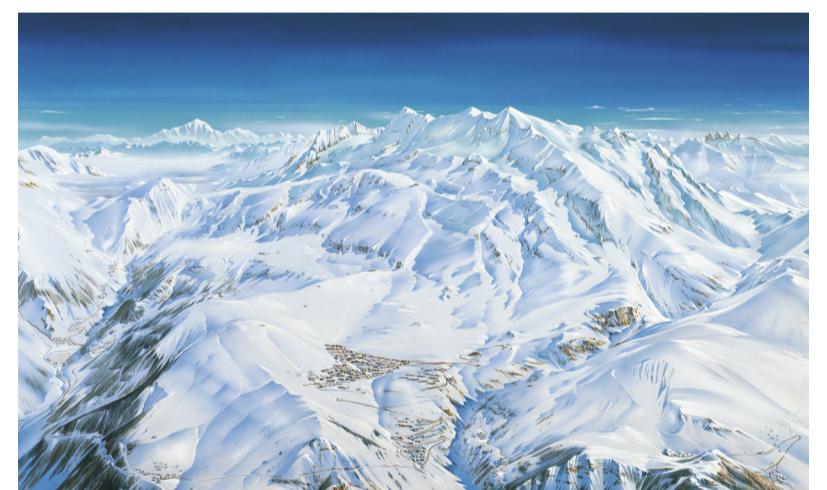
We compute a set of light directions to compute multi-scale shadows. We control their length to solve masking while aligning shadows with the relief.



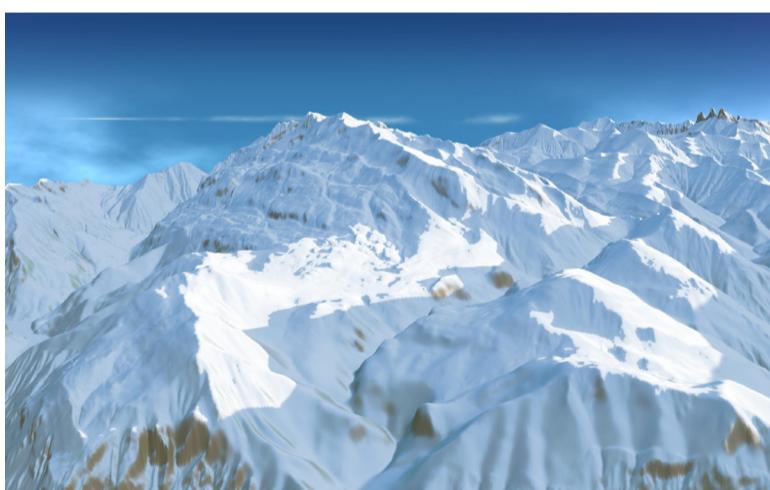
Shadow map with a single light



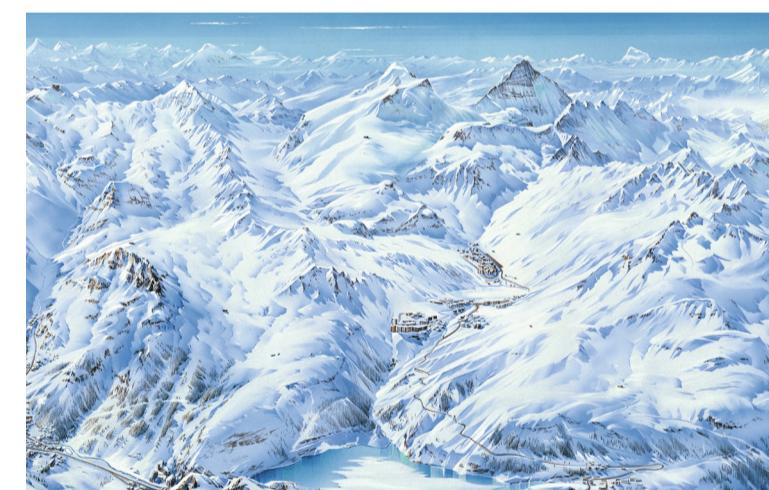
Two scales (grey and black) adjusted shadows



Alpe d'Huez, Atelier Novat



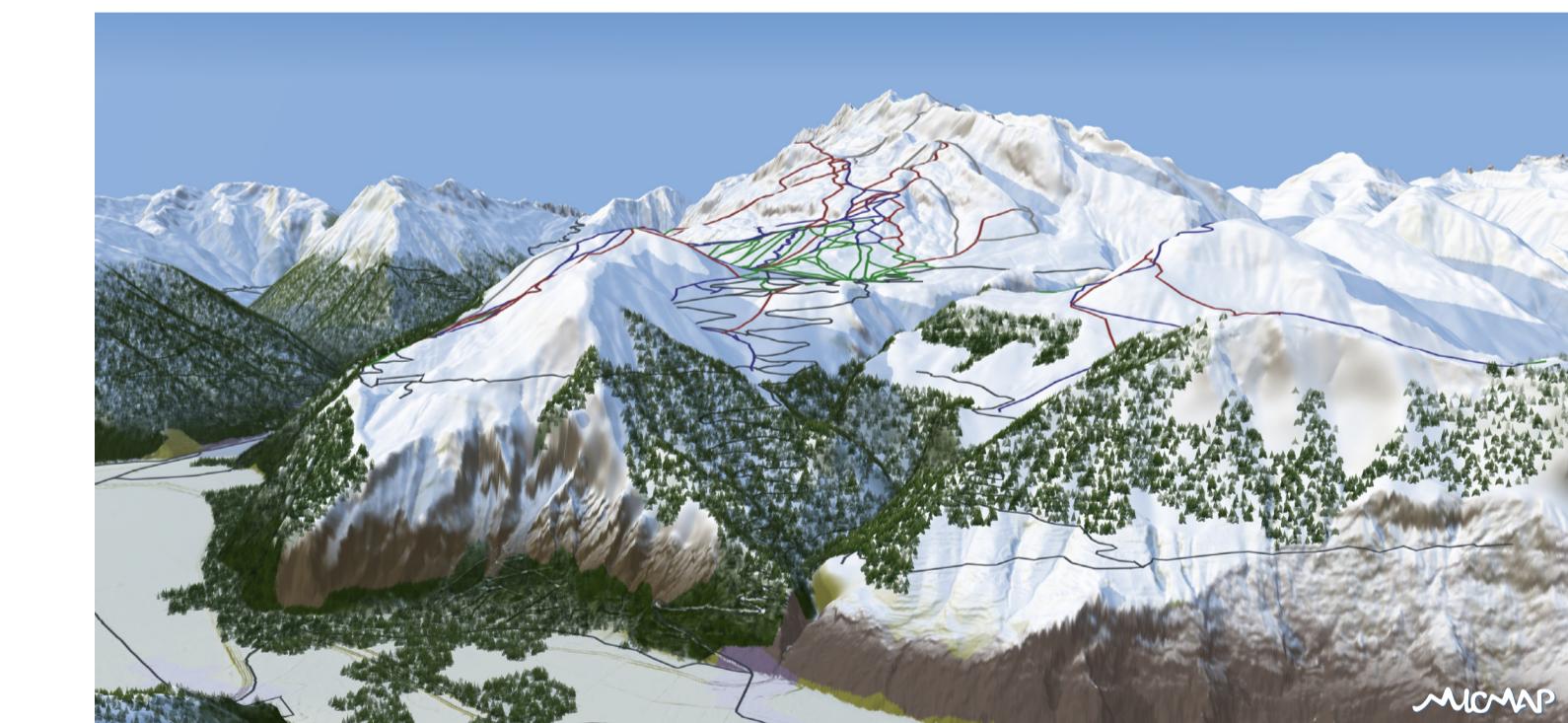
Simple colored shading



Val d'Isère-Tignes, Atelier Novat



Simple colored shading



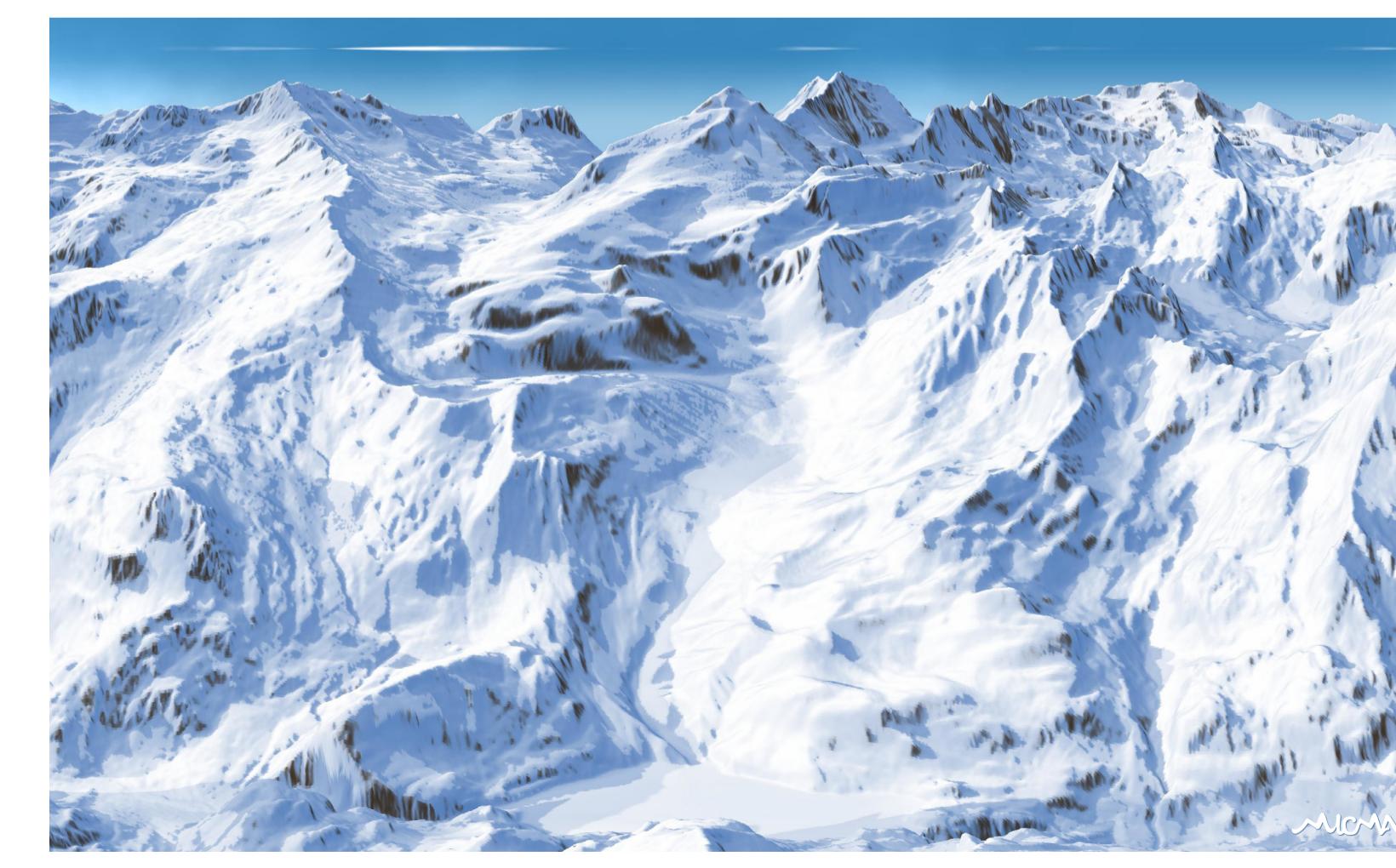
To be continued...

Cartographic elements:

- ▶ roads,
- ▶ trees,
- ▶ ski tracks...



Our result



Our result

References

- ▶ A Stylistic Study of the Winter Panorama Maps of Pierre Novat
Nolan Mestres
Cartographic Perspectives 2022, 10.14714/CP100.1753
- ▶ Local Light Alignment for Multi-Scale Shape Depiction
Nolan Mestres, Romain Vergne, Camille Noûs, Joëlle Thollot
Eurographics 2021, 10.1111/cgf.142656



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