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



Nolan Mestres<sup>1</sup>, Romain Vergne<sup>1</sup>, Joëlle Thollot<sup>1</sup>, Arthur Novat<sup>2</sup> | <sup>1</sup>Univ. Grenoble Alpes, INRIA, CNRS, Grenoble INP | <sup>2</sup>Atelier Novat



Chamonix, Atelier Novat

## Analytical Shading

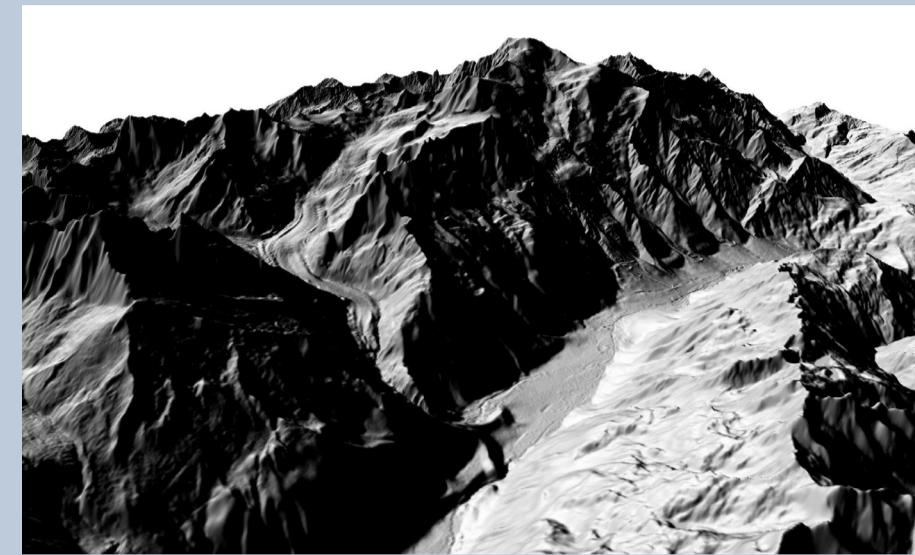
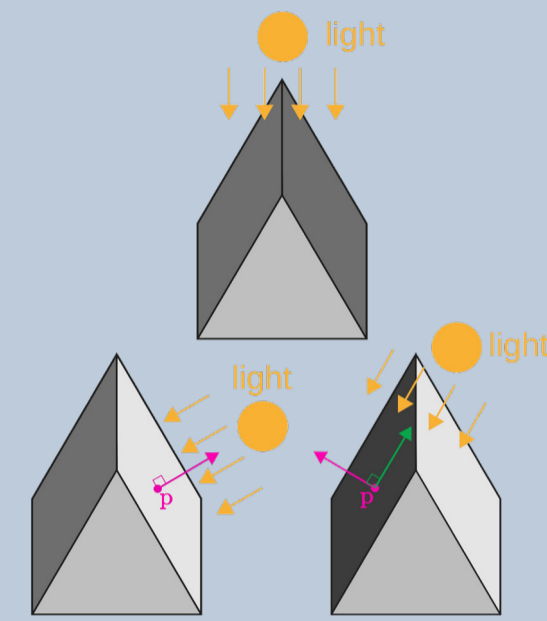
Whatever the shading model (diffuse, aspect based, global illumination,...) having a single light direction results in masking effects and contrast issues.



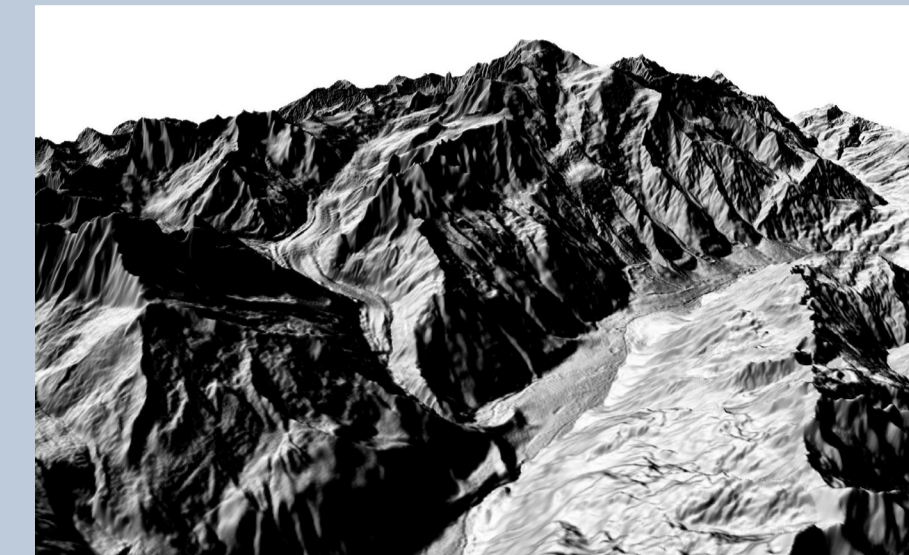
Shading with shadow map and simple color model

## 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.

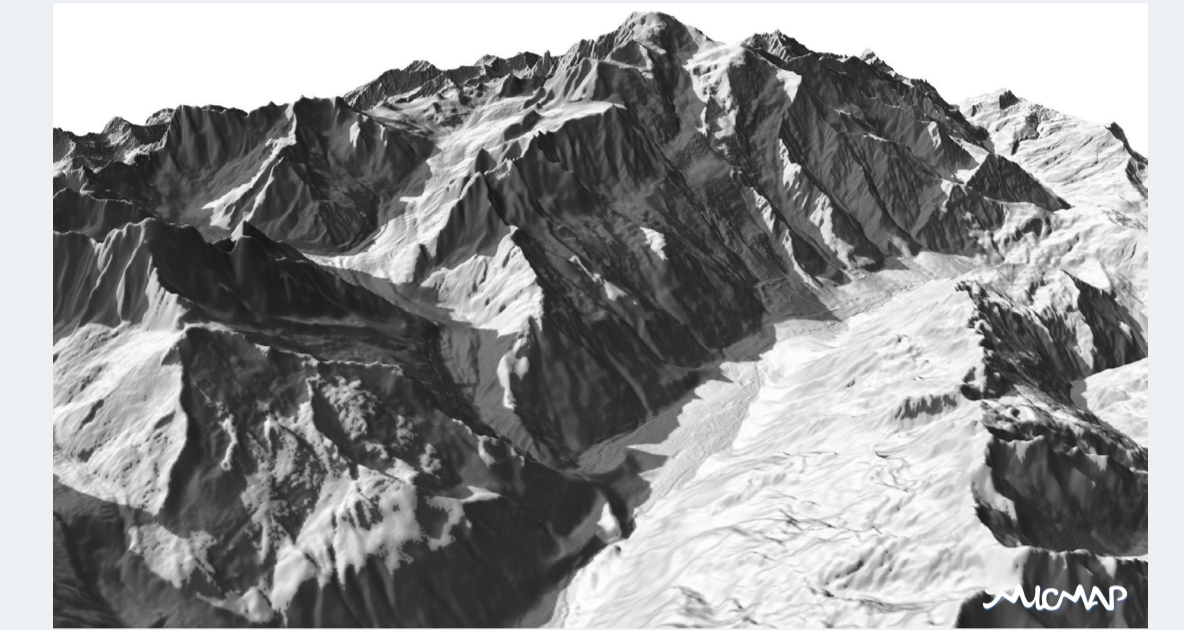


Lambert diffuse rendering



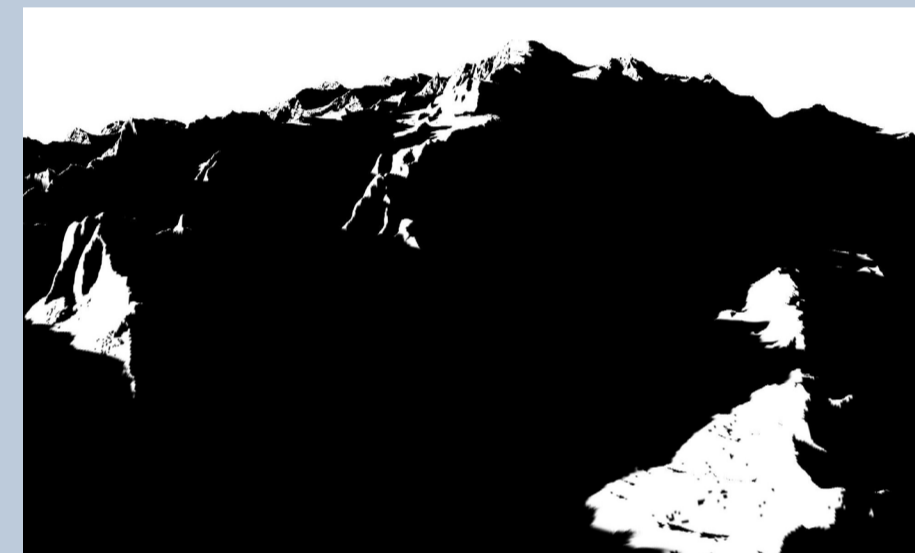
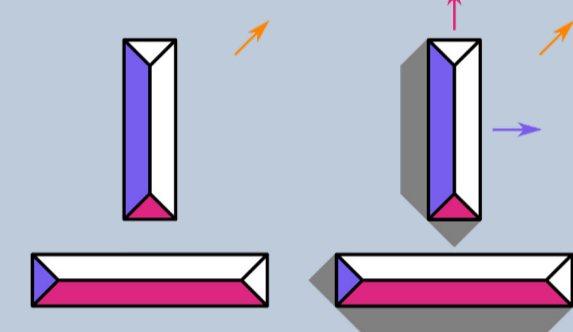
Our result with Local Light Alignment

## Combined Result

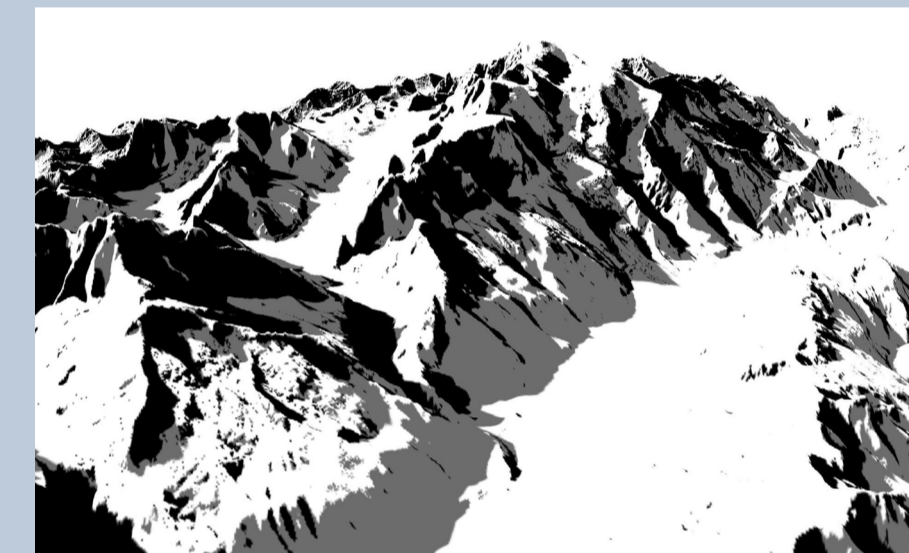


## Multi-scale Adjusted Shadows

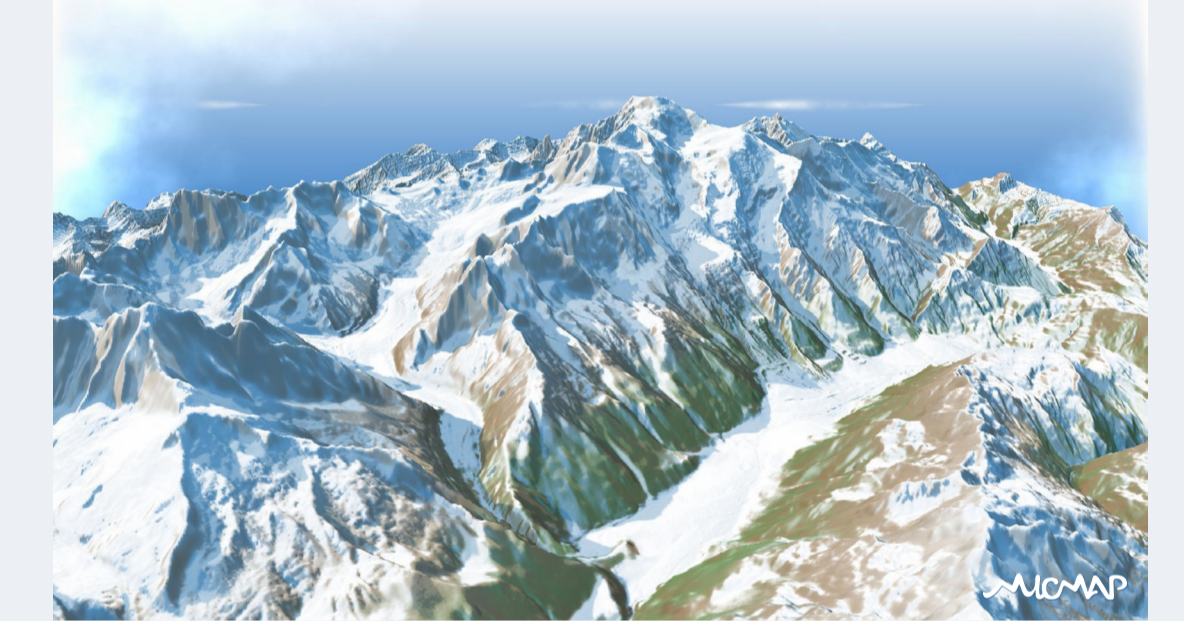
We compute a set of light directions to compute multi-scale shadows. We control their length to solve masking while aligning shadows with the relief.



Shadow map with a single light



Two scales (grey and black) adjusted shadows



Alpe d'Huez, Atelier Novat



Simple colored shading



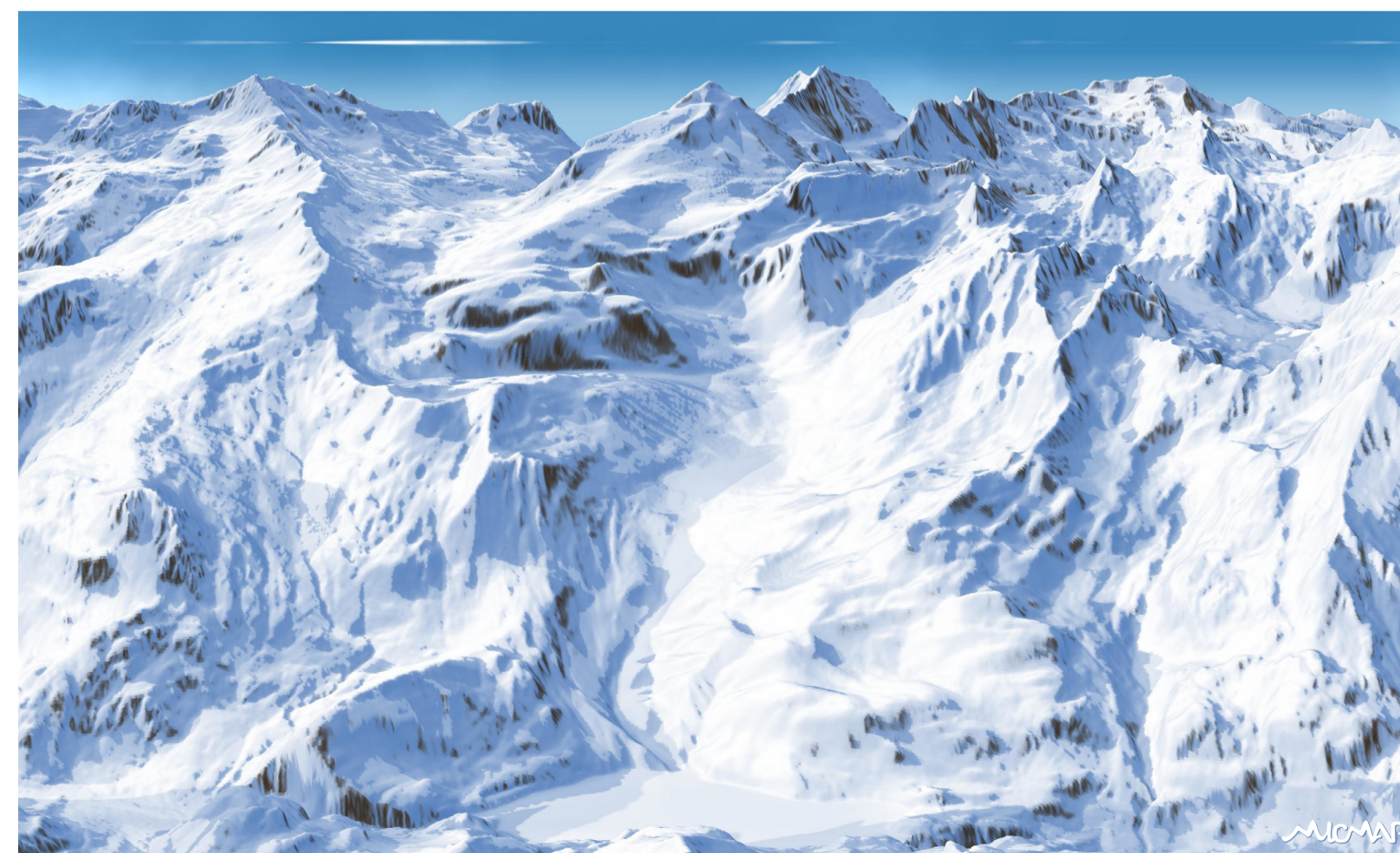
Val d'Isère-Tignes, Atelier Novat



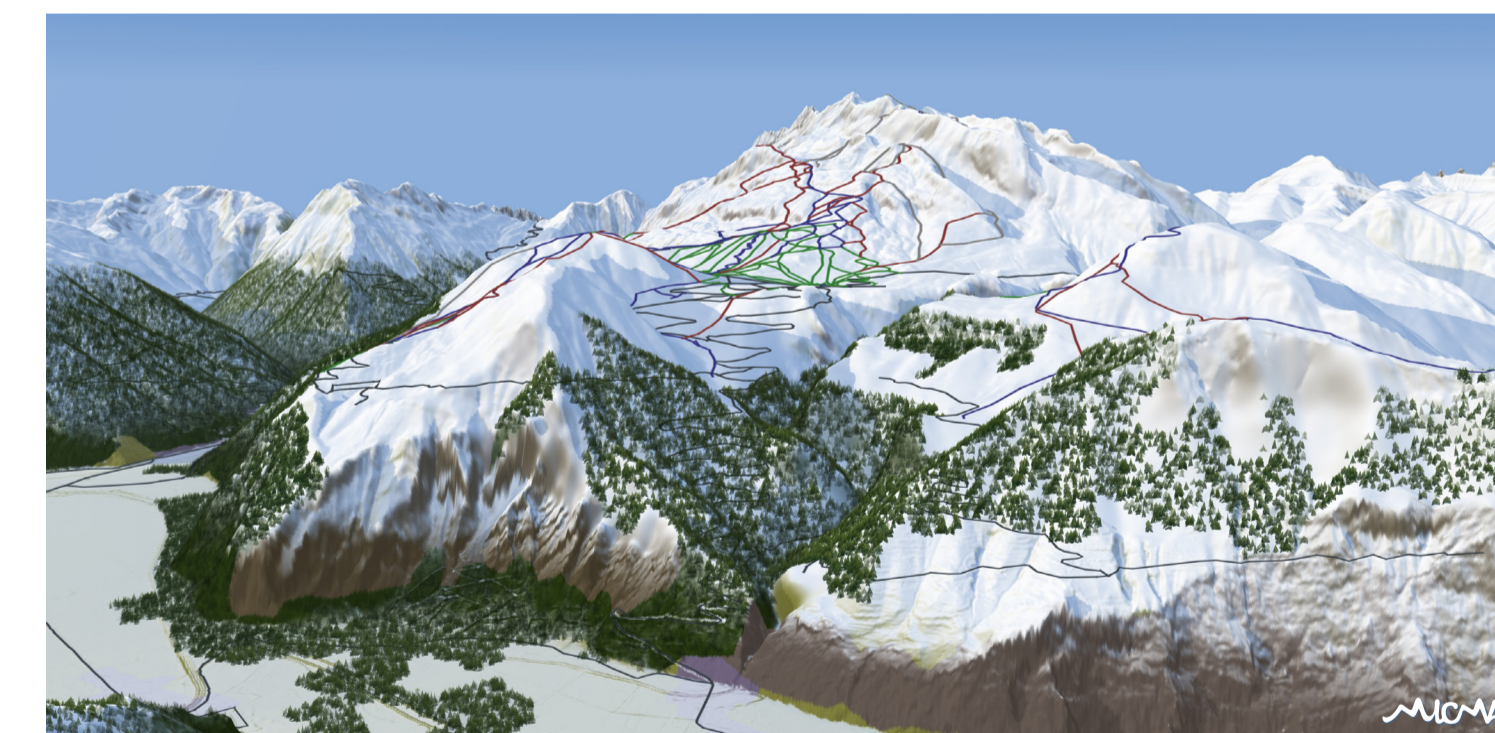
Simple colored shading



Our result



Our result



## To be continued...

Cartographic elements:

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

## 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

