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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.

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.

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.

Combined 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

Chamonix, Atelier Novat

Combined Result

Alpe d'Huez, Atelier Novat

Simple colored shading

Val d'Isère-Tignes, Atelier Novat

Simple colored shading

Our result

Our result

Shading with shadow map and simple color model

Lambert diffuse rendering

Our result with Local Light Alignment

Shadow map with a single light

Two scales (grey and black) adjusted shadows

Chamonix, Atelier Novat

Alpe d'Huez, Atelier Novat

Simple colored shading

Val d'Isère-Tignes, Atelier Novat

Simple colored shading

Our result

Our result

To be continued...