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

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

To be continued...
Cartographic elements:
- roads,
- trees,
- ski tracks...

Alpe d'Huez, Atelier Novat
Simple colored shading
Chamonix, Atelier Novat
Simple colored shading
Val d'Iser, Atelier Novat
Simple colored shading
Our result
Our result
Our result
Our result
Our result with Local Light Alignment
Shadow map with a single light
Two scales (grey and black) adjusted shadows
Lambert diffuse rendering