



Revision of rock, scree and glacier in a data-based cartographic system

Topographic map series of Switzerland:

Rock, scree and glacier representations need to be updated

Juerg Gilgen



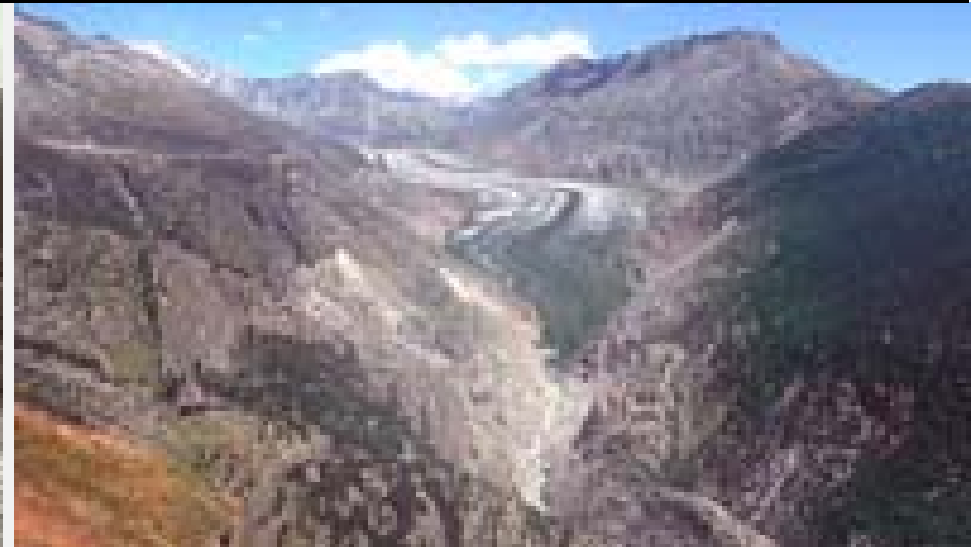
Federal Office of Topography

1. Is revision of terrain necessary at 1:25 000 scale?

Aletschgletscher (Switzerland)

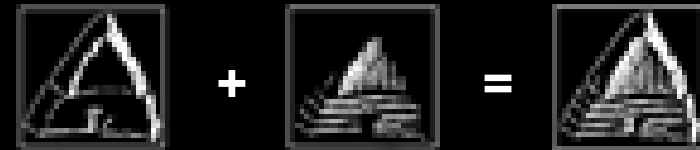
Around 1900

2005



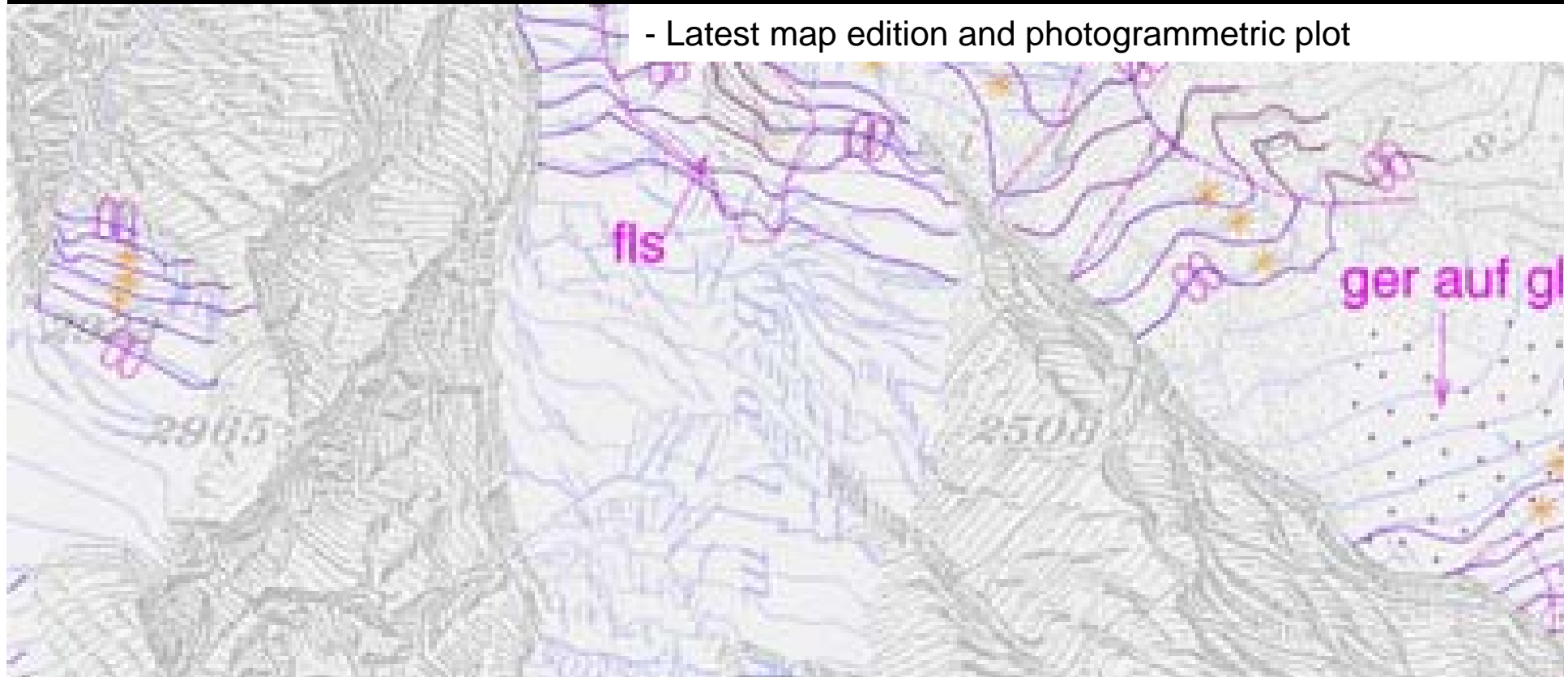
2. Today's terrain revision, 1:25 000

Method of terrain representation



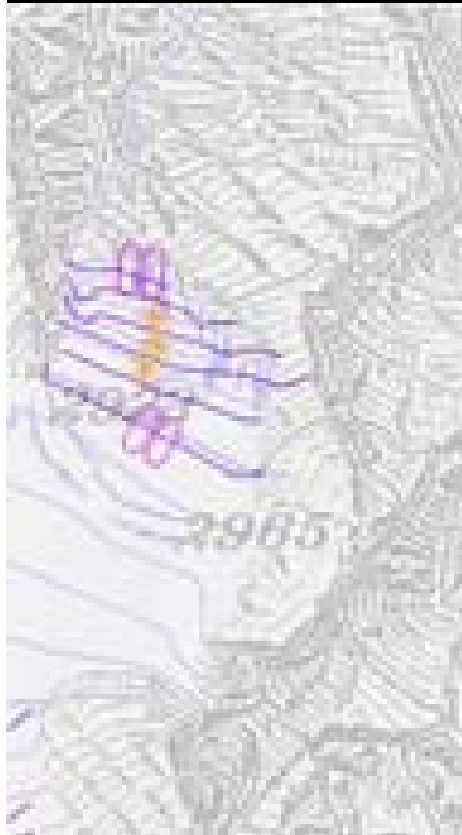
Bases of terrain revision

- Latest map edition and photogrammetric plot



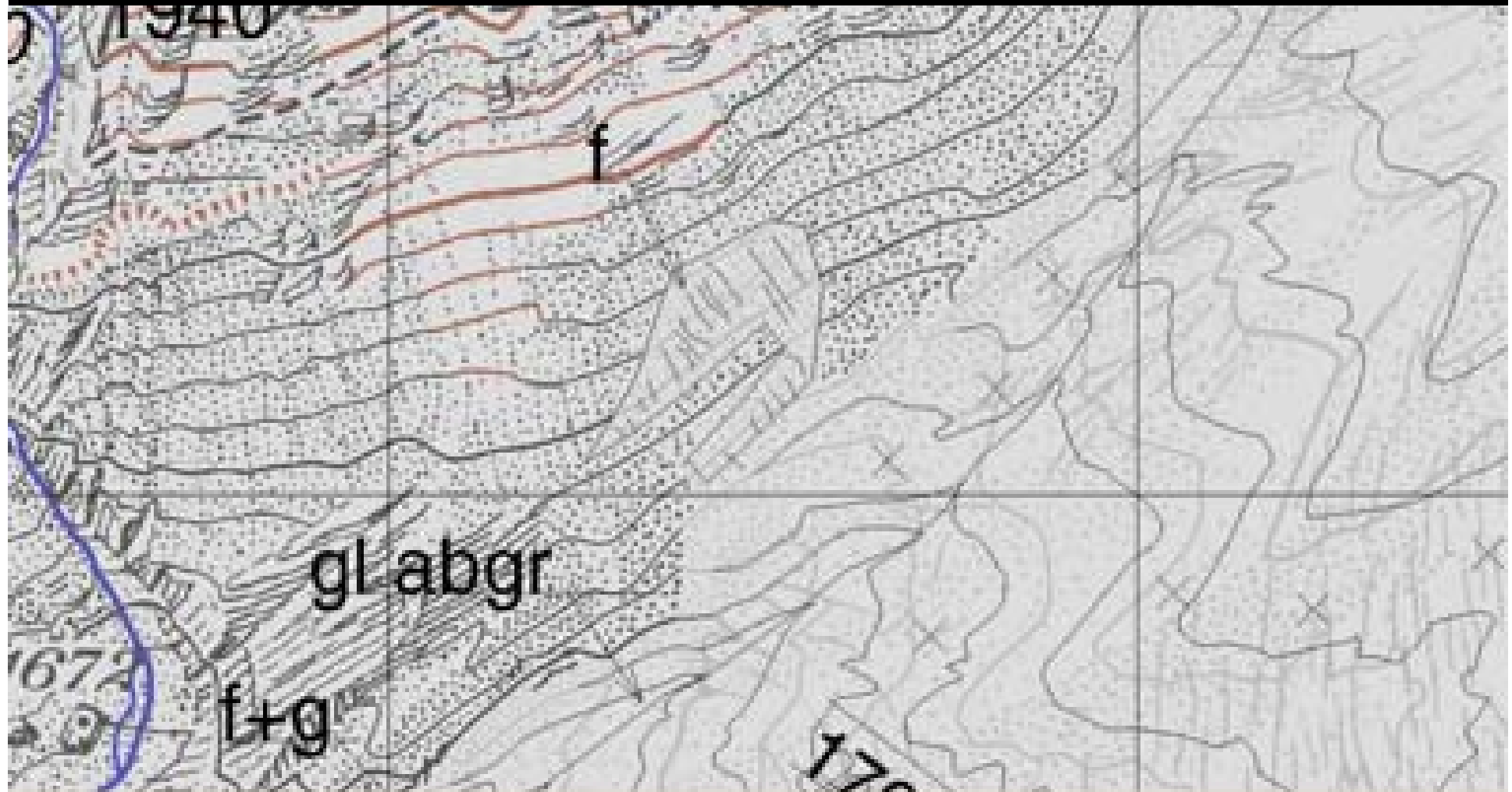
Bases of terrain revision

- Latest map edition and photogrammetric plot
- Stereoscopic aerial photographs



Problem

Photogrammetric plot



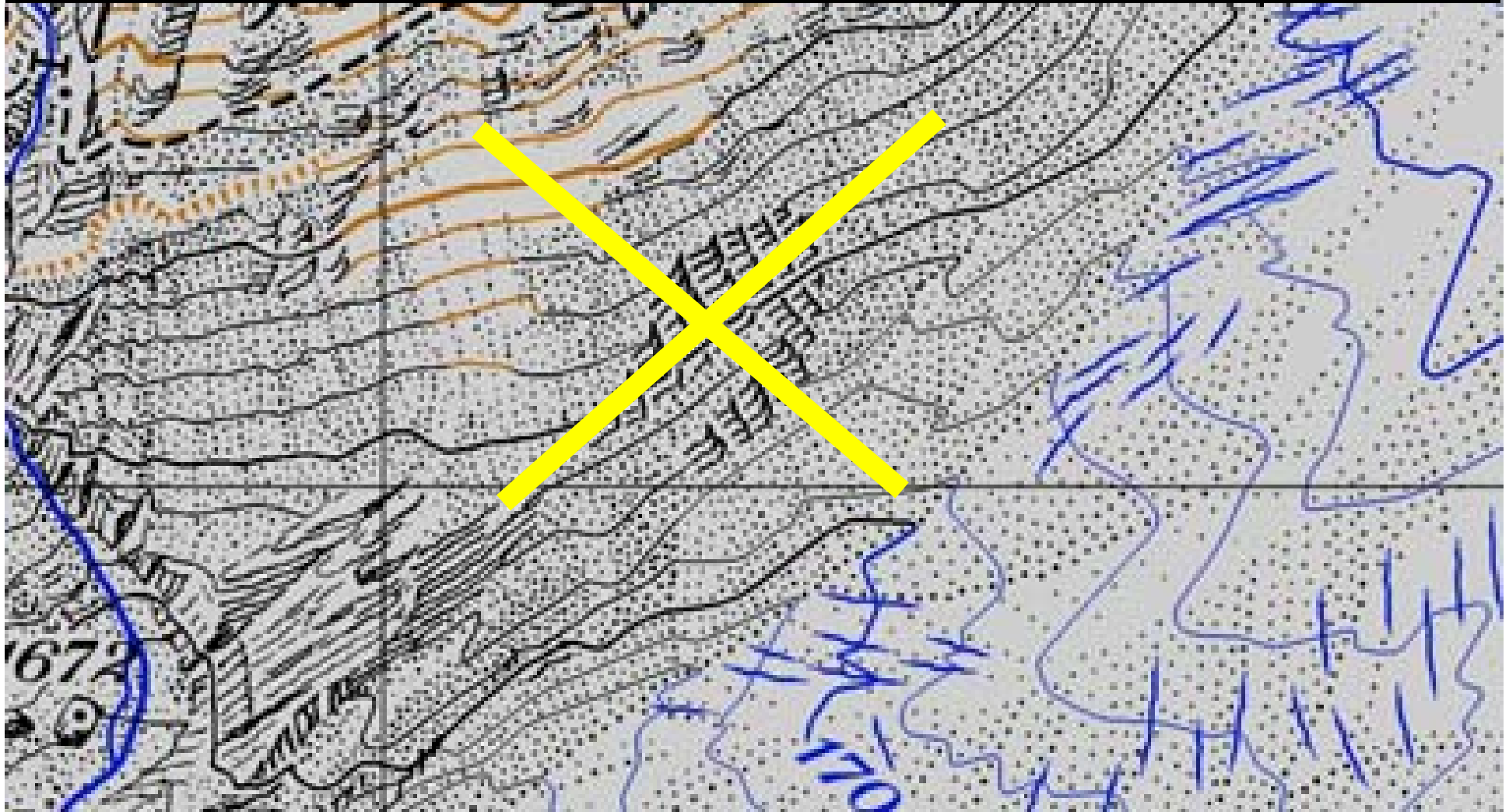
Problem

Aerial photograph



Problem

Incorrect rock and scree revision



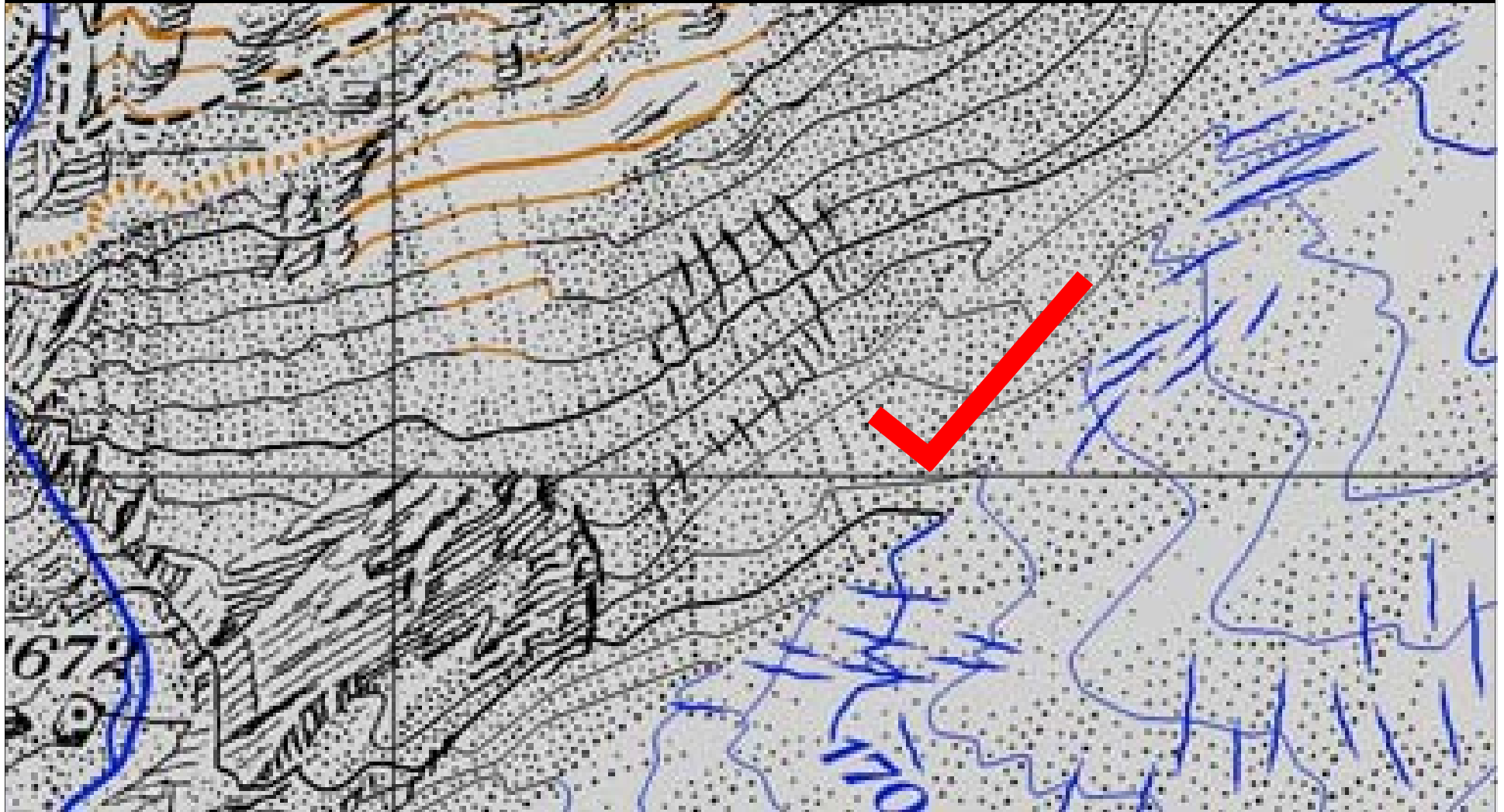
Problem

Terrestrial photograph



Problem

Correct rock and scree revision

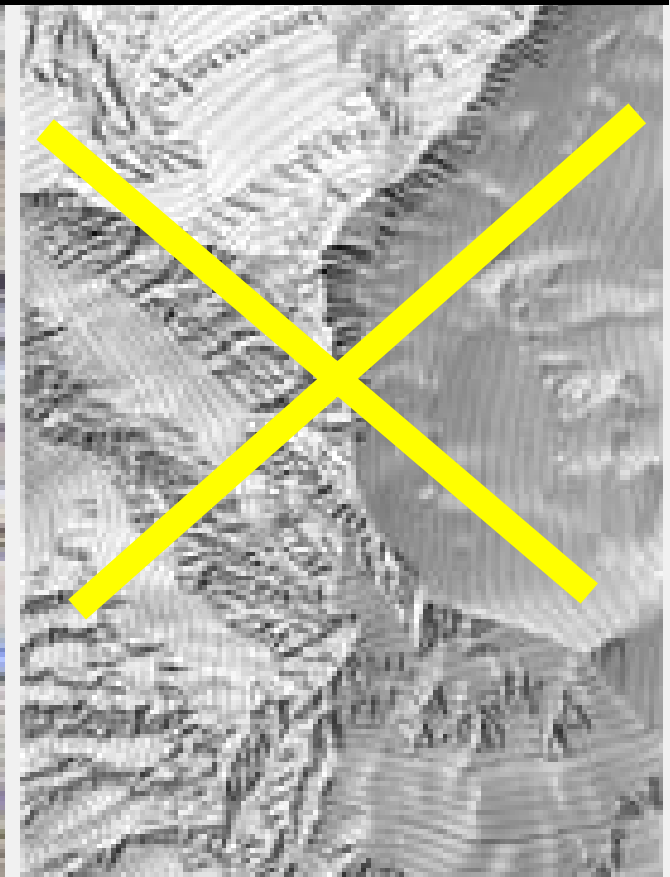


3. Terrain revision in the future, 1:25 000

Alternative rock representations

Option A

Option B



Comparison

Photograph

Map 1:25 000



Comparison

Photograph

Map 1:25 000

Our conclusion: **Rock, scree and glaciers are well presented!**



Chosen method of terrain representation

- Rock representation will be retained

Now



Future



Reduction in human labour



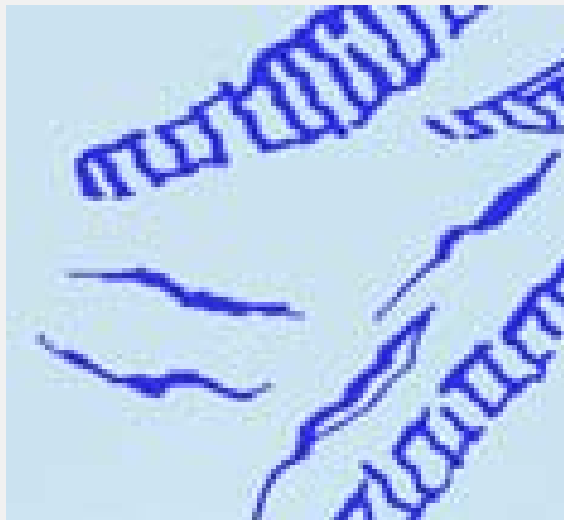
Chosen method of terrain representation

- Rock representation will be retained
- Glacier representation will be retained

Now



Future



Reduction in human labour



Chosen method of terrain representation

- Rock representation will be retained
- Glacier representation will be retained
- Scree representation will be automatically produced

Now



Future

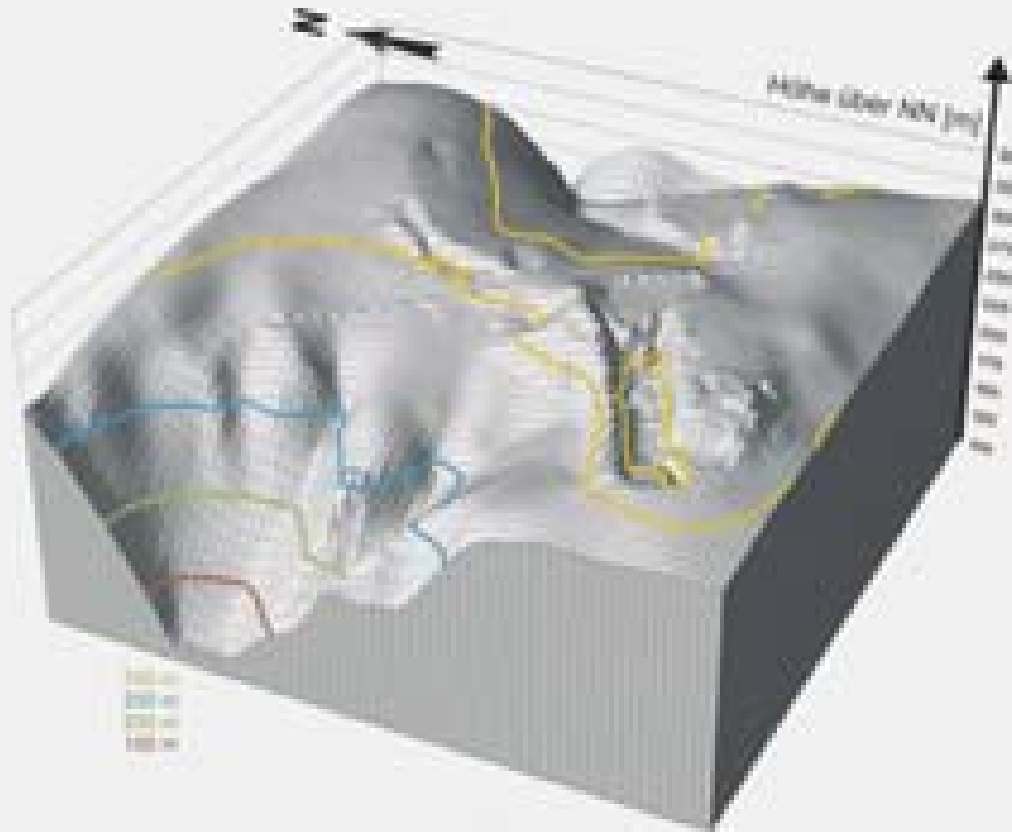


Reduction in human labour



Chosen method of terrain representation

- Rock representation will be retained
- Glacier representation will be retained
- Scree representation will be automatically produced
- Contour lines will be derived from a digital terrain model



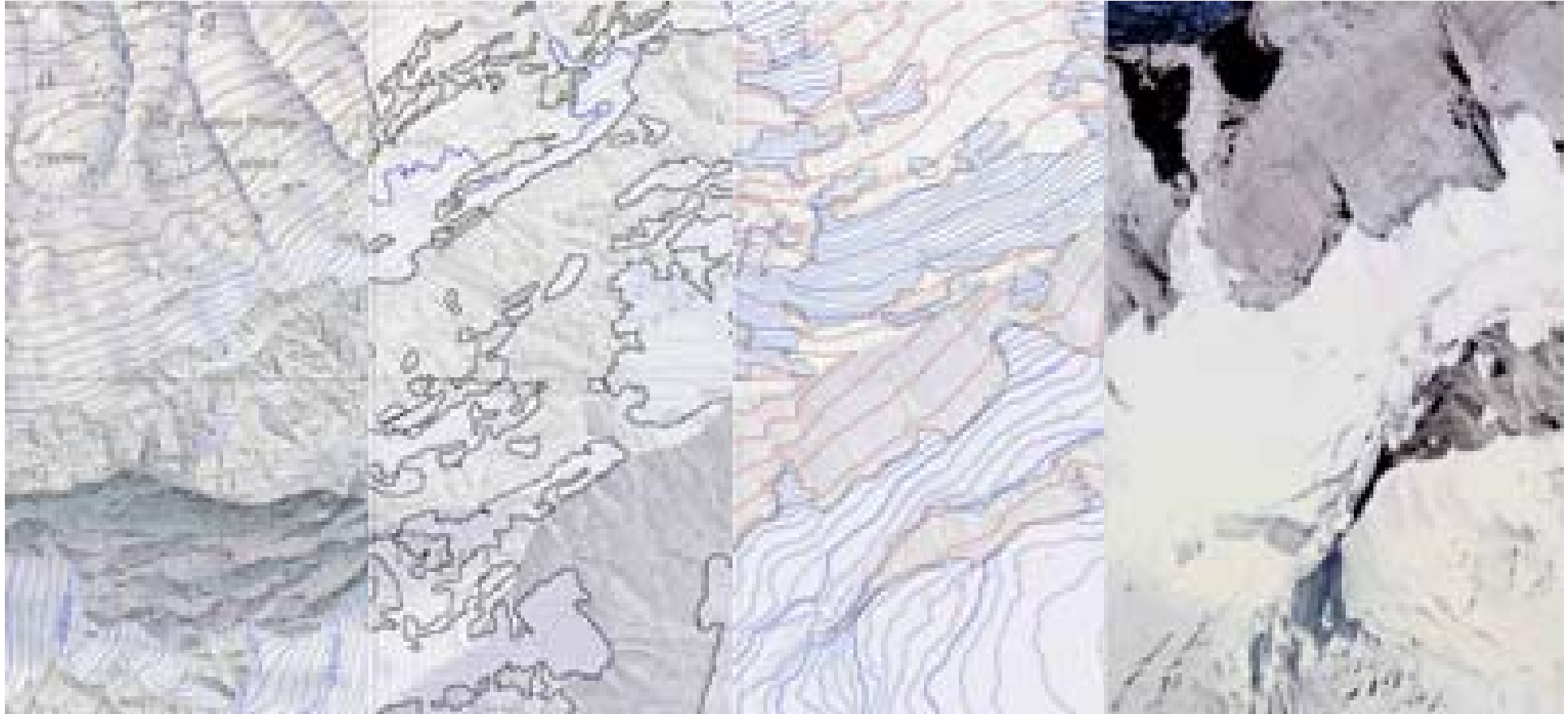
Future bases for rock and glacier revision

Latest map edition

Outlines of rock + glaciers

Contour lines

Aerial photographs

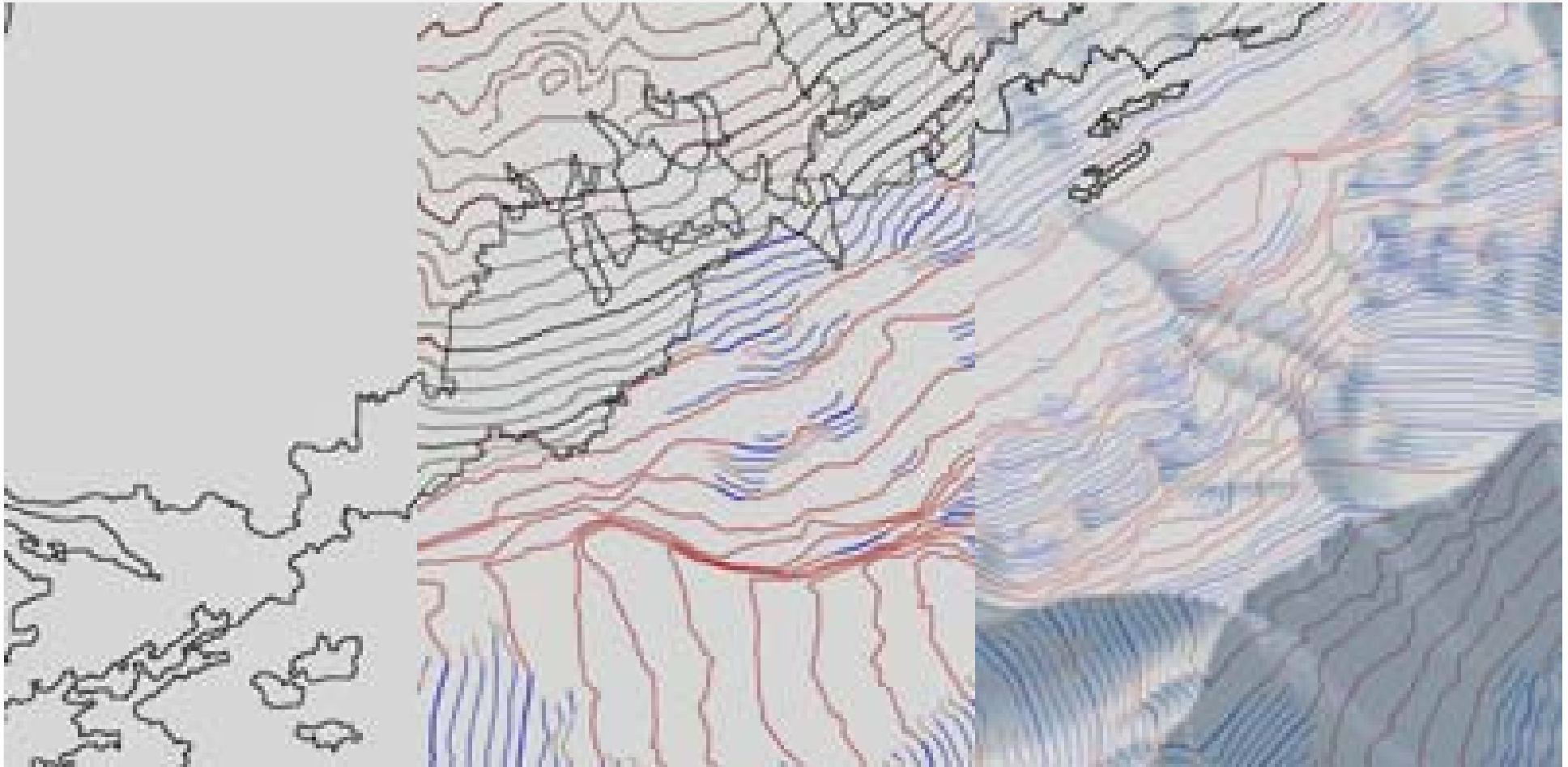


Future bases of scree representation

Outlines of scree

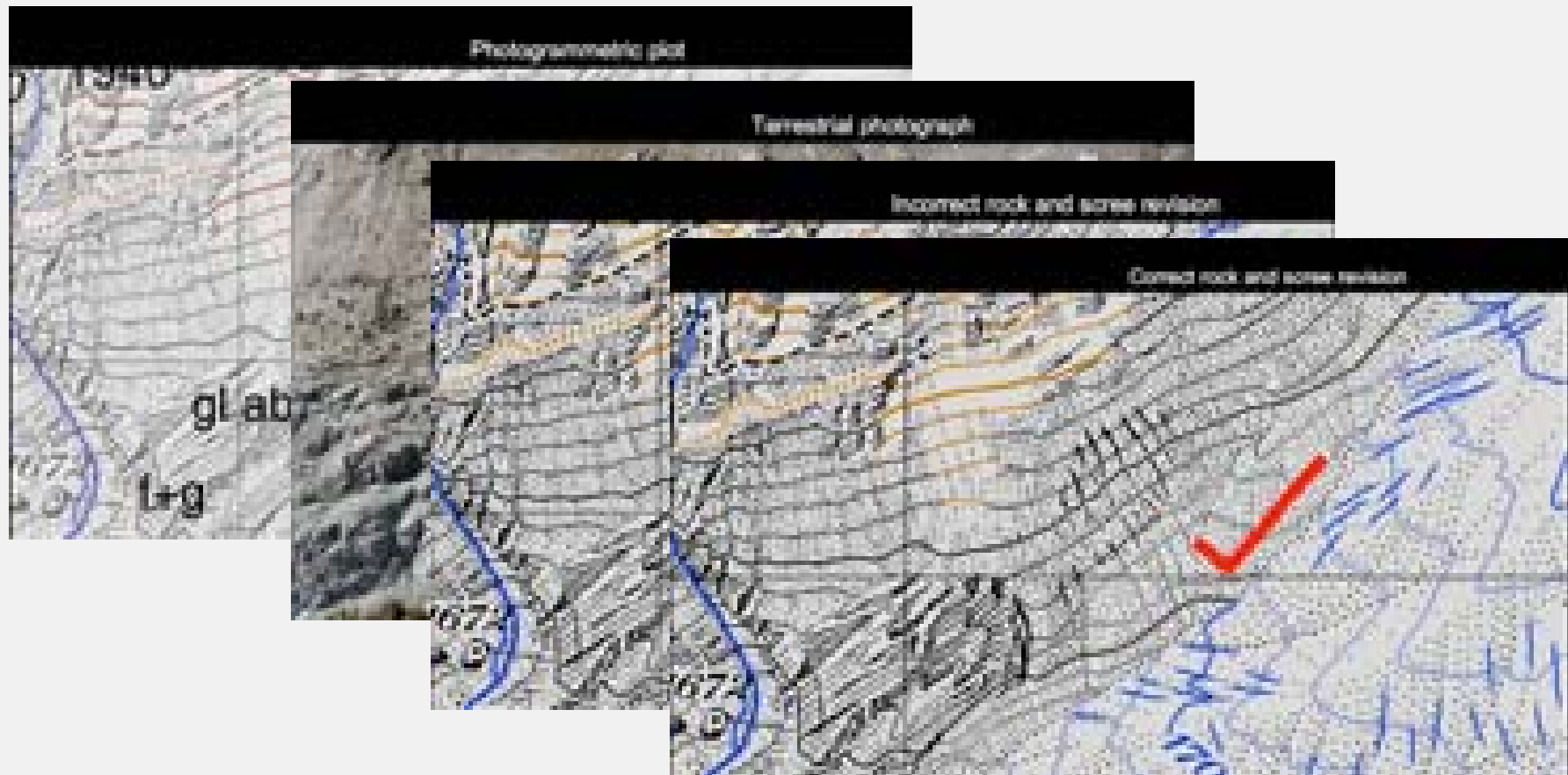
Contour lines

Hill shading



Problem

- Risk of incorrect terrain revision will remain



Preliminary work before transition

- Rock and glacier representations have to be separated from the map content

Black and blue items



Separated rock drawing



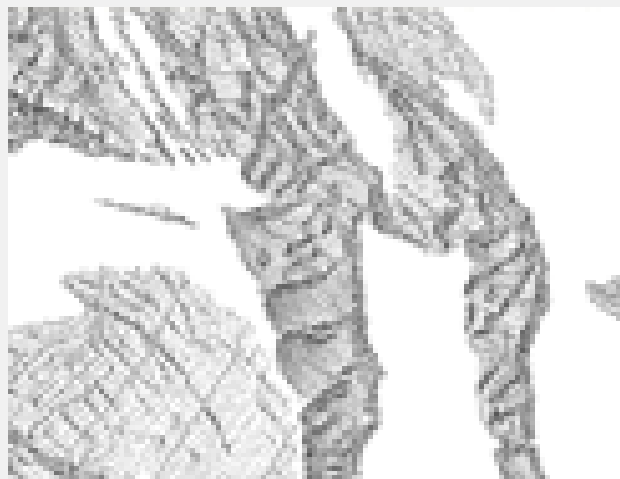
Separated glacier drawing



Preliminary work before transition

- Rock and glacier representations have to be separated from the map content
- Rock and glacier representations must be completed

Completed rock drawing



Completed glacier drawing



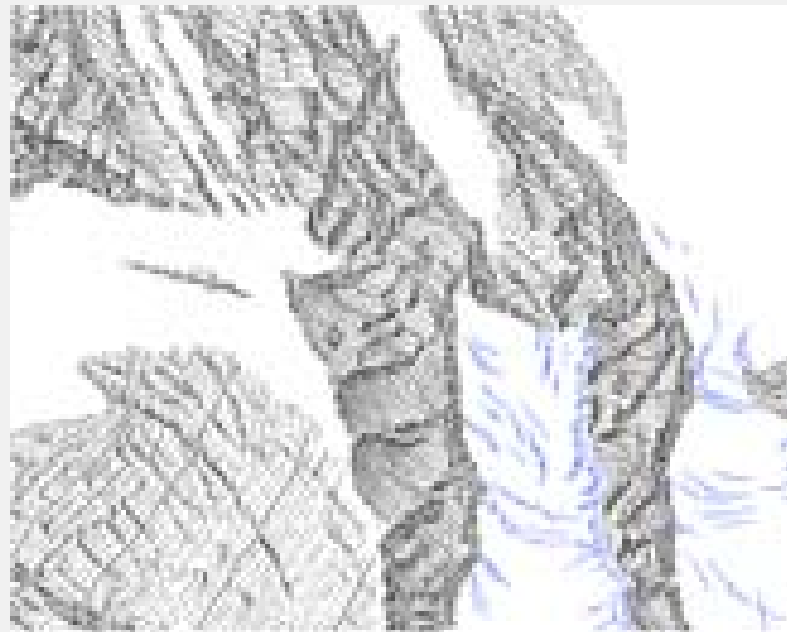
Conclusions

- Today's rock and glacier representations is retained and will be revised

Today's rock and glacier drawing



Future rock and glacier drawing



Conclusions

- Today's rock and glacier representations is retained and will be revised
- New scree representation will reduce costs

Now



Future



Reduction in human labour



Conclusions

- Today's rock and glacier representations is retained and will be revised
- New scree representation will reduce costs
- Skills of a sufficient number of specialized cartographers must be guaranteed



4 of 6 swisstopo's rock drawing specialists

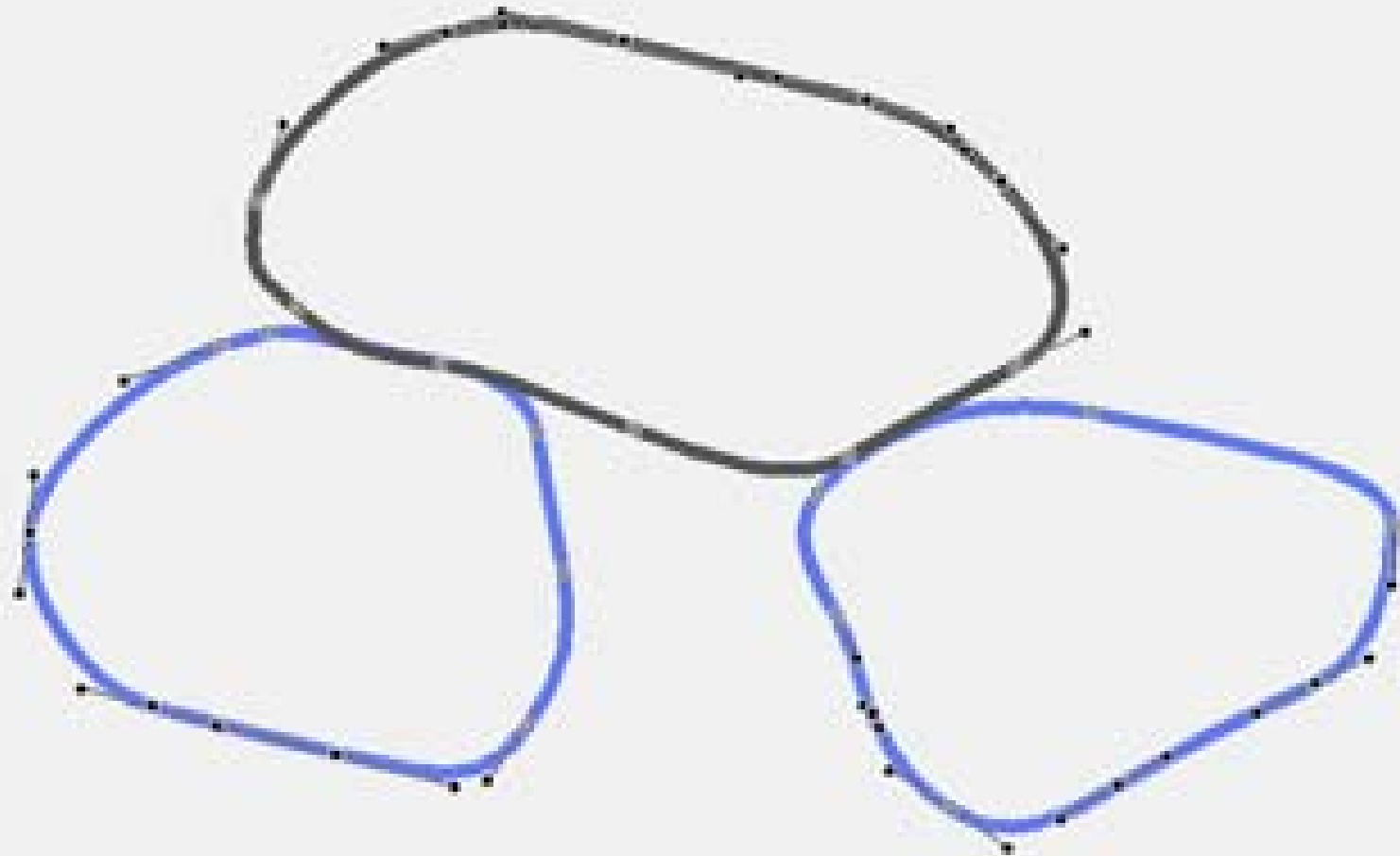
4. Summary

- Rock and glacier representations will be stored and revised in raster mode



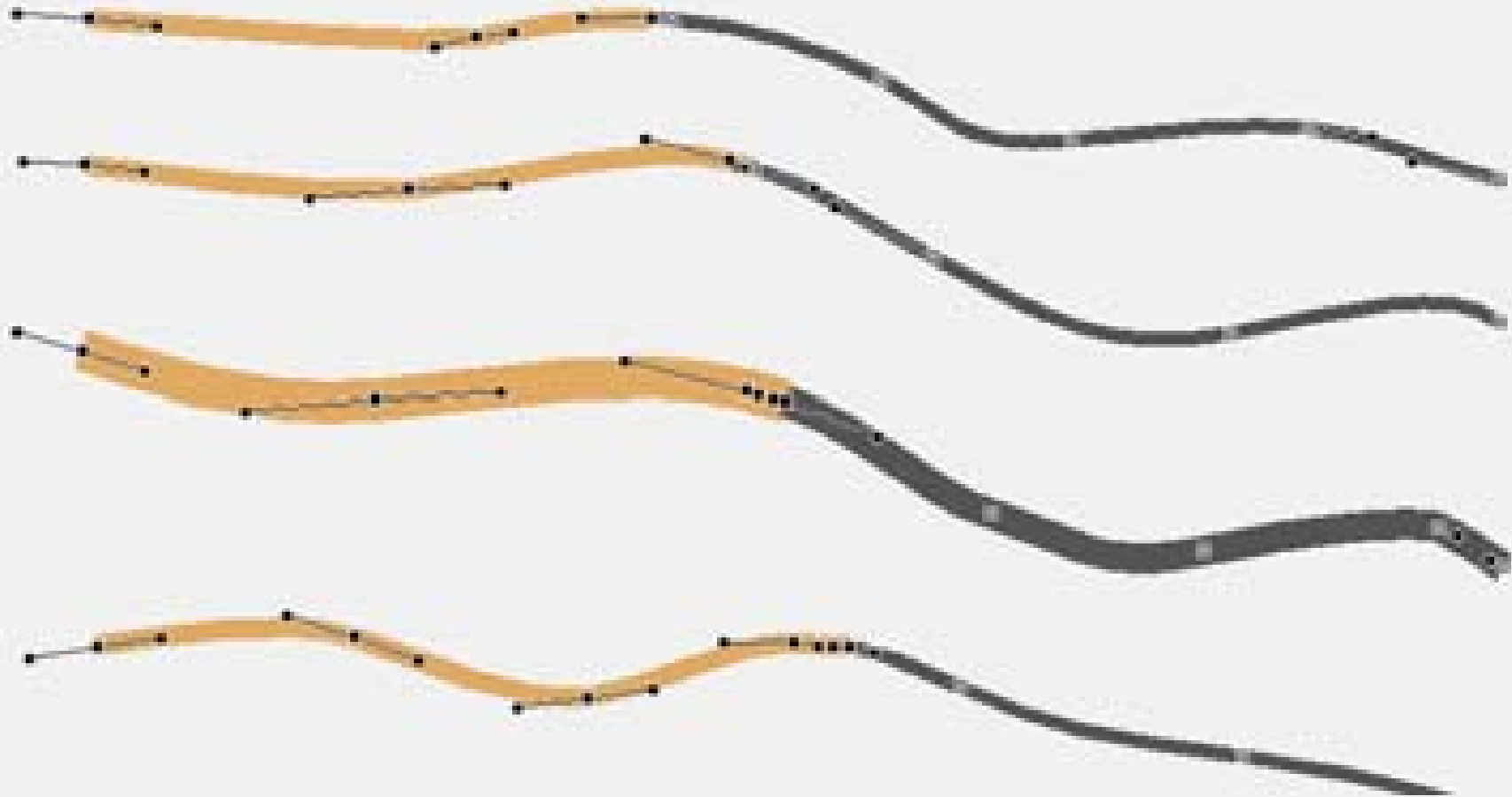
4. Summary

- Rock and glacier representations will be stored and revised in raster mode
- Outlines of rock, glacier and scree will be stored and revised in vector mode



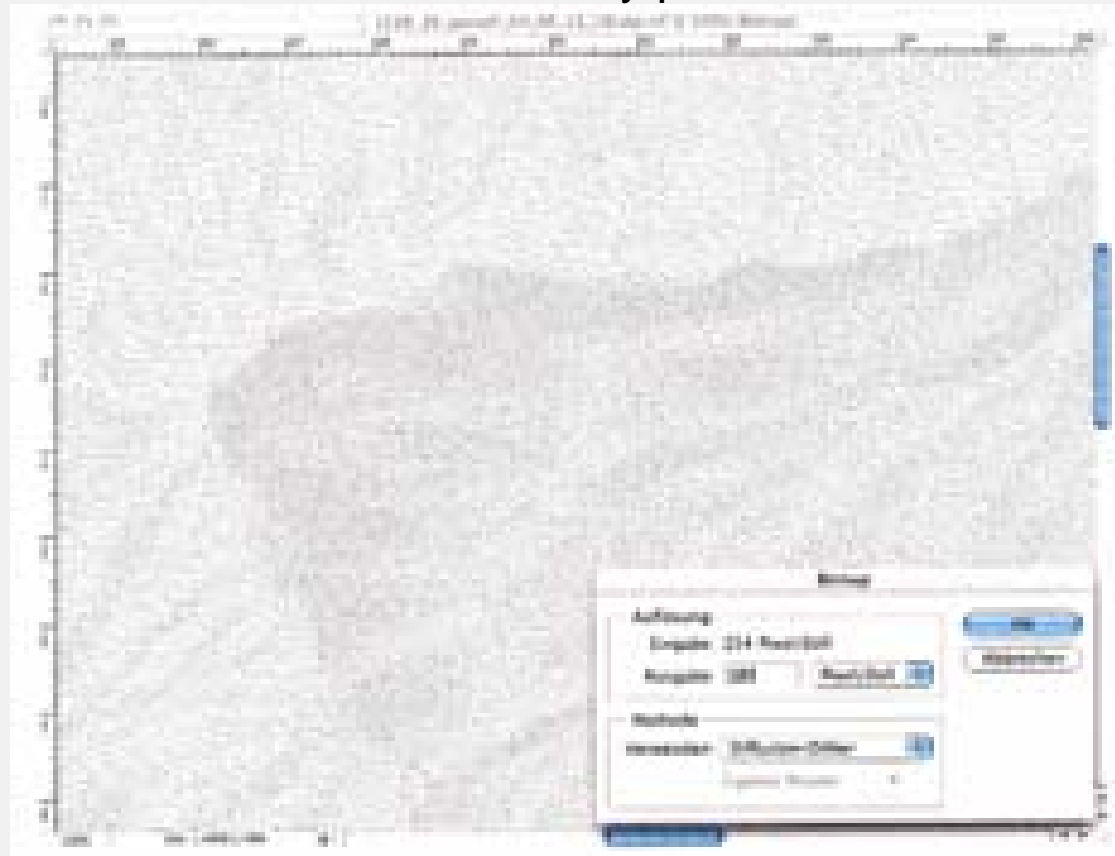
4. Summary

- Rock and glacier representations will be stored and revised in raster mode
- Outlines of rock, glacier and scree will be stored and revised in vector mode
- Contour lines will be stored and revised in vector mode



4. Summary

- Rock and glacier representations will be stored and revised in raster mode
- Outlines of rock, glacier and scree will be stored and revised in vector mode
- Contour lines will be stored and revised in vector mode
- Scree representation will be automatically produced



Maps in comparison

Now



Future

