Processing, data sharing and storage of geospatial data at the National Land Survey of Iceland

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Pléiades stereoimages
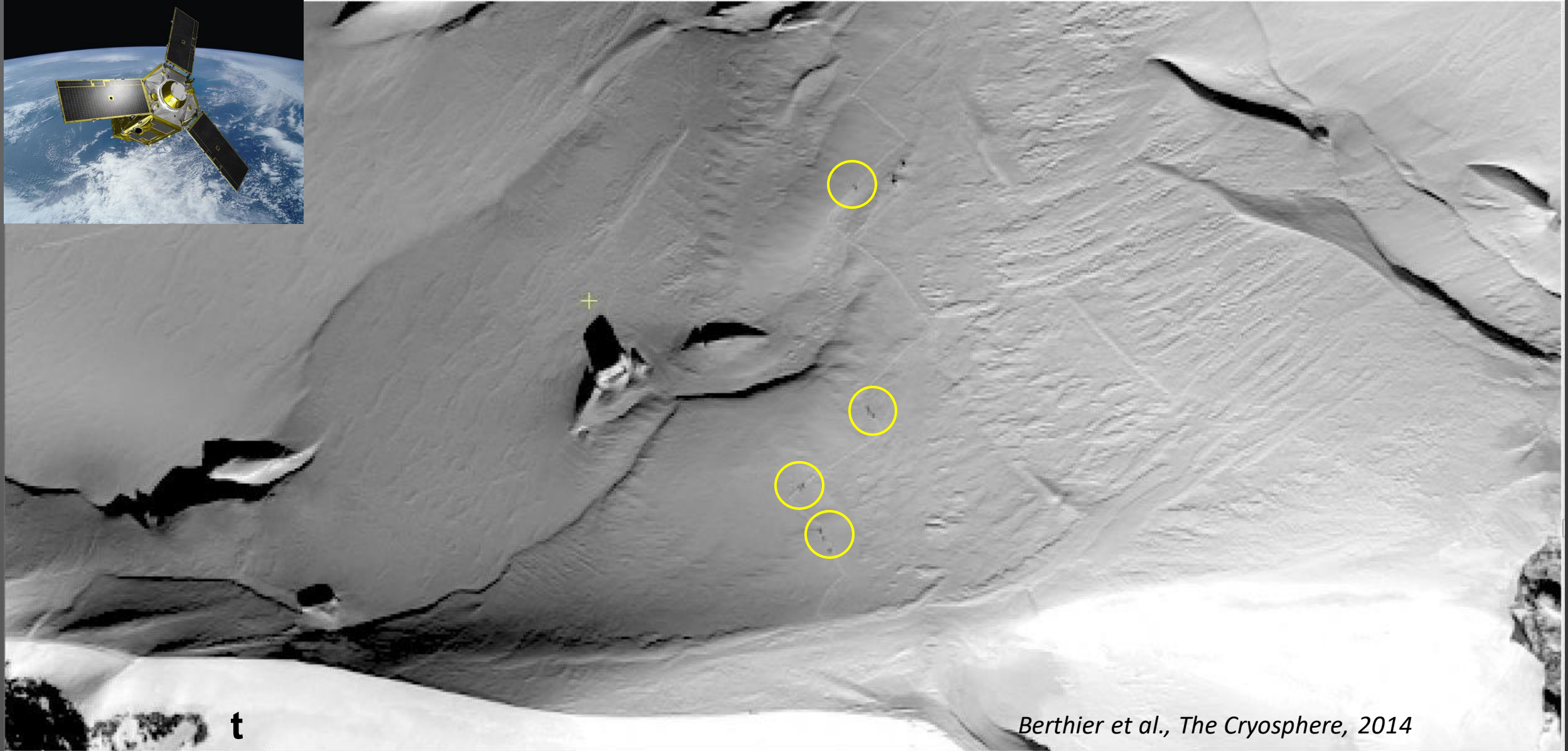
t + 27 sec

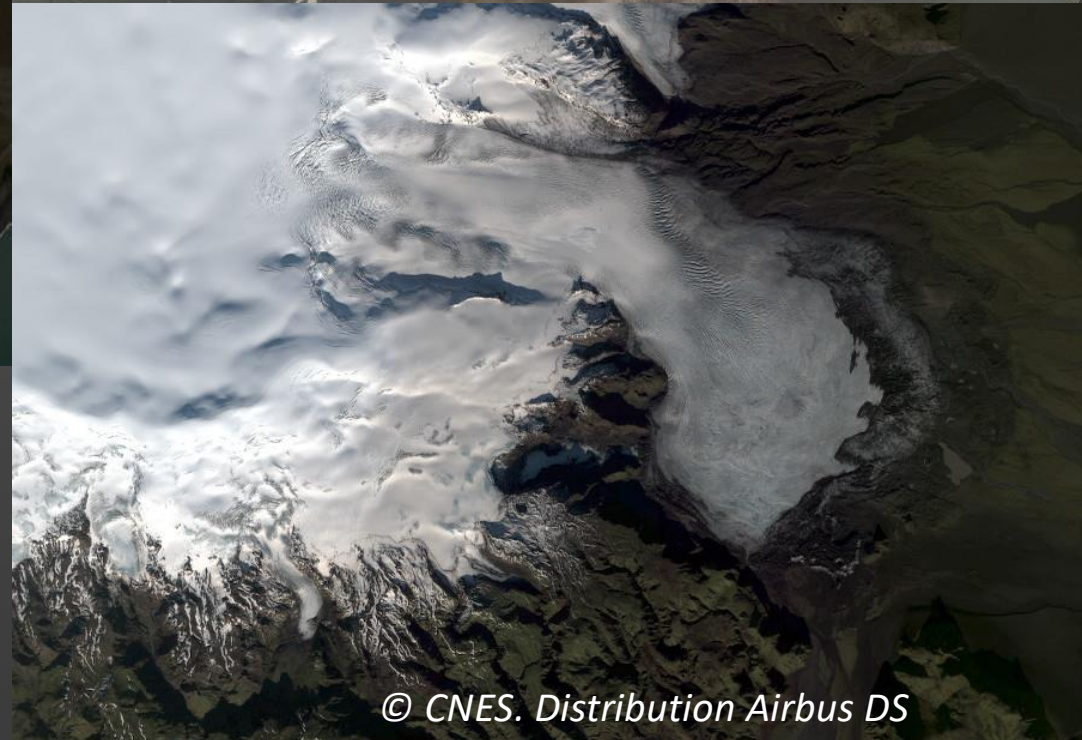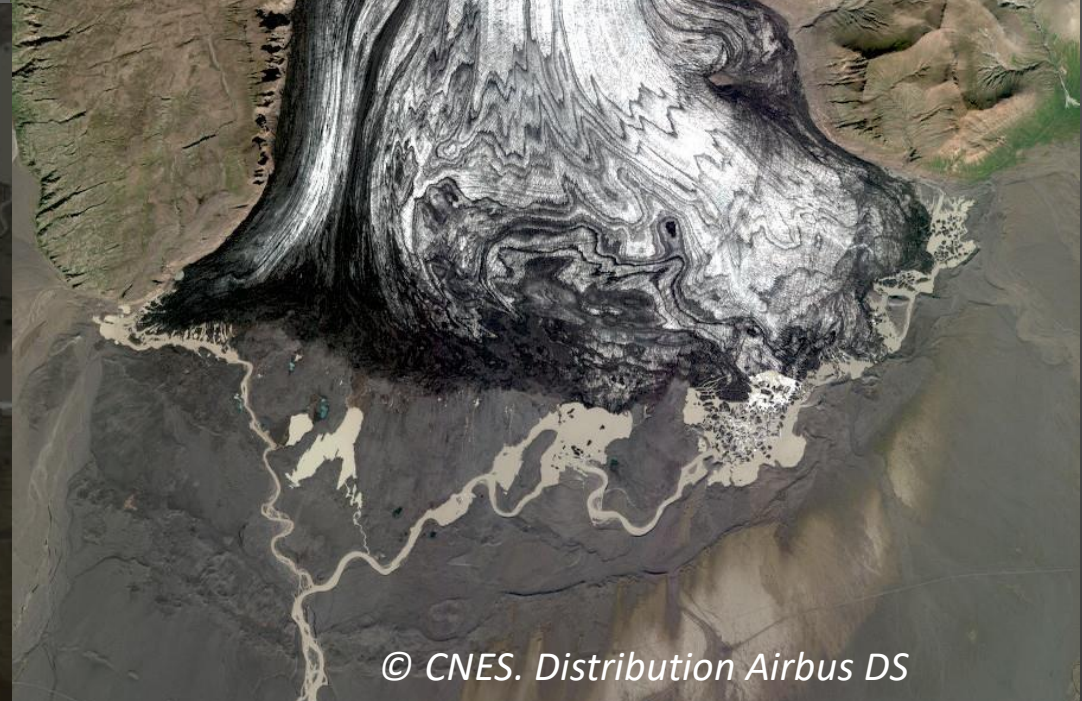*Berthier et al., The Cryosphere, 2014*

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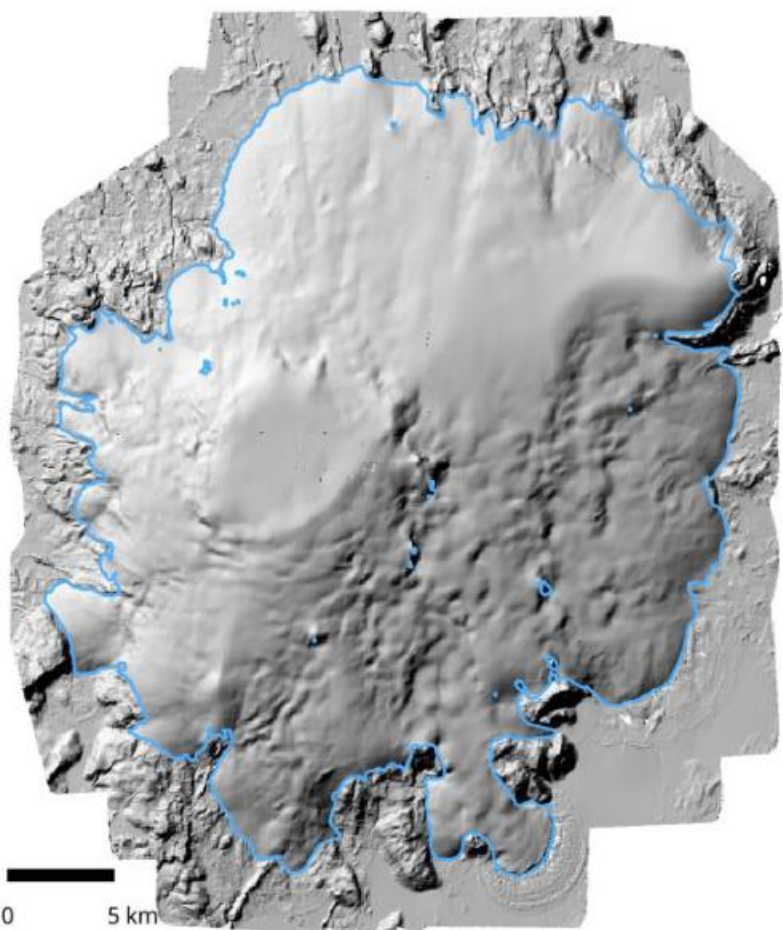© CNES. Distribution Airbus DS

Glacier mapping
from Pléiades stereo
images:

2020: ~2,000 km^2
2021: ~15,000 km^2
2022: ~4,000 km^2
2023: ~2,500 km^2

DEM & DEM difference

Hofsjökull elevation difference
Oct 2020 minus Oct 2013
Data: lidar (2013) & Pléiades (2020)

-50 -40 -30 -20 -10 0 10 20 30 40 50 m
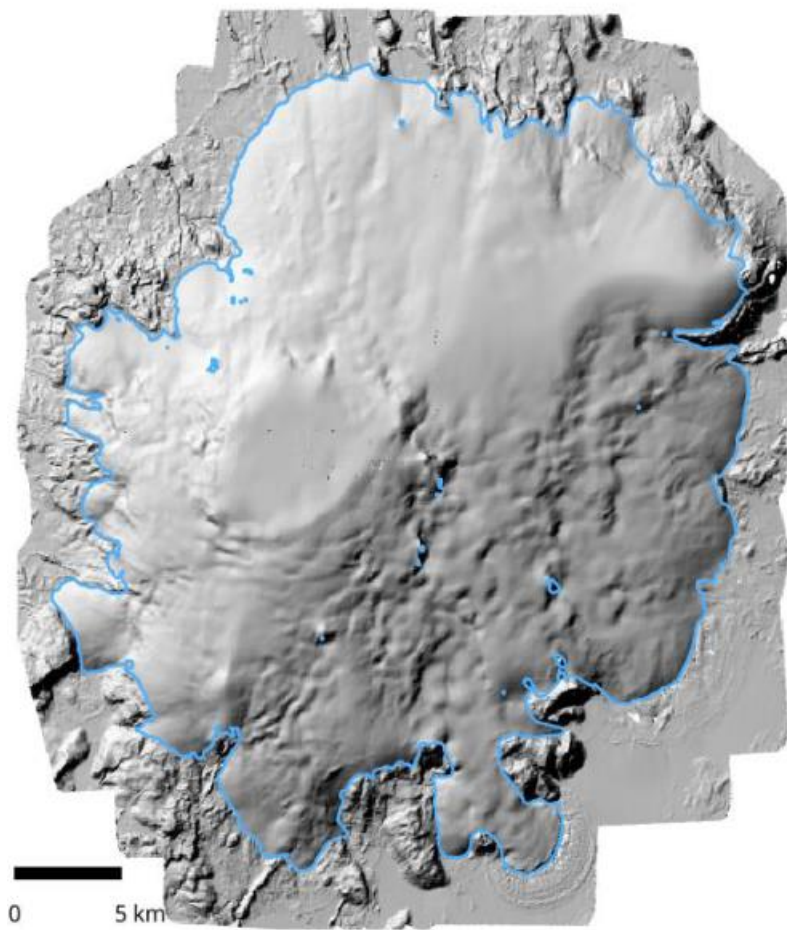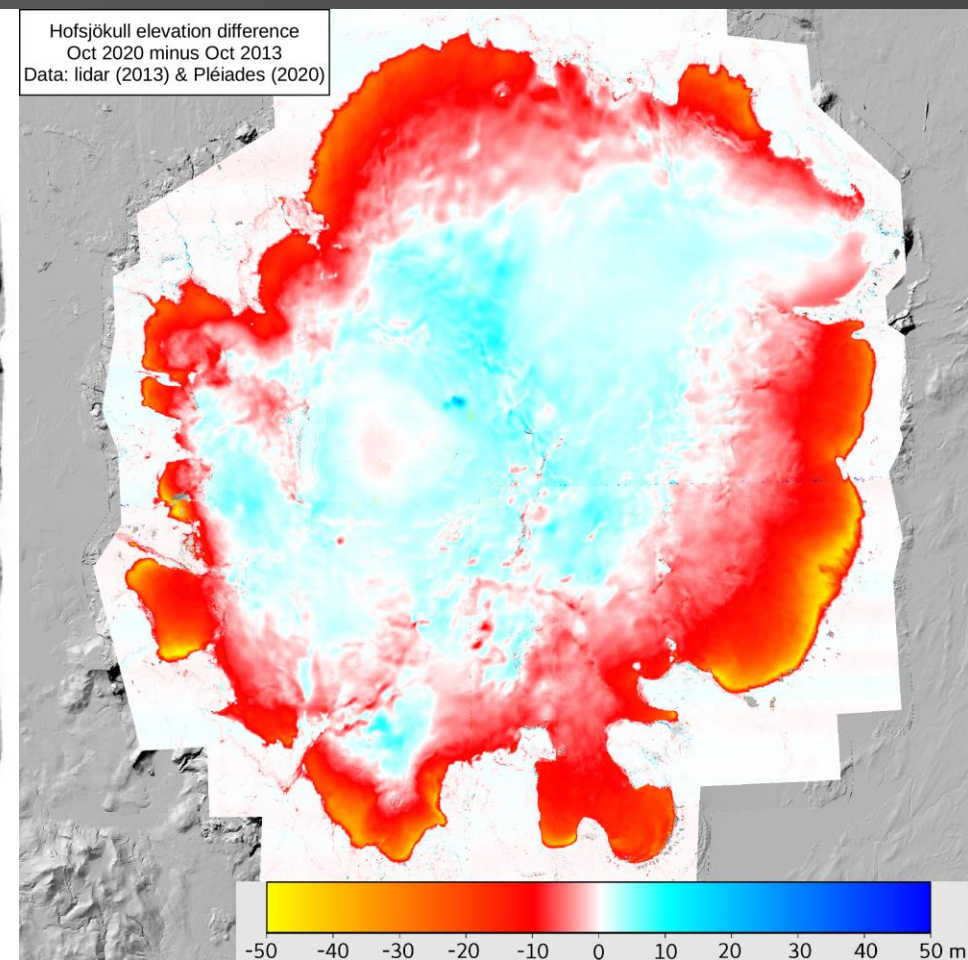
Oct 2013

Oct 2020

Elev. Diff 2013-2020

Satellite stereoimages: challenges in processing

Pléiades: 2Gb per acquisition. ~200Gb currently in ELJA

Example of processing time:

ELJA: 1-4 hr per acquisition, up to 8 nodes (64cpu_256mem or 48cpu_192mem)

Krafla (LMI's server): 4-12hr per acquisition, 1 node (AMD Ryzen Threadripper 3970X)

```
scontrol show hostname $SLURM_NODELIST | tr ' ' '\n' > nodes.list
parallel_stereo --nodes-list nodes.list ${pllpar} --stereo-algorithm asp_mgm \
    --keep-only ".exr L.tif F.tif PC.tif" -t rpcmaprpc --parallel-options '--sshdelay 0.1' \
    i1mp.tif i2mp.tif $rpc1 $rpc2 ${plnam}_${dat}_${cor} $glo30is
```

NeoGeographyToolkit/
StereoPipeline

The NASA Ames Stereo Pipeline is a suite of automated geodesy & stereogrammetry tools designed for processing planetary imagery captured...
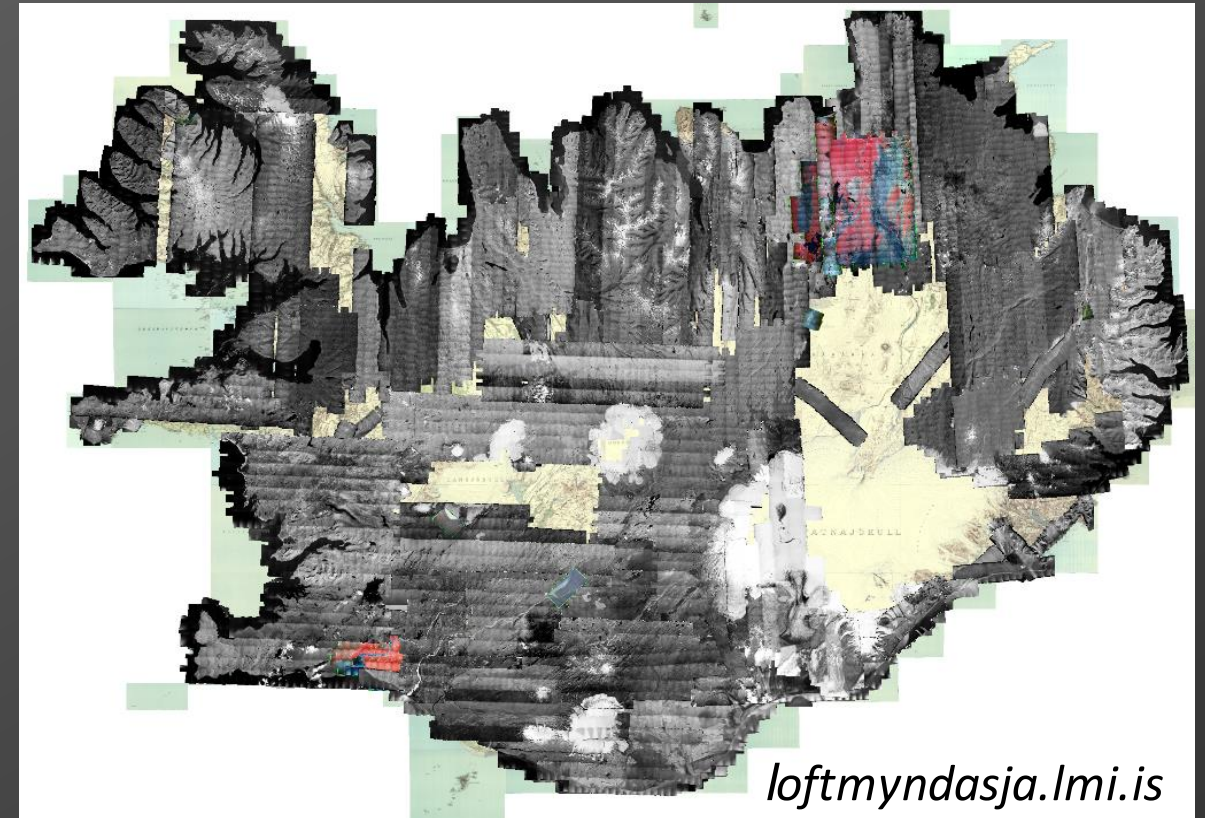
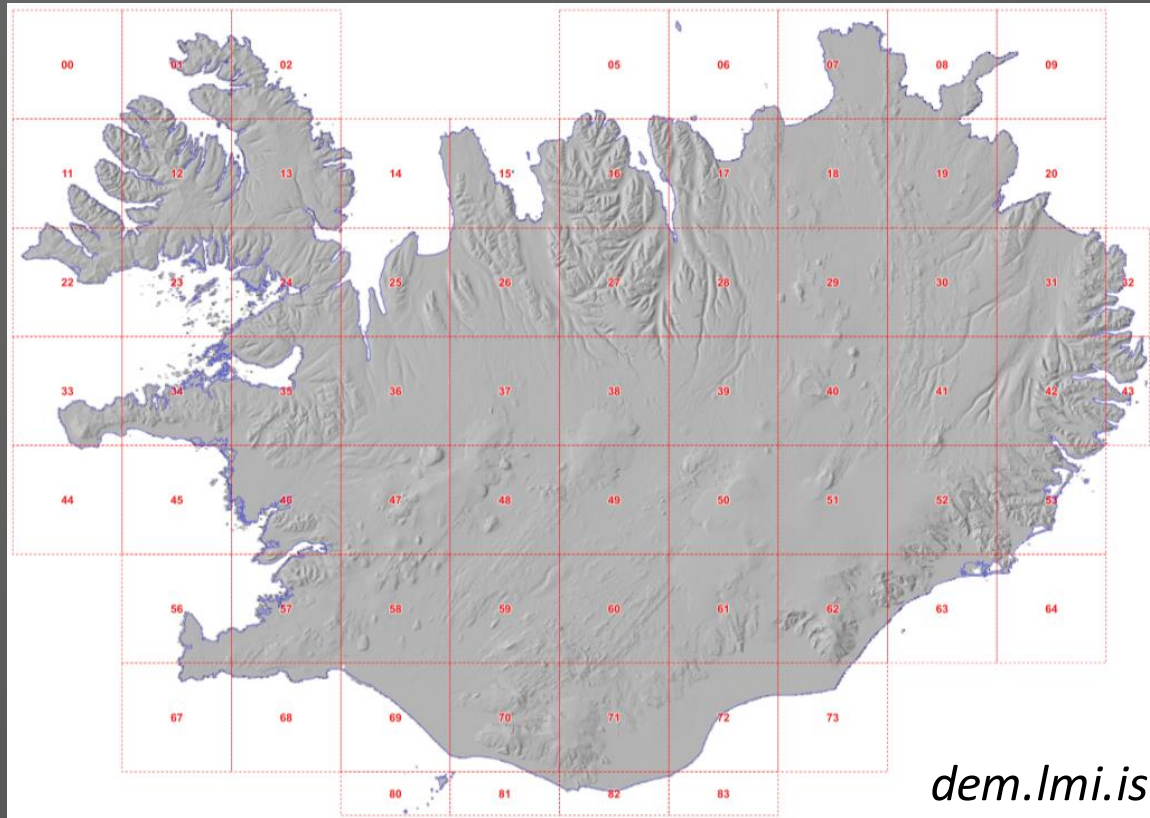👥 24 Contributors   ⊙ 31 Issues   💬 10 Discussions   ⭐ 457 Stars   ⑂ 172 Forks

https://github.com/NeoGeographyToolkit/StereoPipeline

Data sharing

LMÍ main task is to distribute free and open geospatial data

dem.lmi.is

loftmyndasja.lmi.is

Data storage and management

LMÍ storage currently [100Tb of storage through Tölvuþjónustan]:

- 20Tb data for historical aerial photographs

- 10Tb data for elevation data

- 10Tb data for other remote sensing data (e.g. Sentinel, Landsat, Maxar)

Perspectives:

- 10Tb additional data to finalize the scanning of aerial photographs

- 30Tb data for new aerial photography of the entire country

Data sharing:

- FTP-based (open and closed) - 500Gb of storage

- Tier-based storage (with different bandwith) with public distribution

Thank you!

And thanks to the IRIS project for the access to ELJA!