

# National report of Iceland

Teams

NKG WGRF 22.3.2020

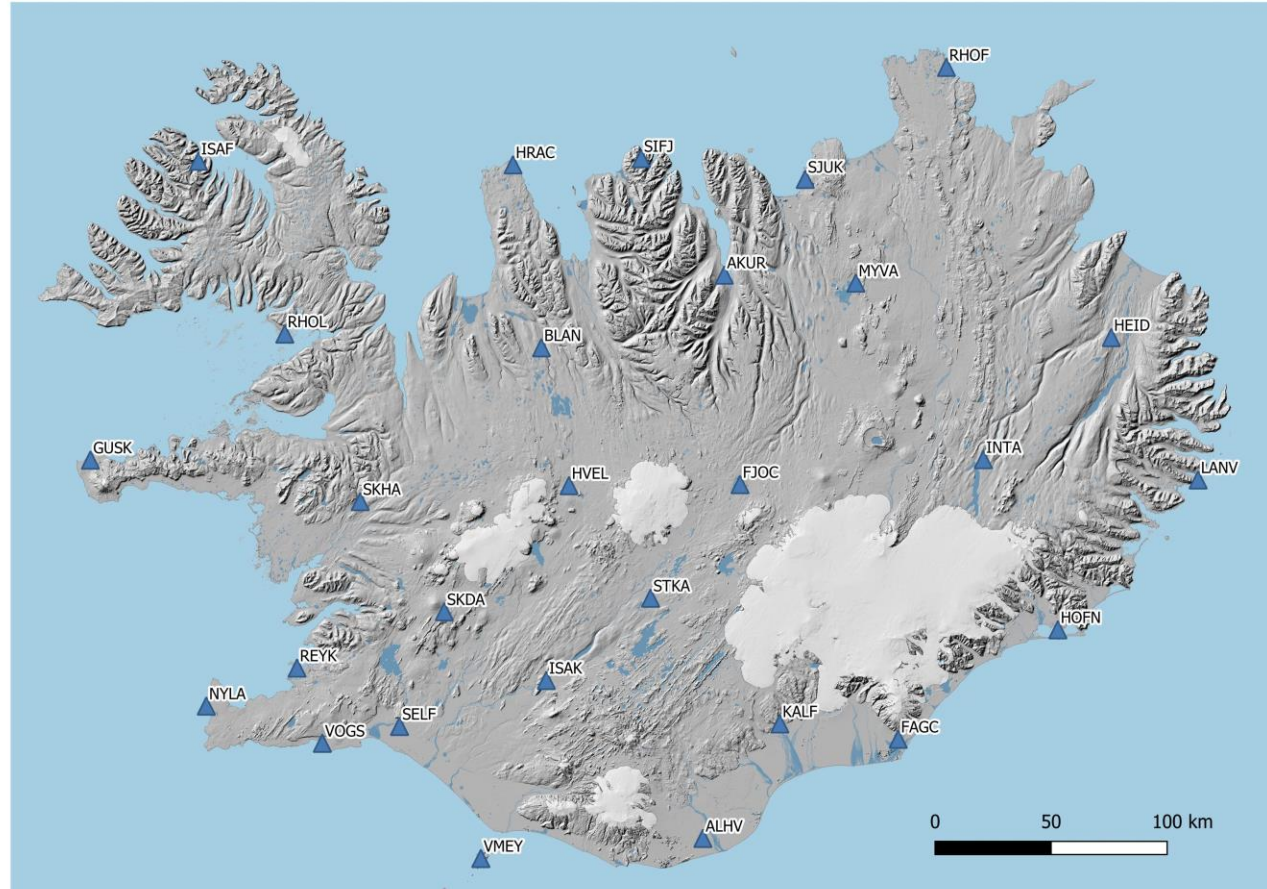
Guðmundur Valsson

# Projects in 2020

- NKG Science week
- Main focus on IceCORS
- Installed 4 new stations
- Finished computation of the Kjölur levelling line
- Re-computation of ISH2004 in southwest Iceland with updated land uplift model
- Levelling in Höfn



# IceCORS current situation

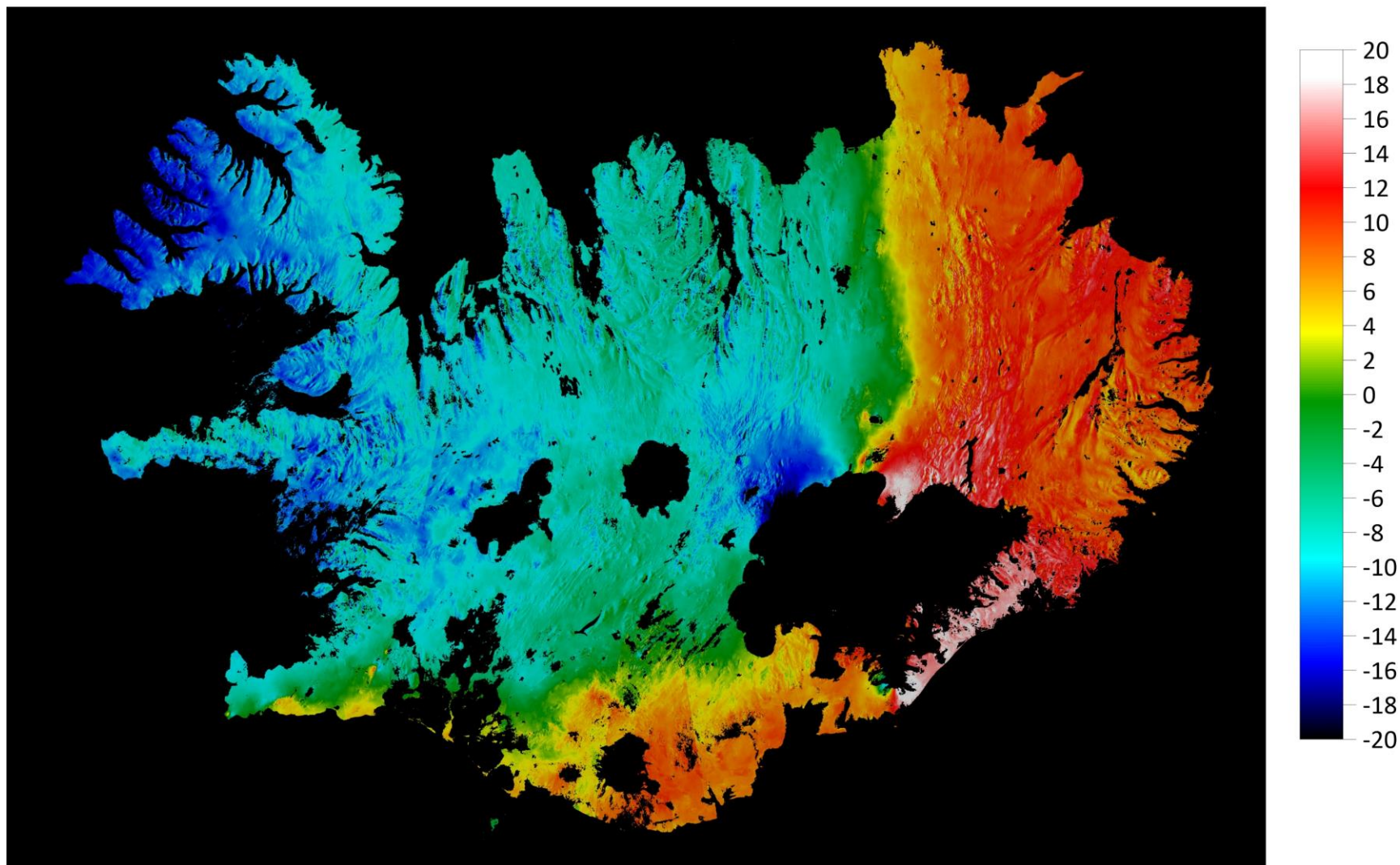


# Ongoing projects

- New INSAR map of Iceland based on Sentinel-1 data from 2015 to 2020
- INSAR database of major events in Iceland
- Study how we can use INSAR for deformation modeling
- More IceCORS stations
- Database for geodetic benchmarks
- Process all data from CORS stations in Iceland
- NKG homepage will be hosted at NLSI
- Unrest and eruption in Reykjanes peninsula

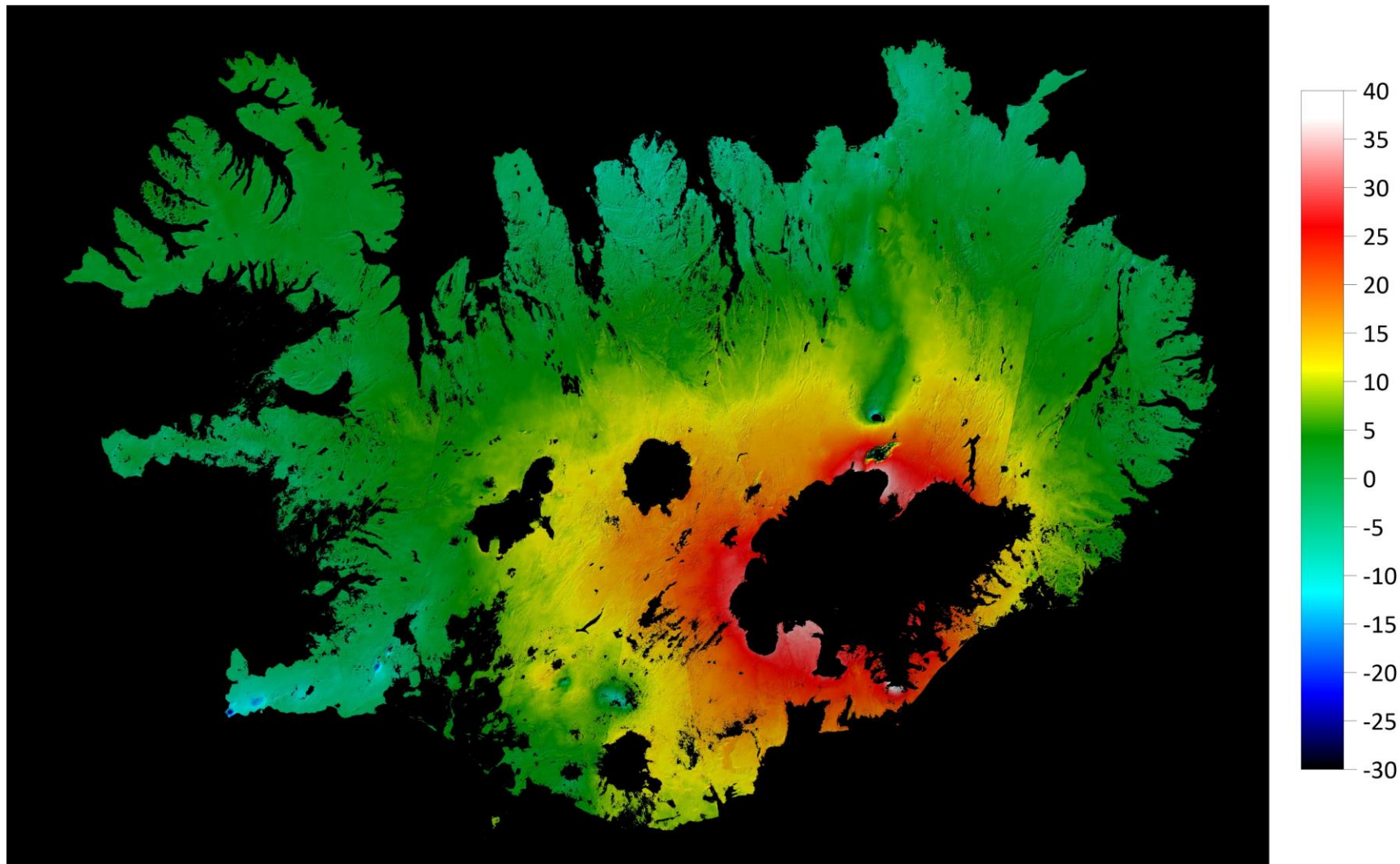
# INSAR map of Iceland 2015-2018

Near-East 2015-2018

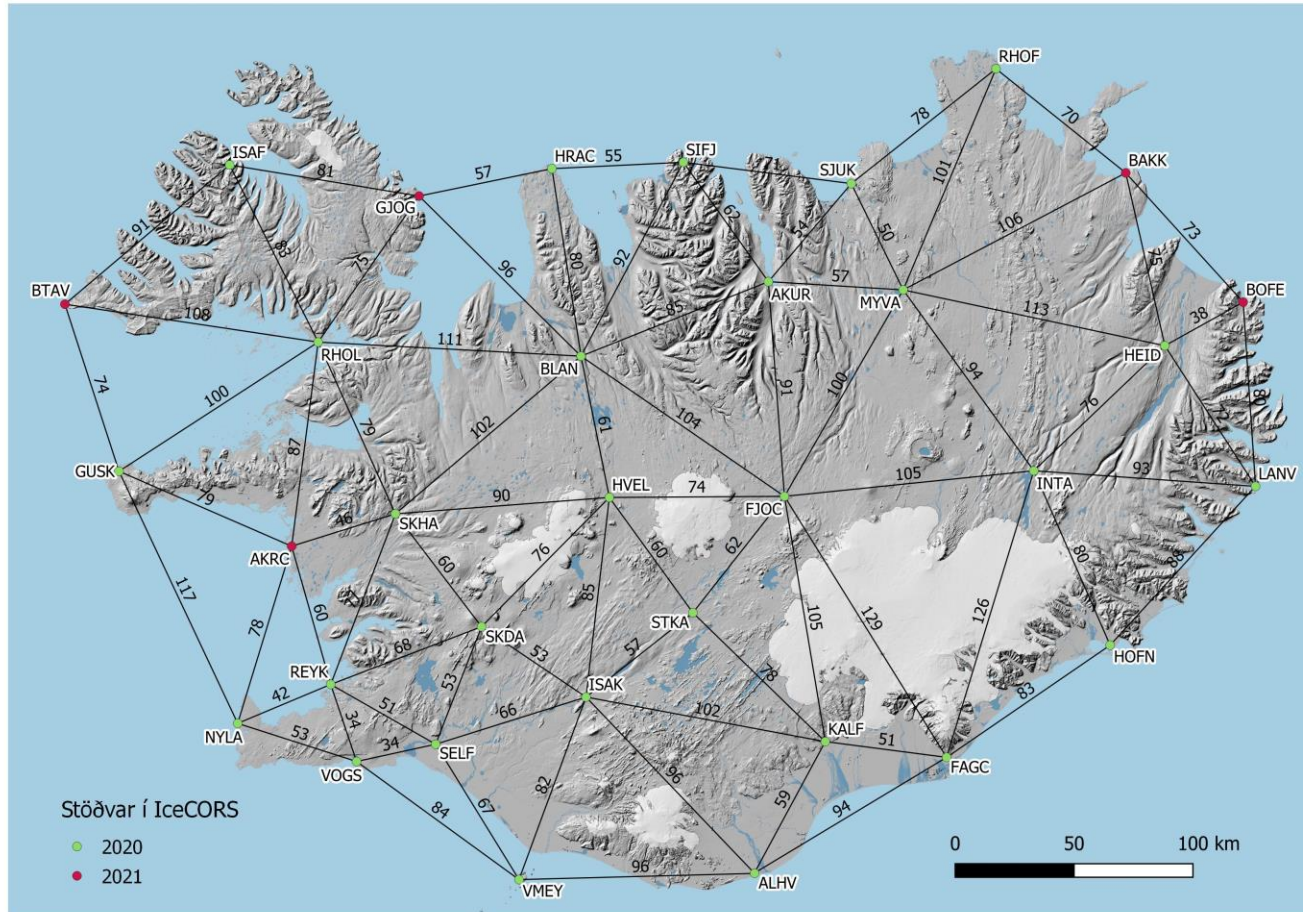


# INSAR map of Iceland 2015-2018

Near-Up 2015-2018



# IceCORS 2021





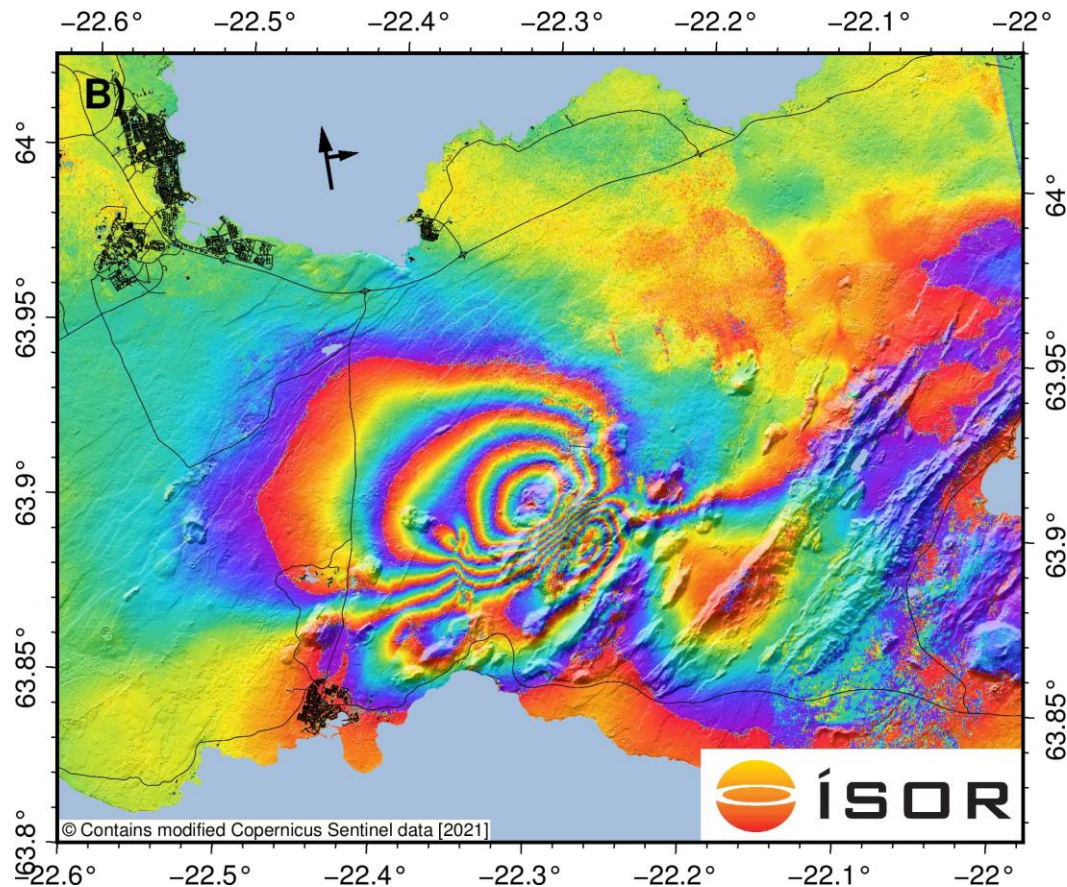
# Ongoing unrest in Reykjanes peninsula

- The unrest started in January 2020 with uplift around the mountain Þorbjörn close to Grindavík
- First large earthquake on March 12<sup>th</sup> magnitude 5.2, followed by several smaller
- Another earthquake on October 20<sup>th</sup> magnitude 5.6, followed by several smaller
- On February 24<sup>th</sup> we had an earthquake of magnitude 5.7
- Continuous unrest since then
- Around 60000 earthquakes
- Clear signs of magma intrusion from INSAR and GNSS
- Eruption started last Friday evening

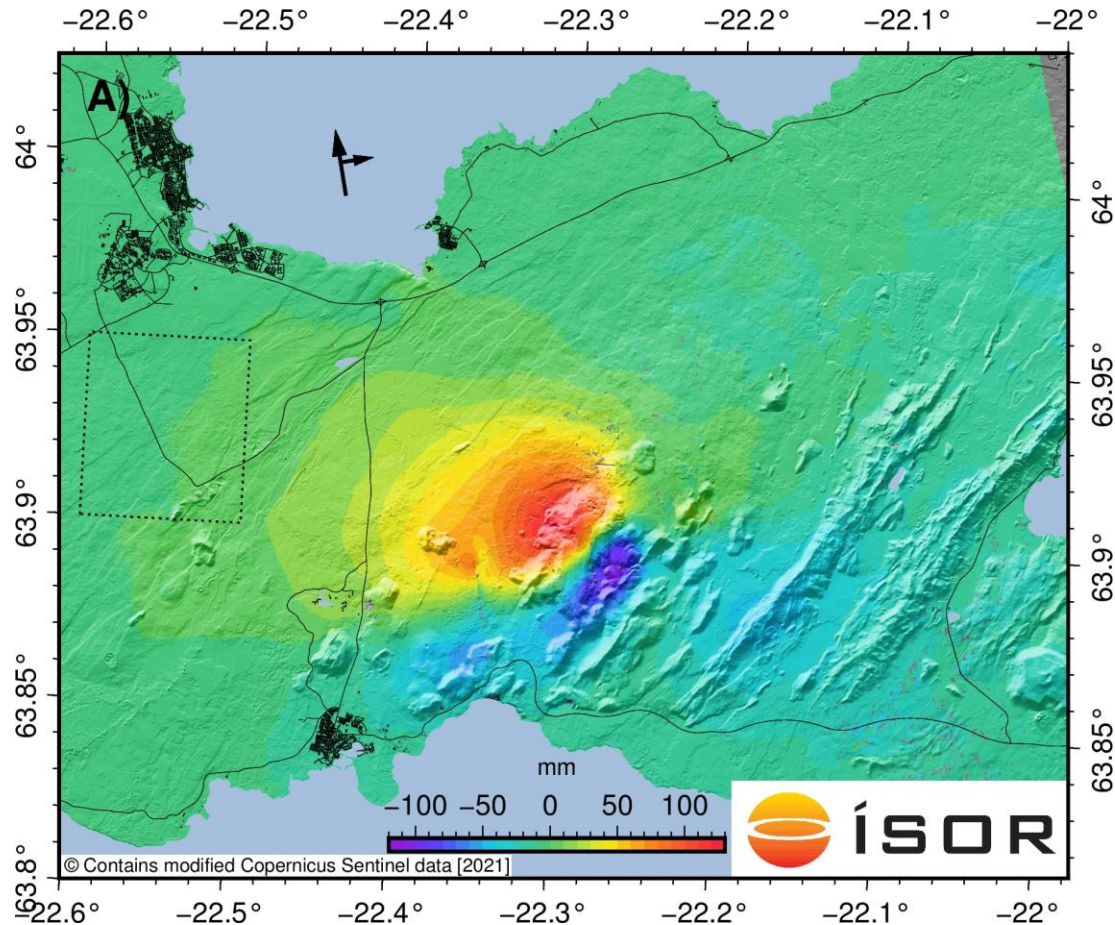
# Activites

- INSAR and GNSS are playing vital role in monitoring the event
- Lot of news coverage explaining how INSAR works
- New CGNSS stations have been installed in the area
- A lot of interest in drone surveying of the area
- NLSI is trying to coordinate this
- Question about reference

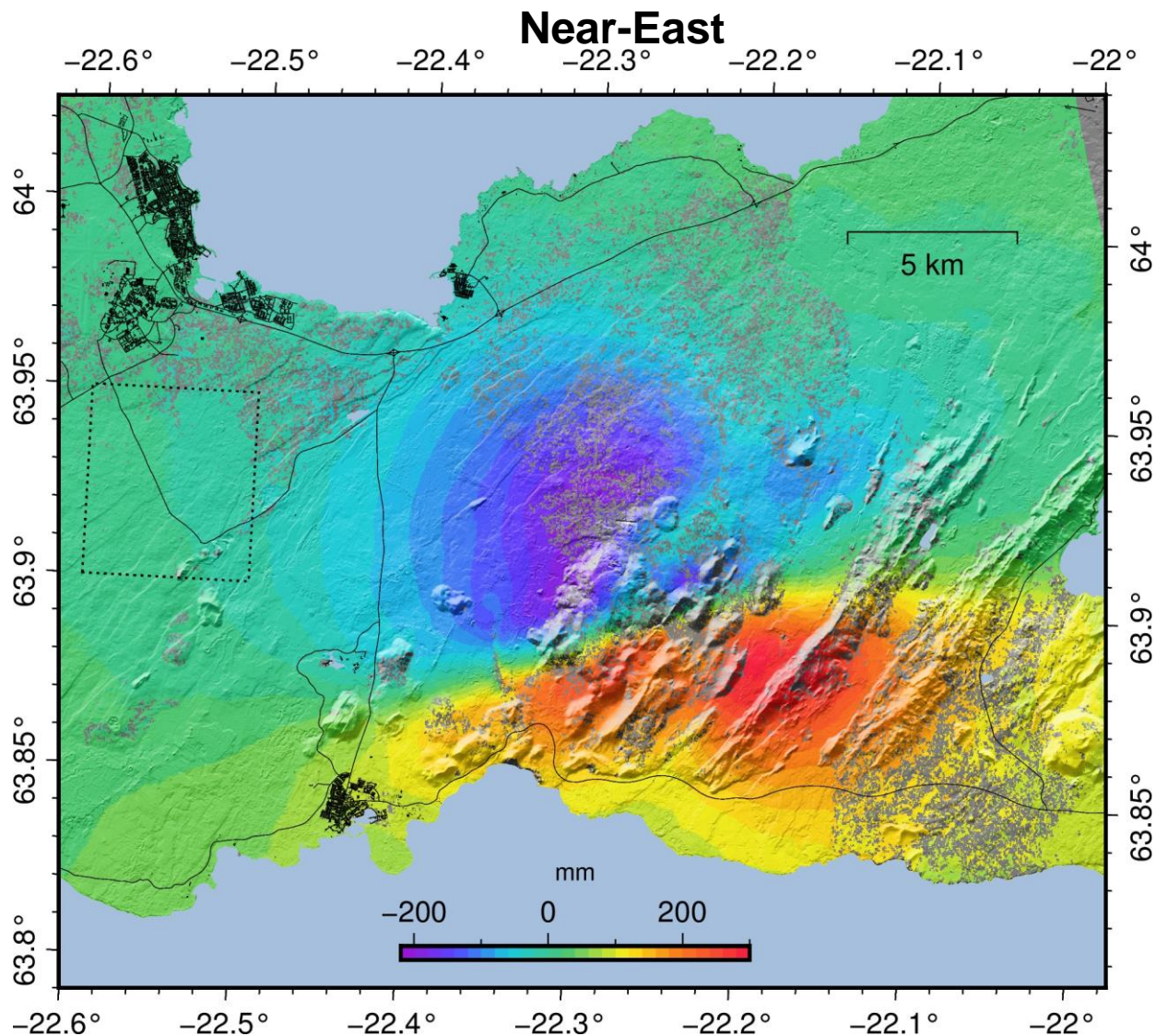
# Ascending track T16: 3 Mar. – 9 Mar. (18:59)



# Ascending track T16: 3 Mar. – 9 Mar. (18:59)

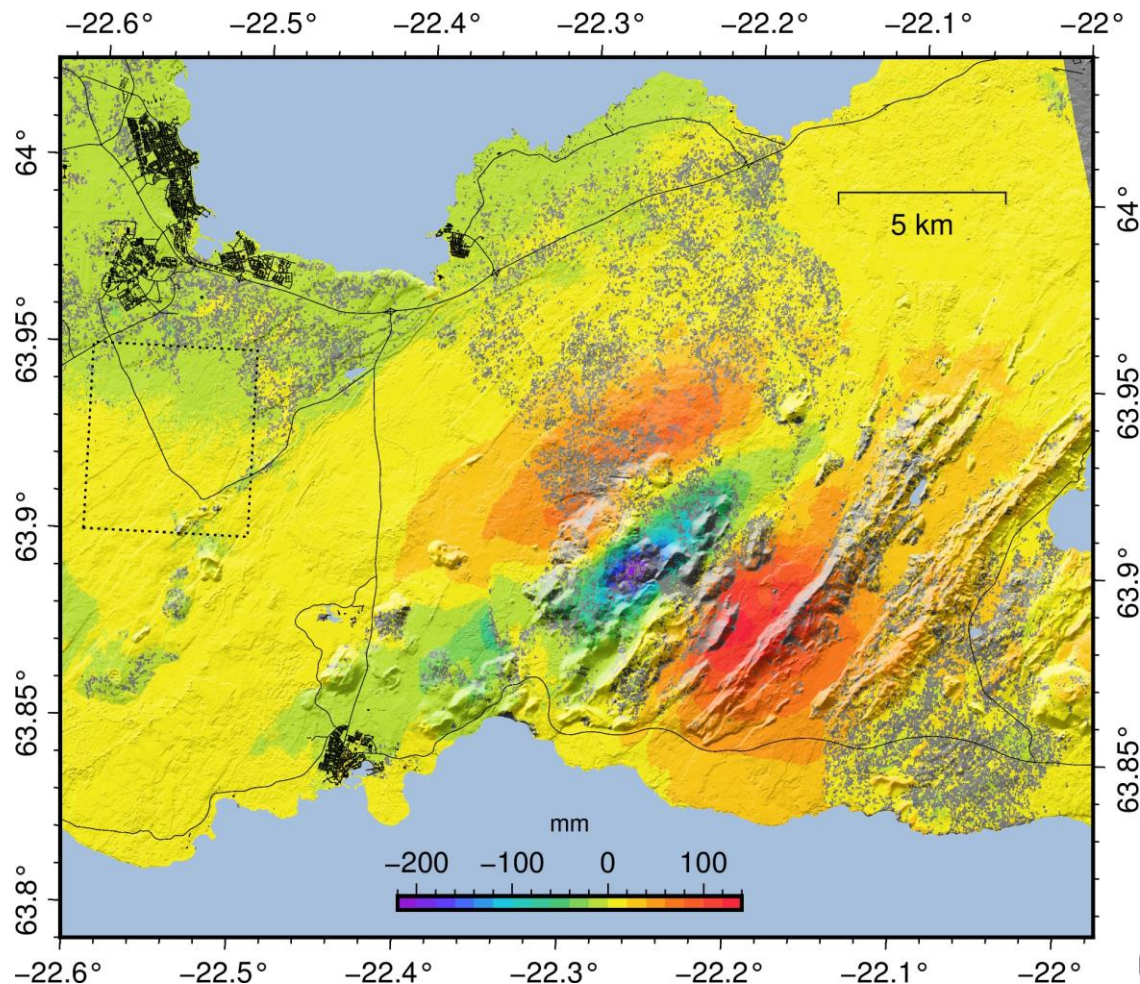


# Total deformation since beginning of unrest-9. mar. (approximation)



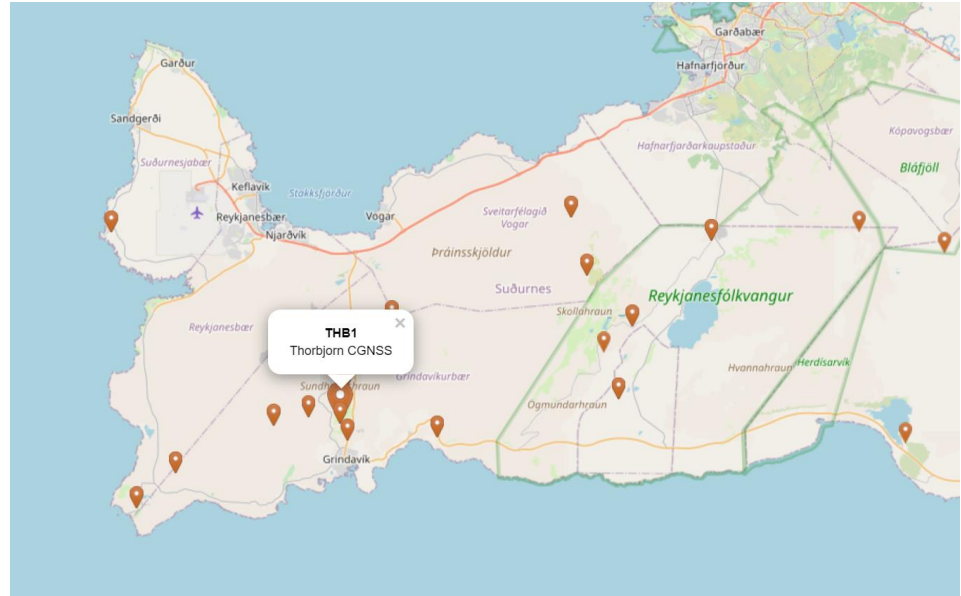
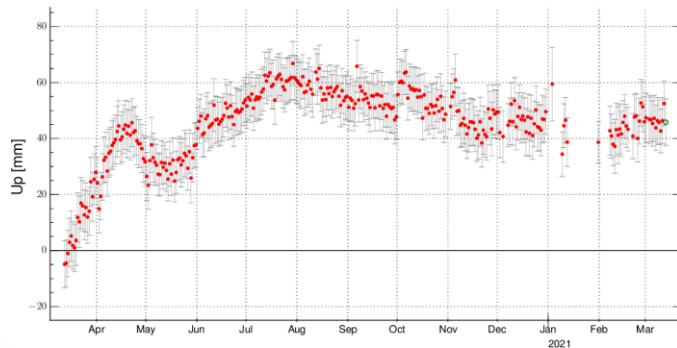
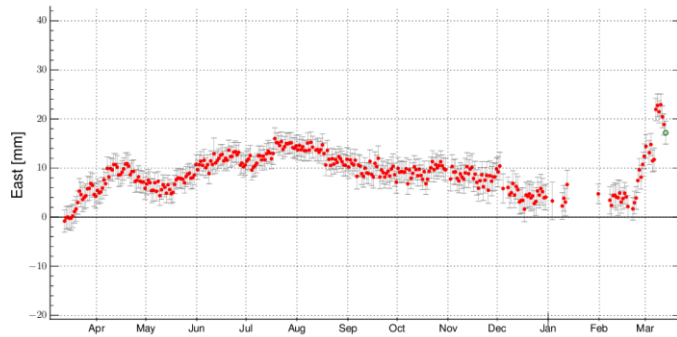
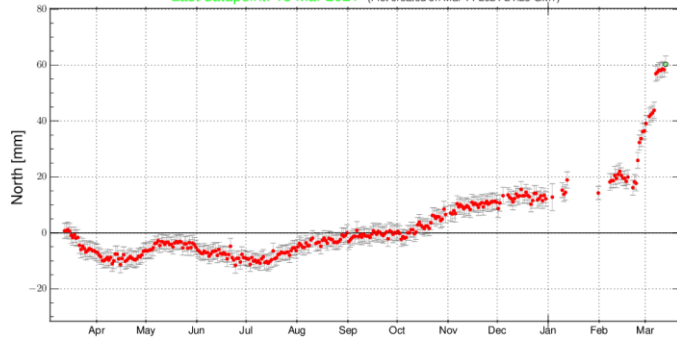
# Total deformation since beginning of unrest – 9. mar (approximation)

## Near-Up



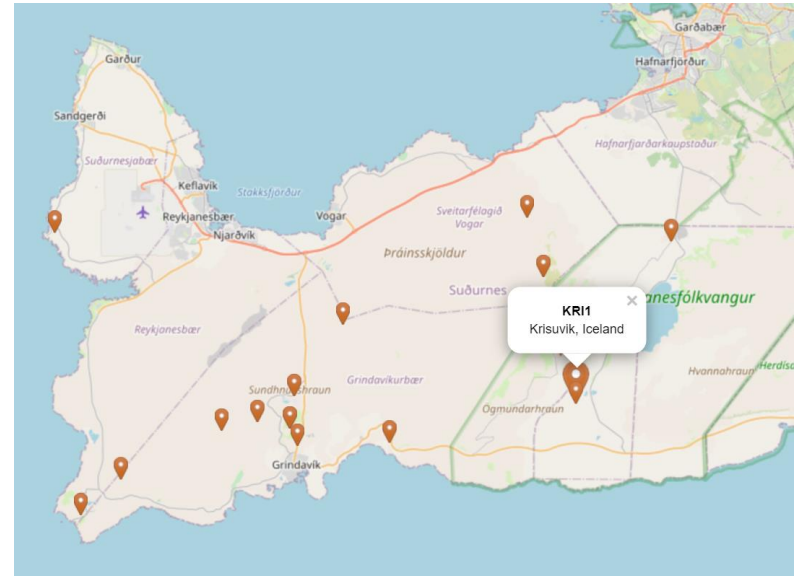
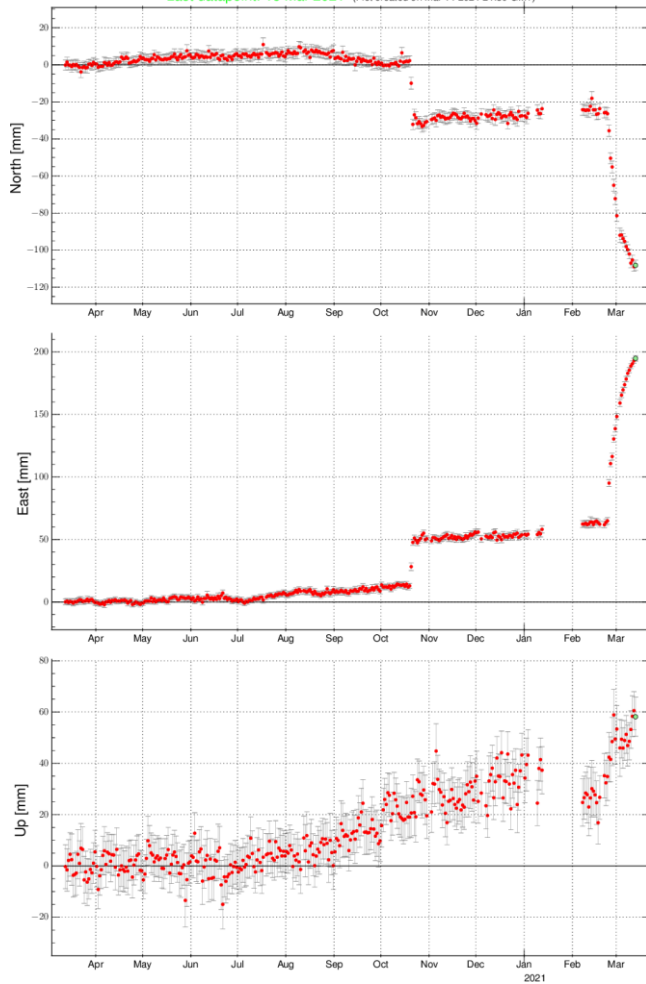
# Time series: THOB

THorbjörn (THOB) Reference frame: ITRF2008  
Last datapoint: 13 Mar 2021 (Plot created on Mar 14 2021 21:25 GMT)



# Time Series: KRIV

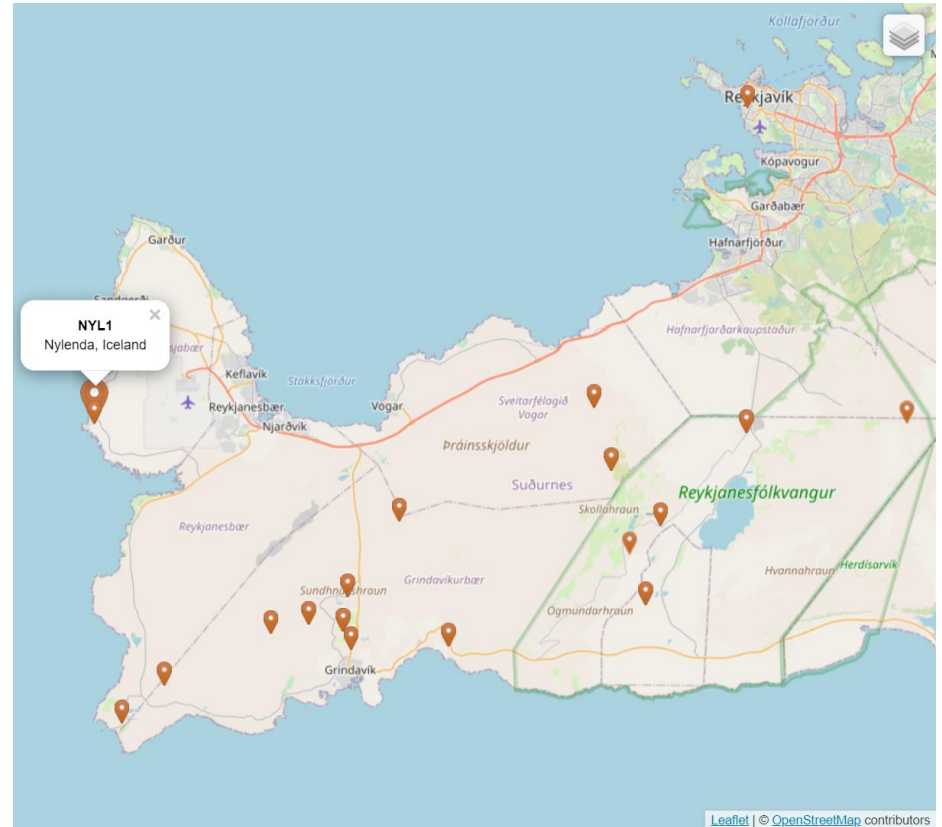
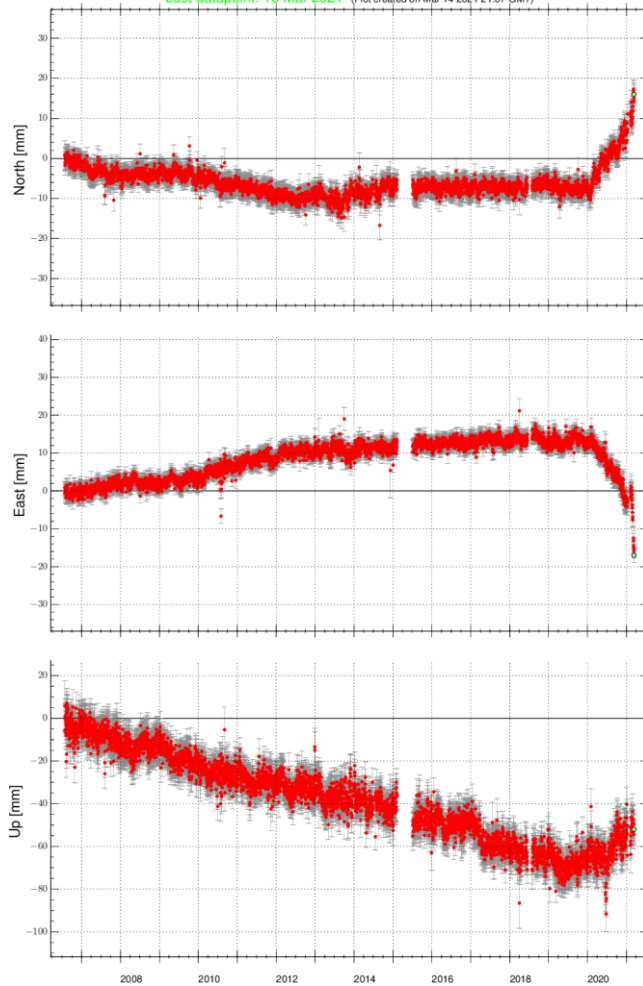
Krísvík (KRIV) Reference frame: ITRF2008  
Last datapoint: 13 Mar 2021 (Plot created on Mar 14 2021 21:30 GMT)





# Time Series: NYLA

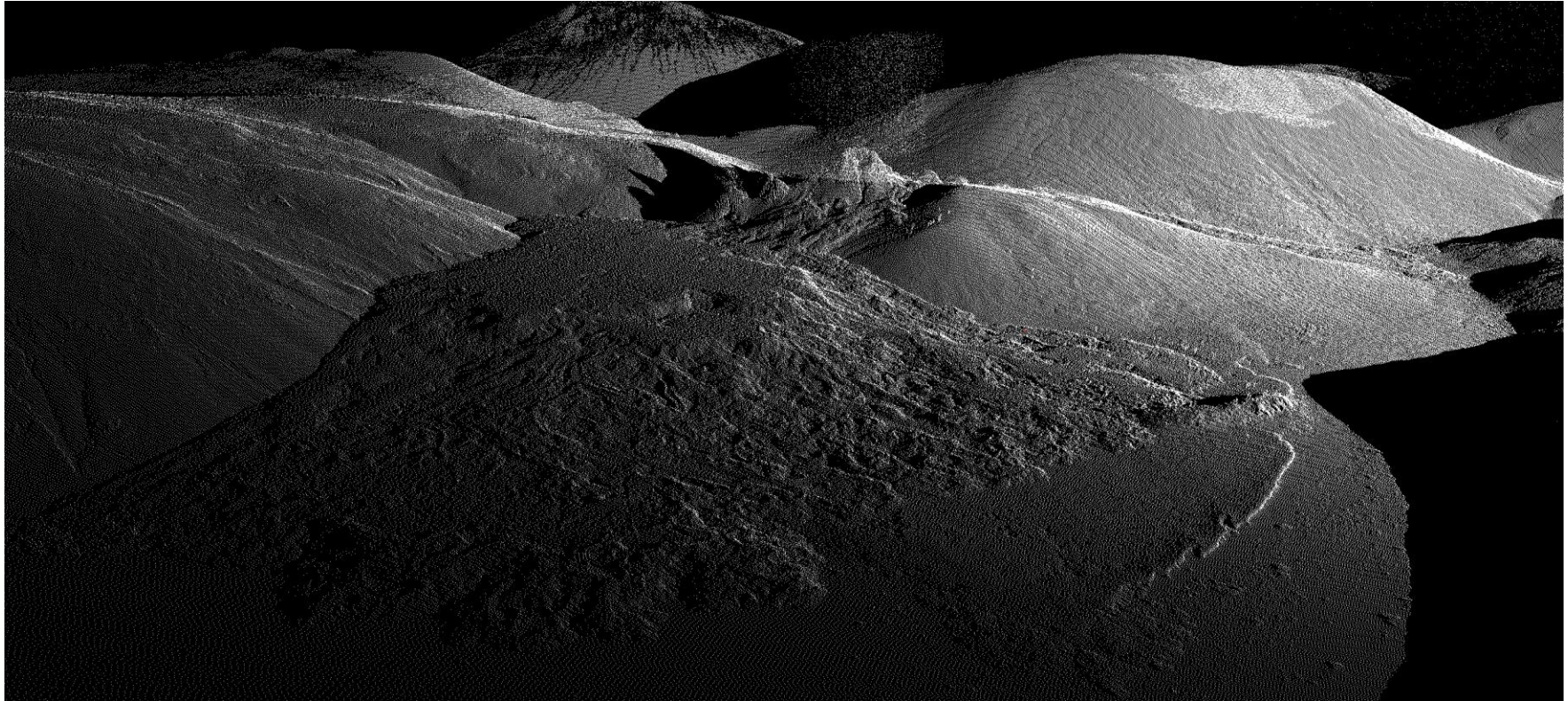
Nýlenda (NYLA) Reference frame: North American plate  
Last datapoint: 13 Mar 2021 (Plot created on Mar 14 2021 21:07 GMT)







# TLS scanning of the eruption



# Following work

- Support and GCP measurements in the area for the ongoing research
- Re-measurement of geodetic infrastructure in the area
  - Levelling
  - GNSS benchmarks
- Modeling of the total deformation in the area as a part of the Iceland DRF
- Reporting and papers

# Thank you

gudmundur@lmi.is