Active Layer Monitoring for Infrastructure Management

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[3] Asiaq - Greenland Survey

esa AALM4INFRAM Project (4000128395/19/I-DT)

Project partners and stakeholders

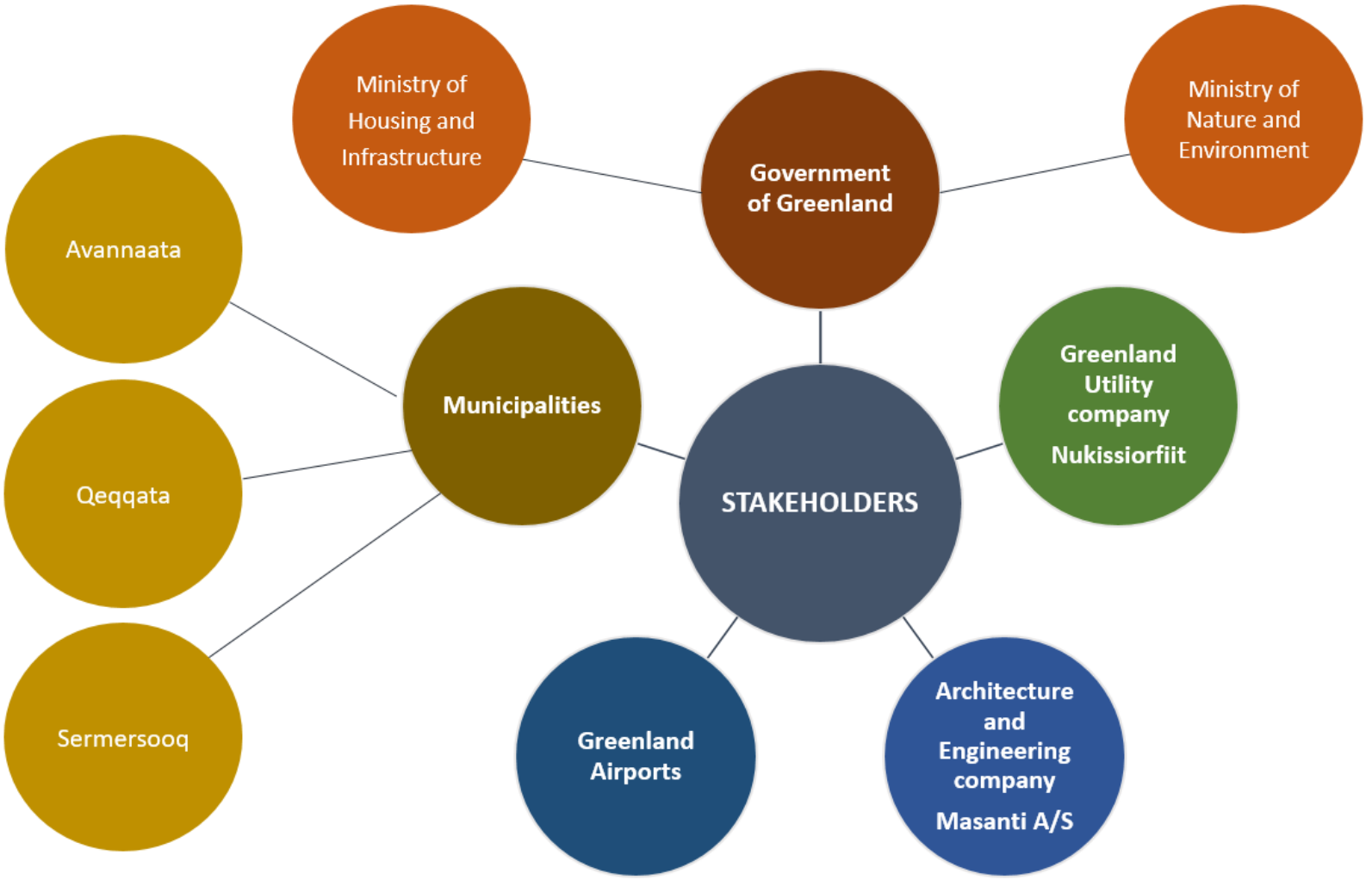
ASIAQ GREENLAND SURVEY

GAMMA REMOTE SENSING

Arctic DTU

DTU Civil Engineering
Department of Civil Engineering

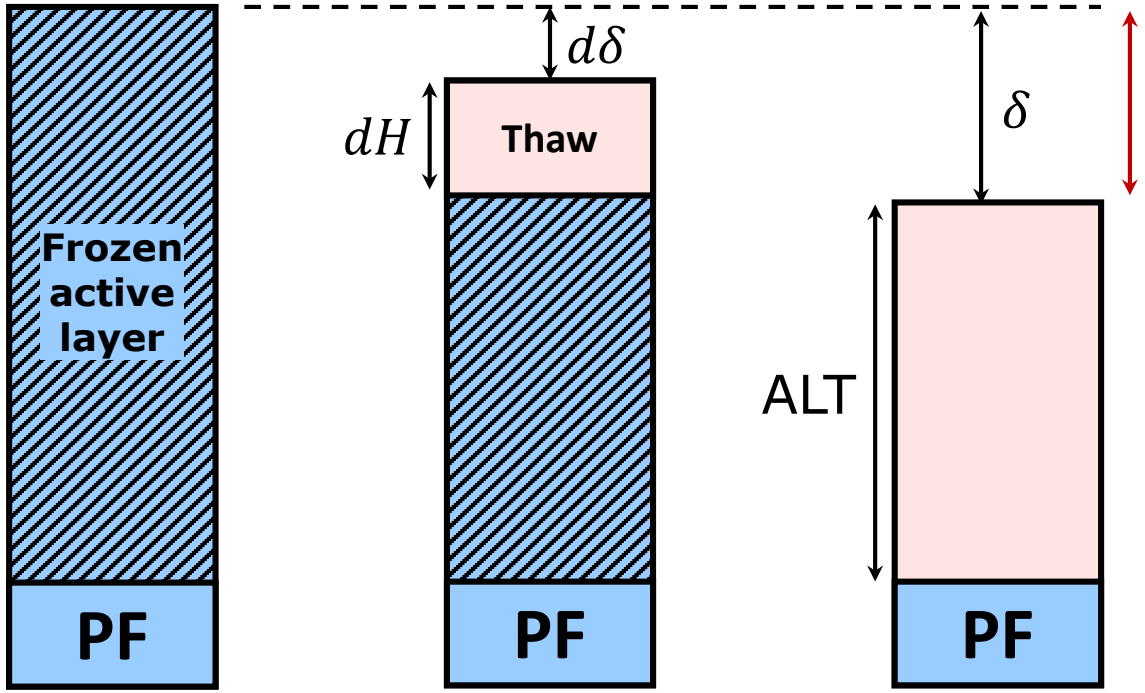
esa



Stakeholder workshop, Nuuk December 3rd, 2019

- Good understanding of challenges related to building on PF
- Yet, geotechnical surveys often not conducted:
  - ➢ Lack of equipment and trained personnel, survey costs
  - ➢ Lack of legislative requirement, no demand
- difficult access to existing information,
- **lack of information available to understand the risks**
- Developers accept the risks and adjust to situations on-the-go

Surface deformation

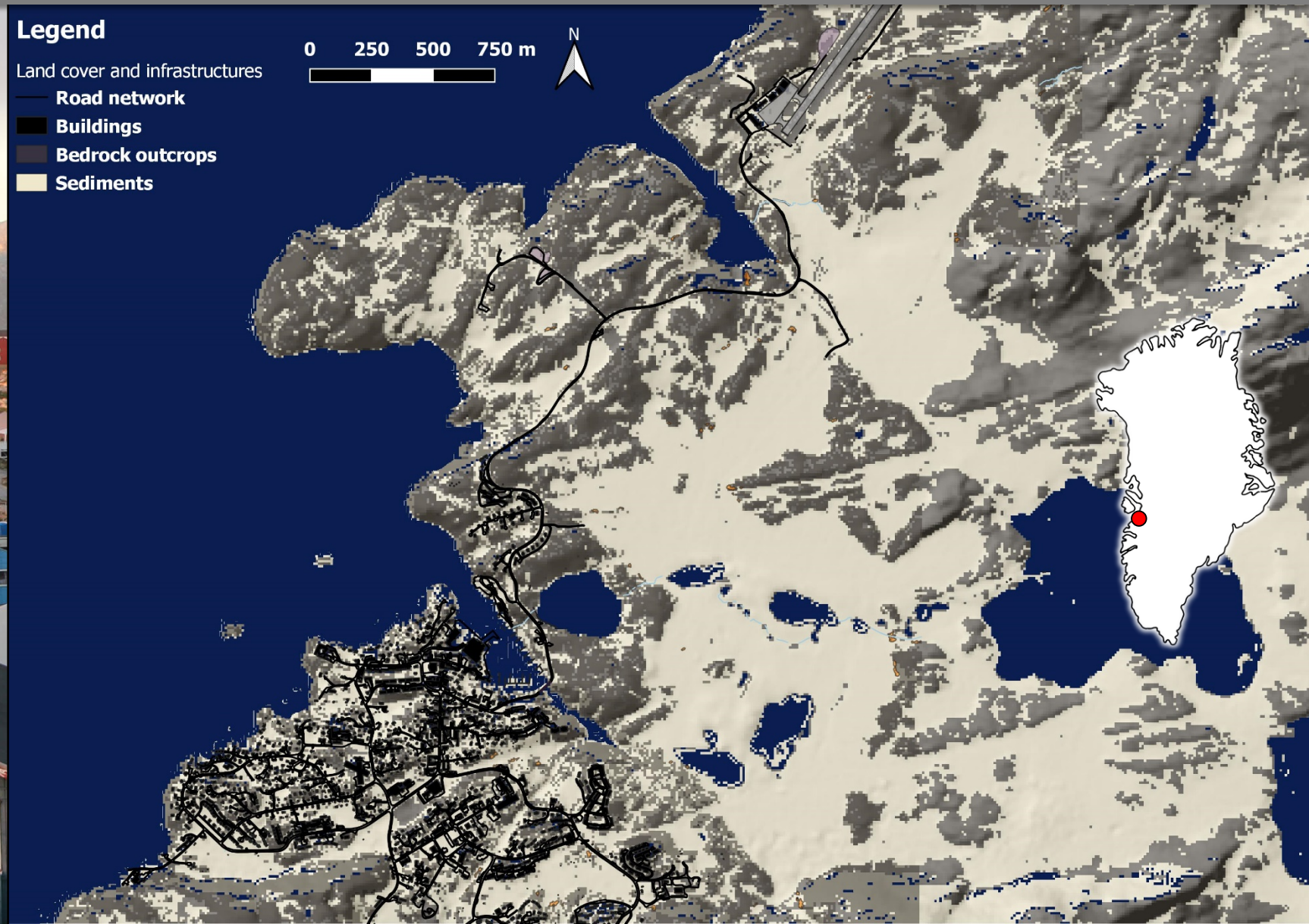


***S* ~ Seasonal amplitude**

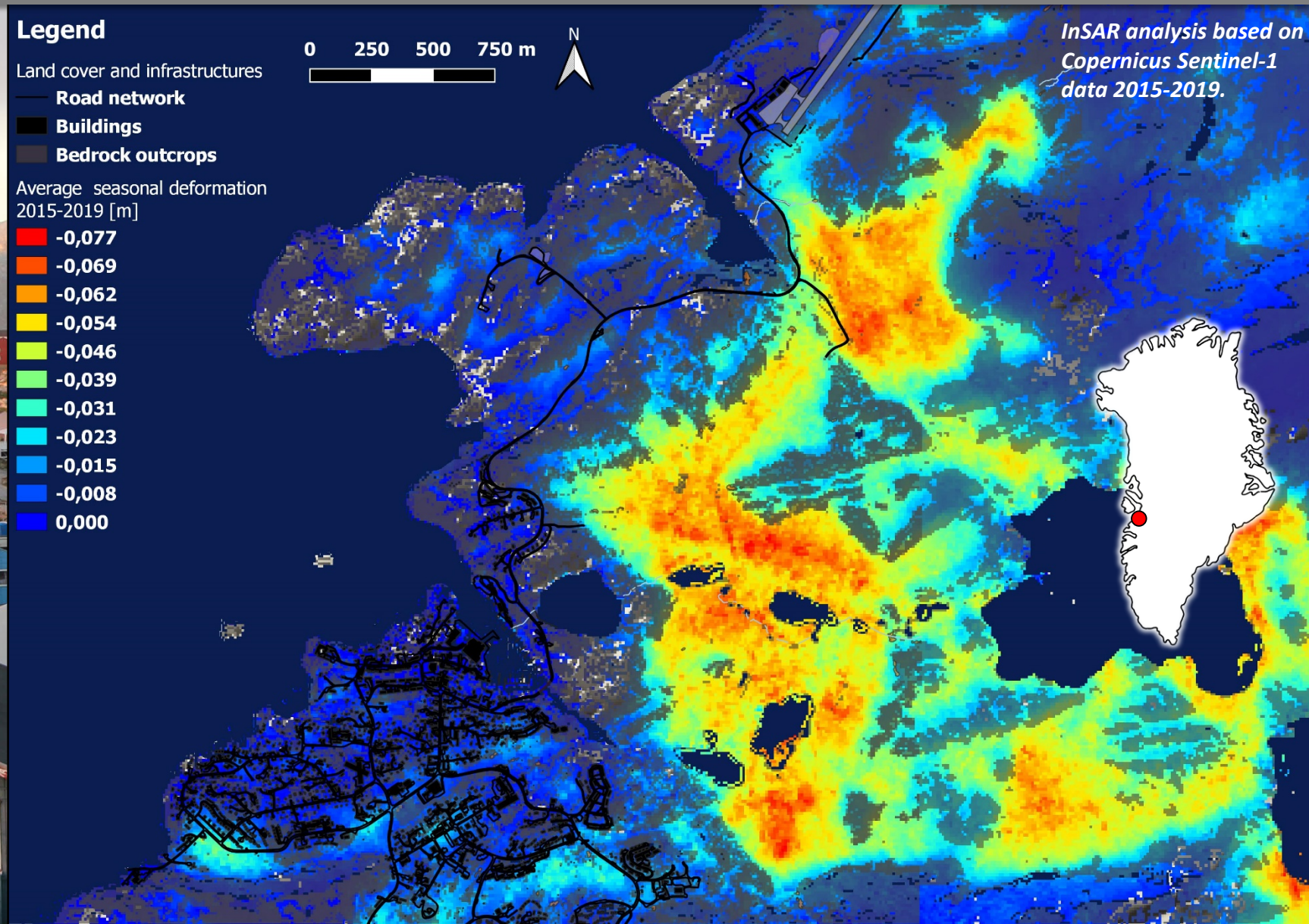
$\delta \approx f(\text{ALT}, \text{ice cont.})$

Measurable by InSAR, Sentinel 1 data used

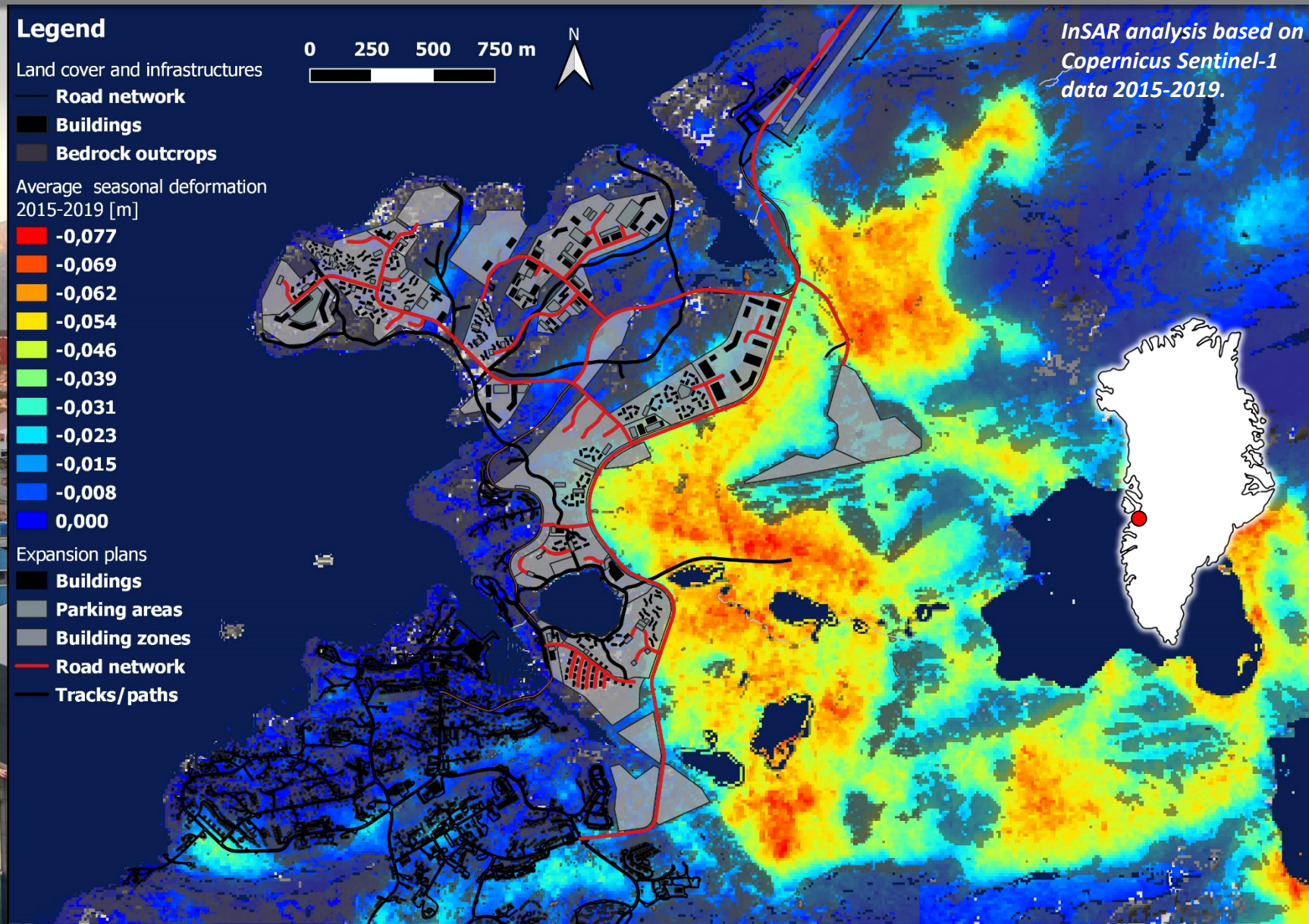
Ilulissat, West Greenland



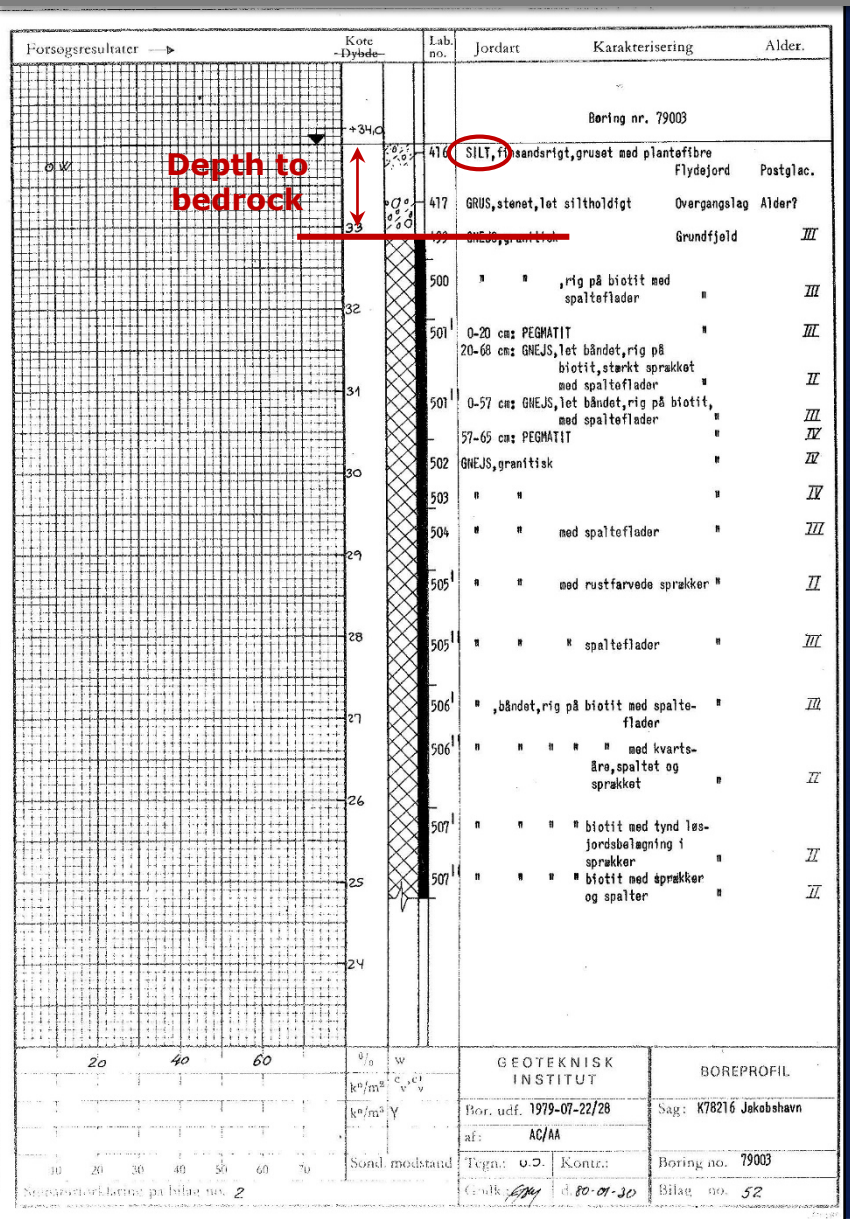
InSAR seasonal deformations (S)

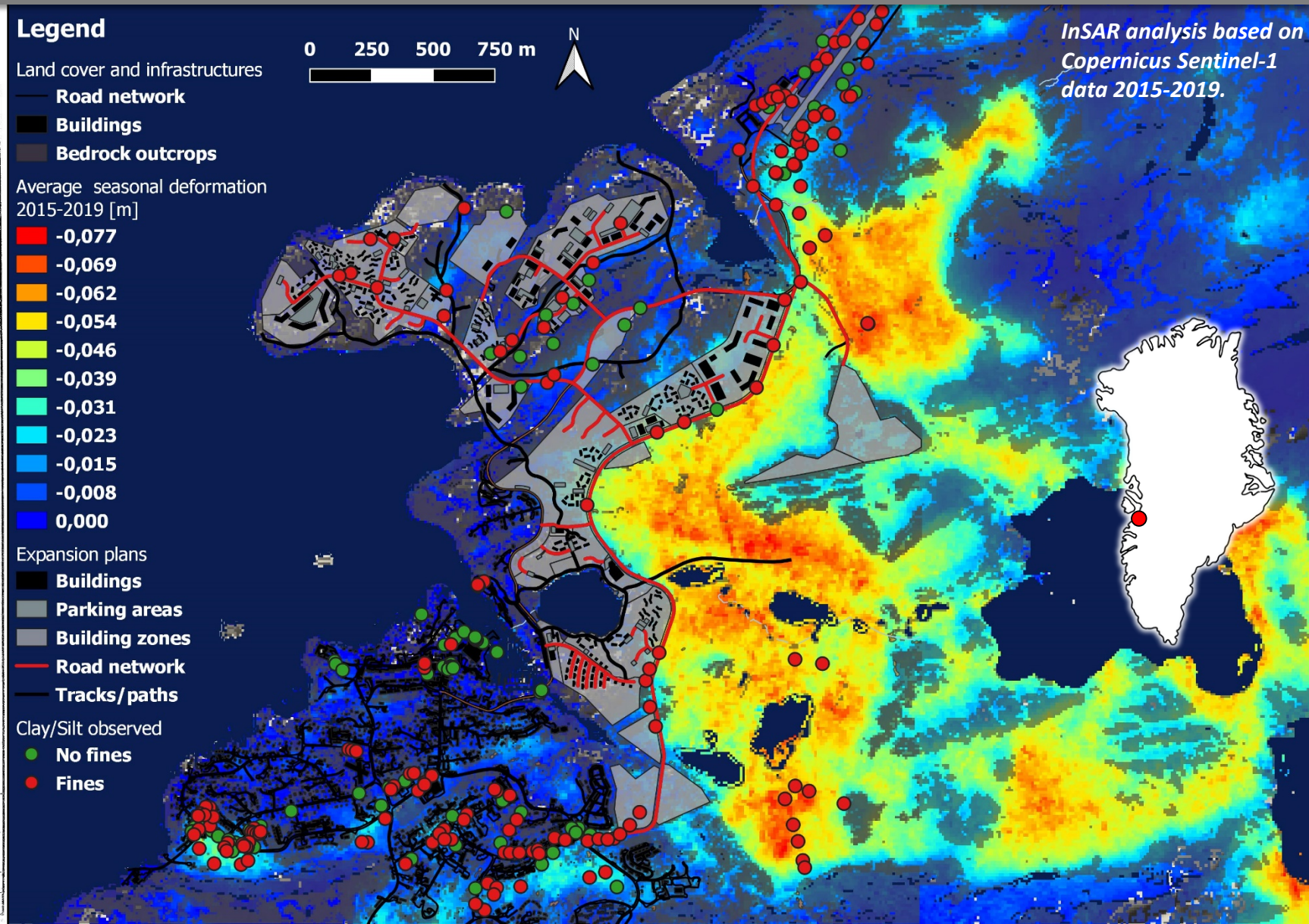


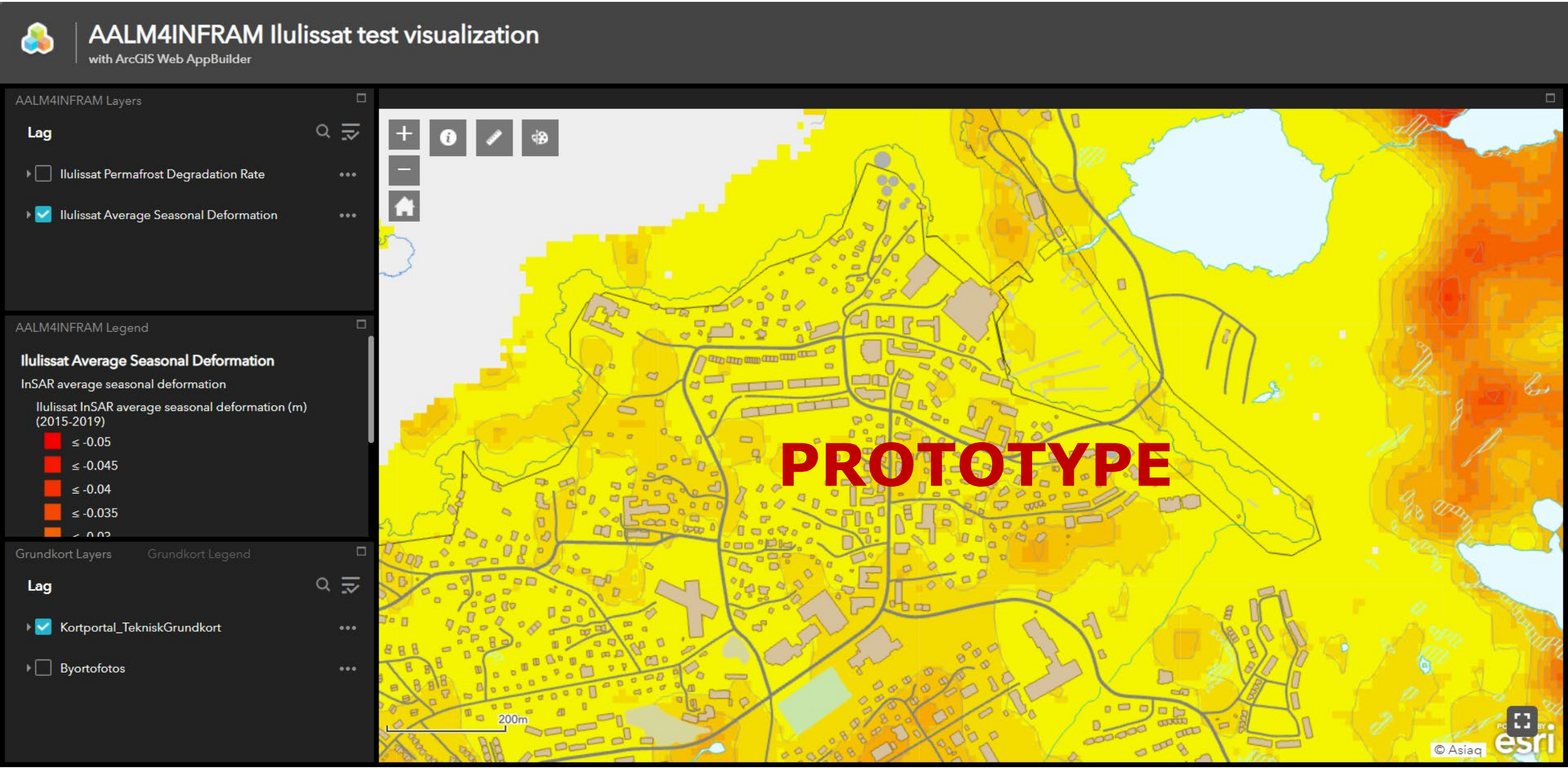
Town expansion plans



Soil type information from archives







https://asiaq.maps.arcgis.com/apps/webappviewer/index.html?id=80e1e4b32bf14dd88df8b7b32307f548

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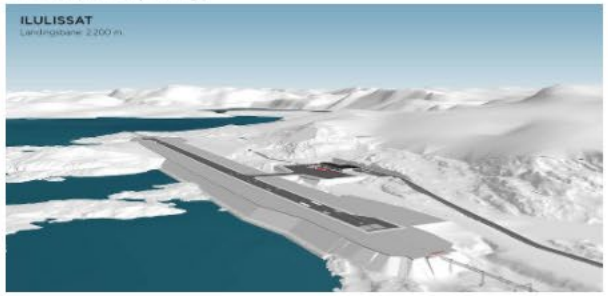
Ilulissat test story map

Ilulissat air expansion #1

According to the Stakeholder report, information about permafrost around the new airport extension was of particular interest to the municipality.



Ilulissat runway schematic

Compared to average seasonal deformation, the area could have particular points where permafrost heave may be more marked.

Ilulissat airport expansion #2

SIGNATURFORKLARING

PROTOTYPE

OVERSIGTSKORT

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https://asiaq.maps.arcgis.com/apps/MapJournal/index.html?appid=e5f6b54c2f2344d49f19a4720d832769

Take-away lesson