Agency for
Data Supply and
Efficiency

National Report, Denmark

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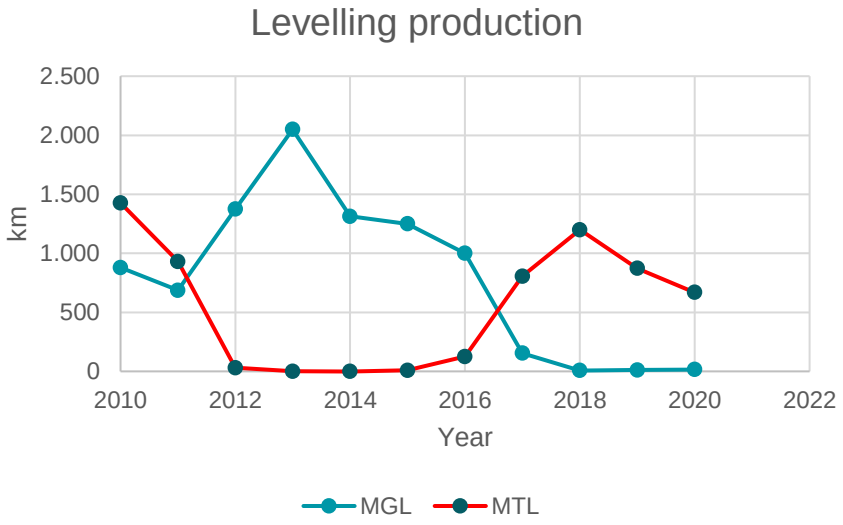
Motorized levelling - MTL and MGL

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
MGL	880 km	687 km	1374 km	2050 km	1314 km	1250 km	1000 km	154 km	7 km	12 km	16 km
MTL	1427 km	931 km	31 km	1 km	0 km	9 km	126 km	807 km	1200 km	873 km	670 km

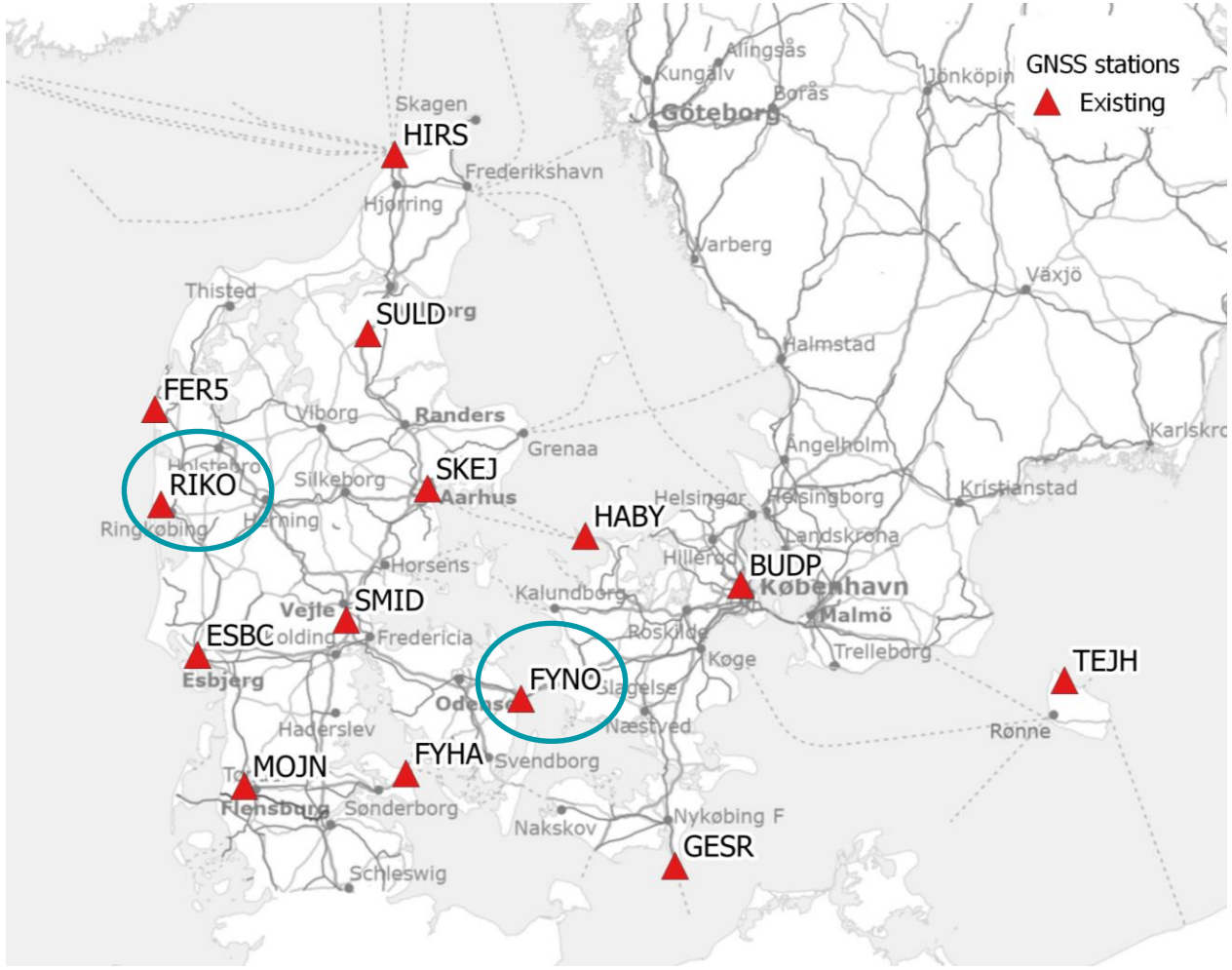
Levelling related to 3rd order benchmarks (~60 %)

Levelling related to the fundamental geodetic infrastructure (tide gauges, improving geoid etc.) (~30 %)

Levelling related to various experiments (~10 %)

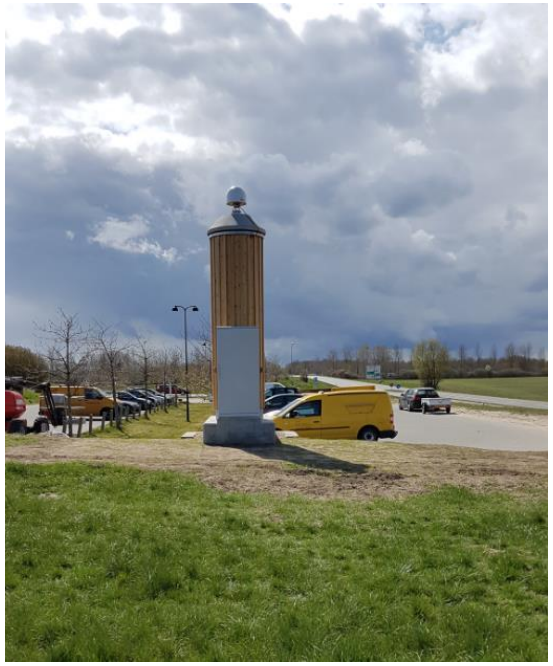


Continuously operating GNSS Stations (Class A)



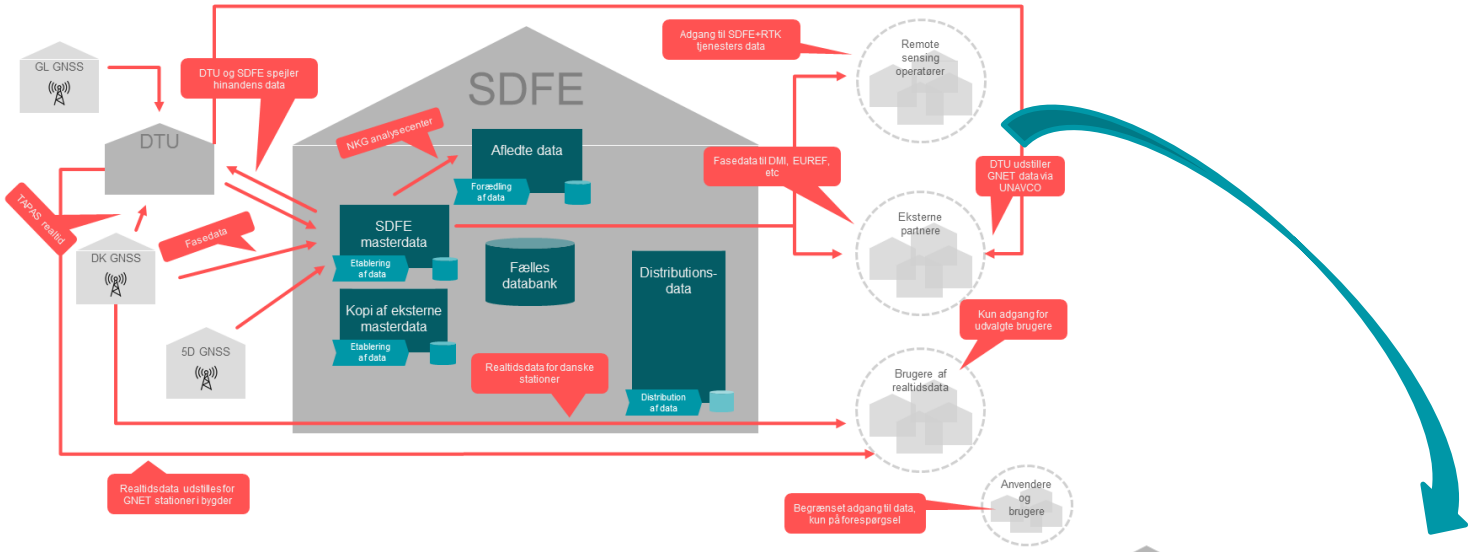
RIKO: New station 19.12.2019
FYNO: New station 04.05.2021

At the moment no further expansion of the GNSS network is planned.

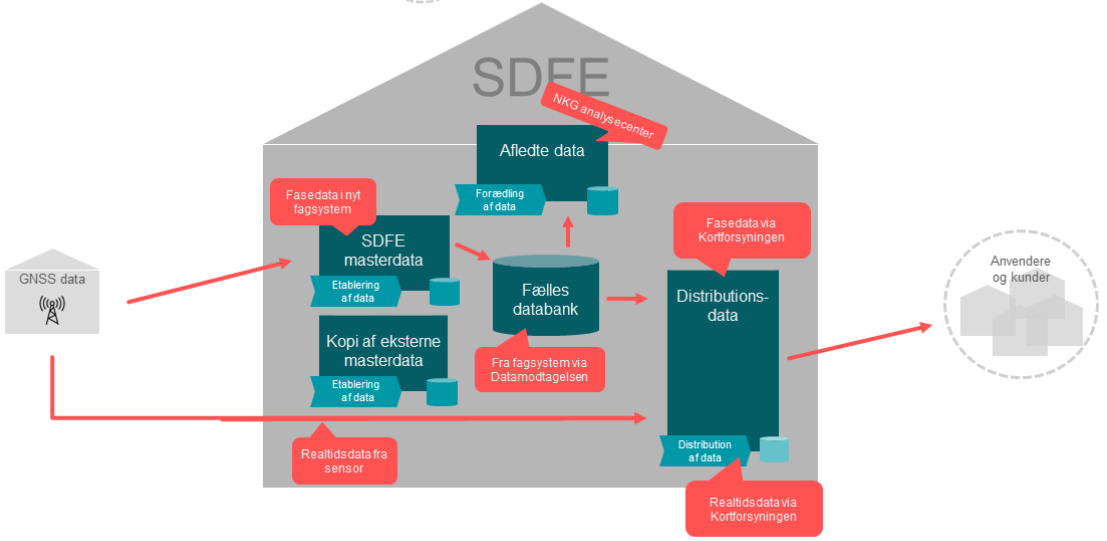


Harmonizing the GNSS IT infrastructure in SDFE

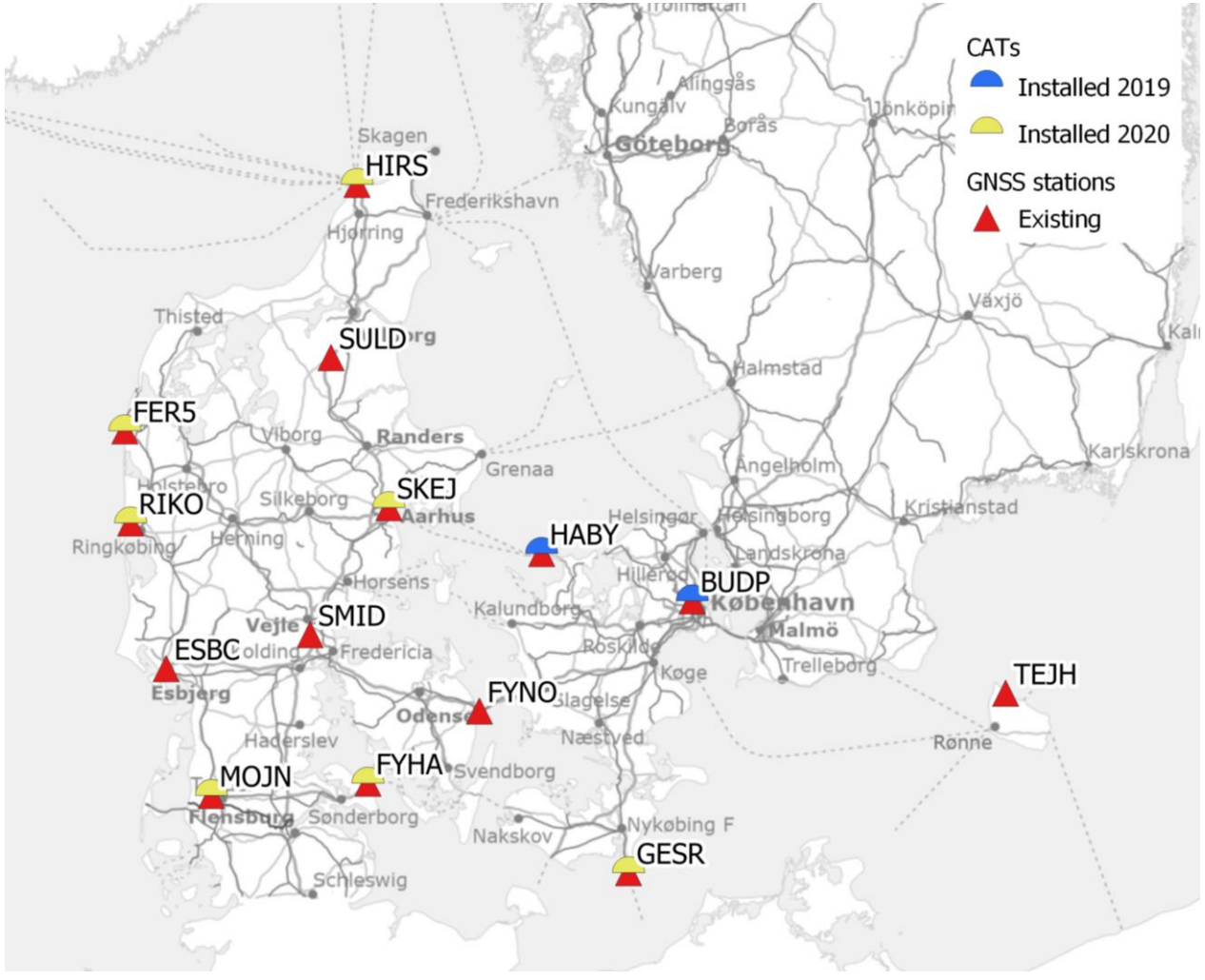
- Decrease complexity of GNSS data flow
- Make GNSS data publicly available, not just for selected partners



- Decided to use NtripCaster Pro from BKG for realtime data distribution
- Considering to distribute RINEX data using EPOS GNSS software (GLASS)



Installation of InSAR CATs



InSAR CATs from MetaSensing installed onto GNSS-stations.

In general the CATs have performed poorly so far (weak or no return signal after a few months, insufficient sealing etc.).

In 2021 focus will be on installing CRs co-located with GNSS-stations (for long term check of CAT phase stability etc.).

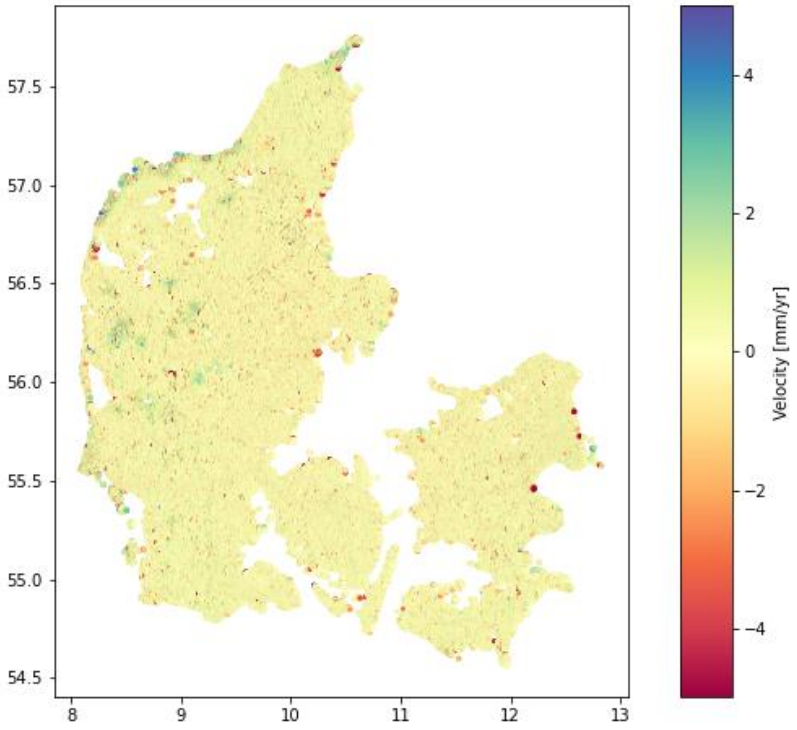
New nationwide deformation map based on InSAR/Sentinel-1

- New update processed by TRE Altamira Jan. 2021
- LOS and 2D (80 m x 80 m pixels)
- Time span: LOS: 2014 - Aug. 2020, 2D: 2016 – Aug. 2020
- Based on SqueeSAR® algorithm
- Final products aligned to ITRF2014 by means of coordinate time series from 10 GNSS-stations. InSAR-GNSS-ties based on natural InSAR measurement points at GNSS-stations

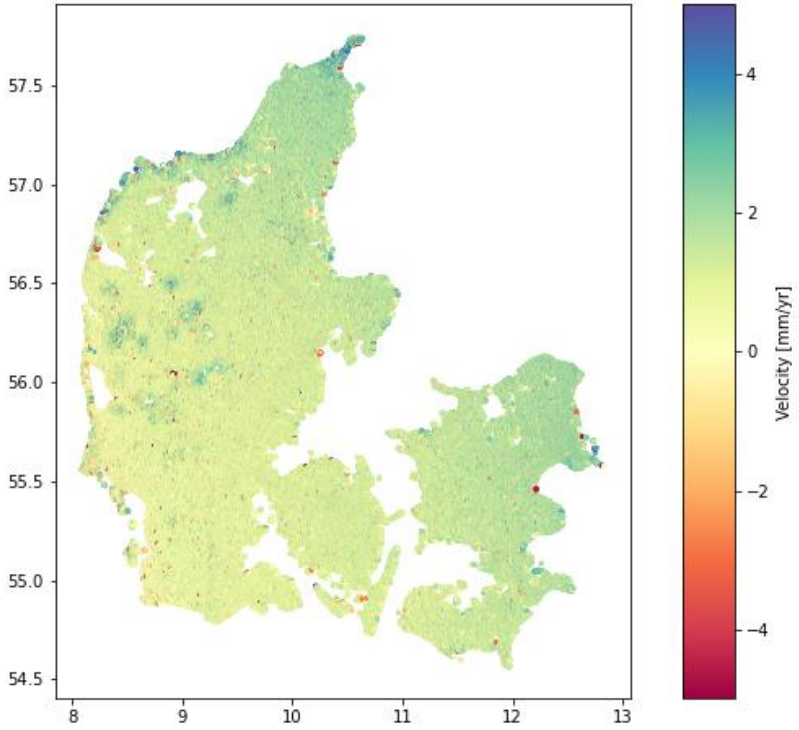
SDFE is currently seeking finance for a permanent service. The goal is to establish a permanent service that will complement a future European Ground Motion Service.

2D vertical products

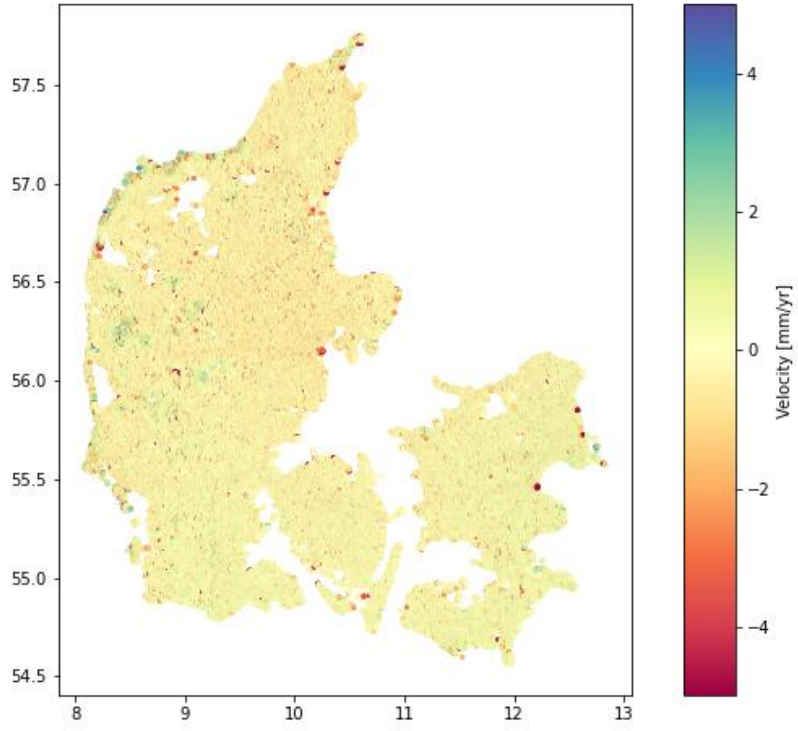
Relative/“uncalibrated” (only InSAR)



Absolute/“calibrated” (InSAR + GNSS)



Absolute/“calibrated” w/o uplift



PROJ

- 14 new releases since May 2019, with 8.0.1 being the latest
- NKG2020 transformations implemented per version 7.2.1
- TIN-based transformations now possible thanks to FGI
- Multi-component time-based deformation model transformations added thanks to Land Information New Zealand