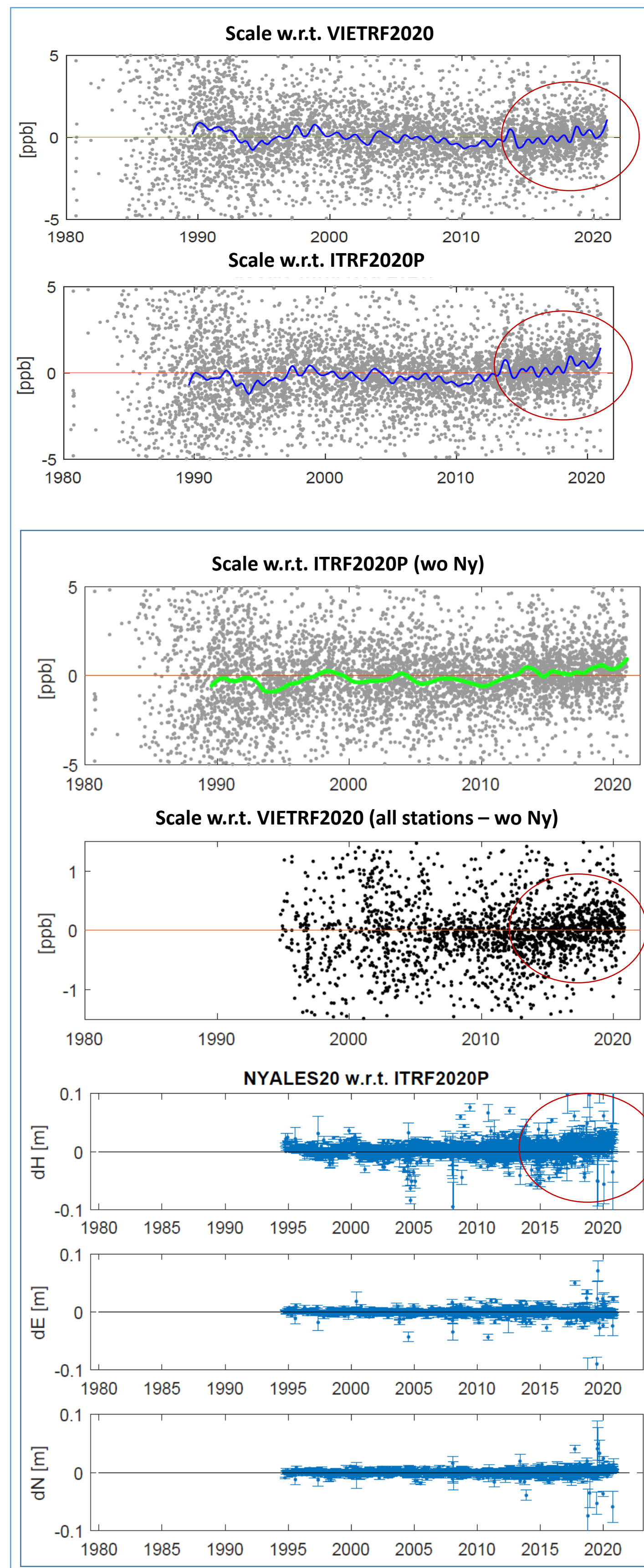


Abstract

The next realisation of the International Terrestrial Reference System, the ITRF2020 is currently under evaluation. The special analysis center of the International Very Long Baseline Interferometry (VLBI) Service for Geodesy and Astrometry (IVS) at TU Wien (VIE) provided one set of the normal equation systems which was combined together with contributions from other VLBI analysis centers to the VLBI input to ITRF2020.

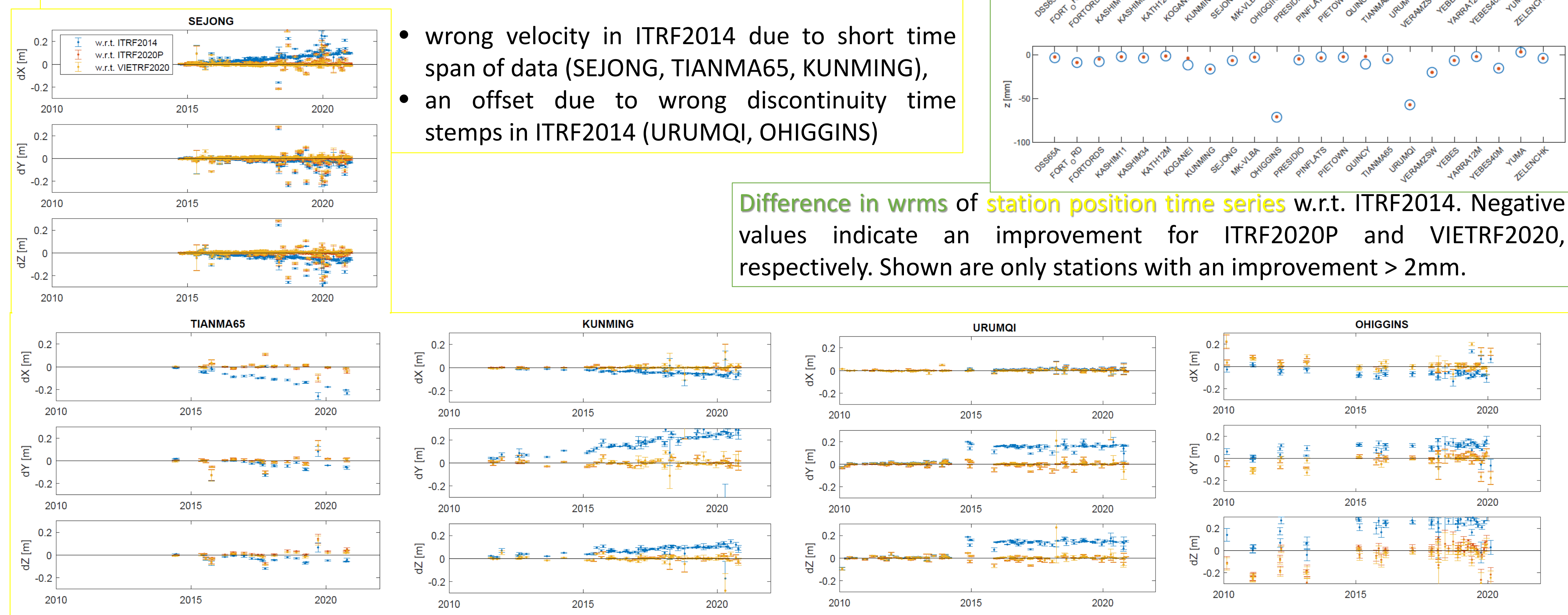
Our own terrestrial reference frame, VIETRF2020 (epoch 2015.0), which is based on the Vienna input to ITRF2020, is presented and compared to previous TRF solutions as well as to preliminary release of ITRF2020, designated as ITRF2020P. As indicated by presentations of the IERS ITRS Product Center, the scale of ITRF2020P was constructed by "using inner/internal constraints" and as "average of SLR (1997.7 - 2021.0) and VLBI (selected sessions up to 2014.0)". This seems to lead to deviations of the scale of our VLBI solution and probably also of the IVS combined data after 2014.0.



Scale

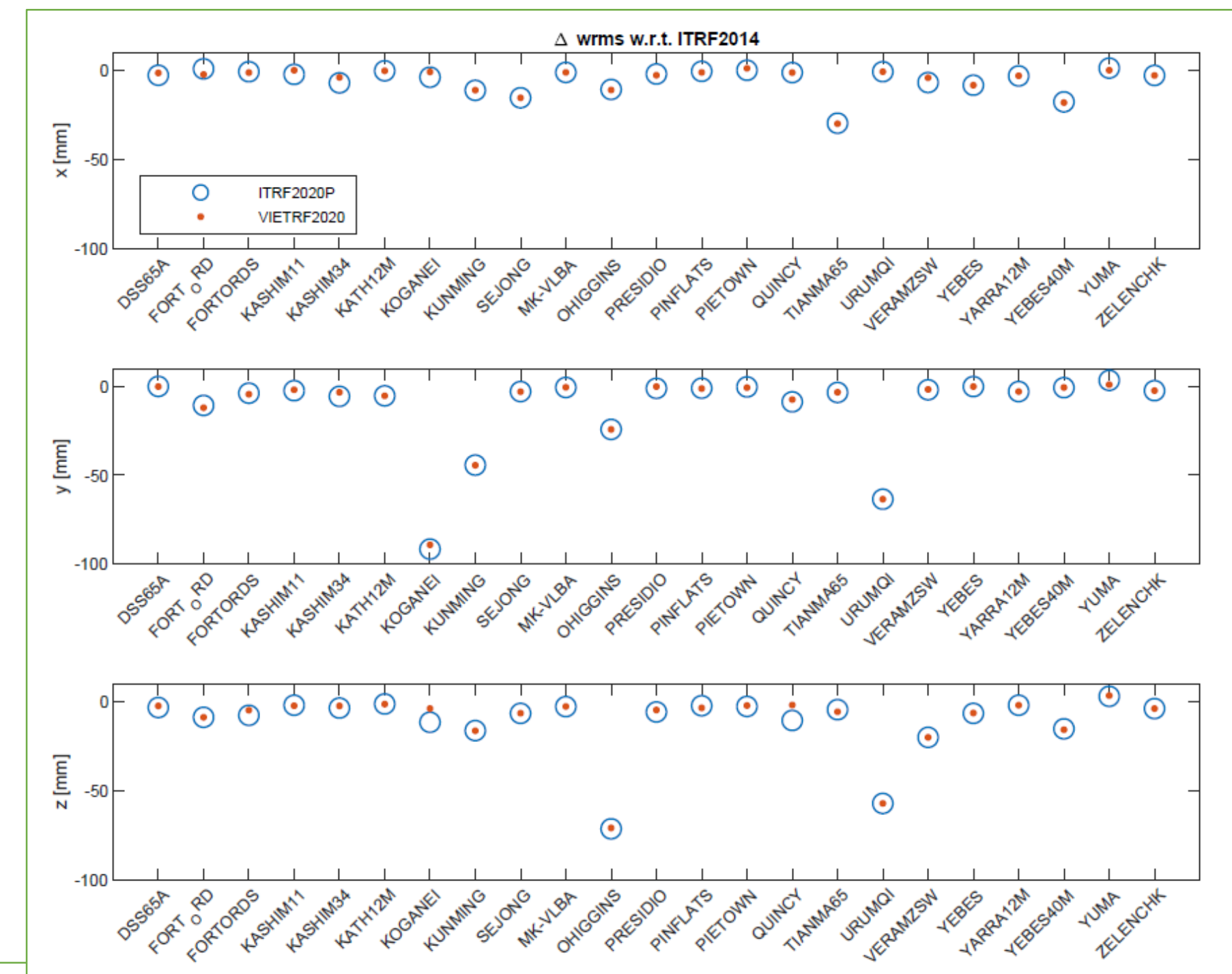
- Drift in scale since ~2015 w.r.t. VIETRF2020, as well as w.r.t. ITRF2020P
- Several stations exhibit anomalous behaviour after ~2015, e.g., NYALES20, MATERA or HART15M
- Case study: NYALES20 in Svalbard (Ny) exhibits an uplift in the position since ~2015. Excluding Ny Alesund (Ny) from the observed sessions reduces the drift in the scale

Station position time series, examples of



- wrong velocity in ITRF2014 due to short time span of data (SEJONG, TIANMA65, KUNMING),
- an offset due to wrong discontinuity time steps in ITRF2014 (URUMQI, OHIGGINS)

Difference in wrms of station position time series w.r.t. ITRF2014. Negative values indicate an improvement for ITRF2020P and VIETRF2020, respectively. Shown are only stations with an improvement > 2mm.



Weighted Helmert parameters to VIETRF2020 from ITRF2014 and ITRF2020P, respectively. Only stations with mean position error < 5 mm.

epoch 2015.0	Tx [mm]	Ty [mm]	Tz [mm]	Rx [μas]	Ry [μas]	Rz [μas]	Scale [ppb]
VIE vs ITRF2014	-2.2 ± 2.4	4.9 ± 2.4	1.1 ± 2.4	-133 ± 94	-105 ± 96	3 ± 76	0.61 ± 0.37
VIE vs ITRF2020P	-1.0 ± 2.2	-3.7 ± 2.2	-1.6 ± 2.1	65 ± 86	28 ± 86	-10 ± 69	0.14 ± 0.33
	Tx' [mm/y]	Ty' [mm/y]	Tz' [mm/y]	Rx' [μas/y]	Ry' [μas/y]	Rz' [μas/y]	Scale' [ppb/y]
VIE vs ITRF2014	0.2 ± 0.1	0.1 ± 0.1	-0.2 ± 0.1	2 ± 2	-0 ± 3	5 ± 2	0.04 ± 0.01
VIE vs ITRF2020P	-0.1 ± 0.1	-0.1 ± 0.1	0.0 ± 0.1	6 ± 2	-0 ± 2	4 ± 2	0.03 ± 0.01