Supporting Information for "Large-Scale Crustal Deformation of the Tianshan Mountains, Xinjiang, From Sentinel-1 InSAR Observations (2015-2020)"

Table S1. Time extent and number of processed SAR data for each track used in this study.

Track	Start	End	Duration (yr)	no. of epochs	no. of ifgs generated	no. of ifg used	mean ifg length (d)
41A	2015-01-24	2020-02-15	5.06	75	350	332	82.9
114A	2015-03-30	2020-02-08	4.87	68	319	235	81.3
12A	2015-01-22	2020-02-01	5.03	72	327	278	82.3
85A	2015-01-03	2020-02-18	5.13	75	369	309	81.5
19D	2017-04-12	2020-02-20	3.14	42	176	169	80.0
92D	2015-01-16	2018-07-29	3.58	38	152	137	91.0
165D	2015-01-09	2019-12-02	4.92	61	318	269	103.5
63D	2015-01-14	2020-01-24	5.07	42	175	153	126.4

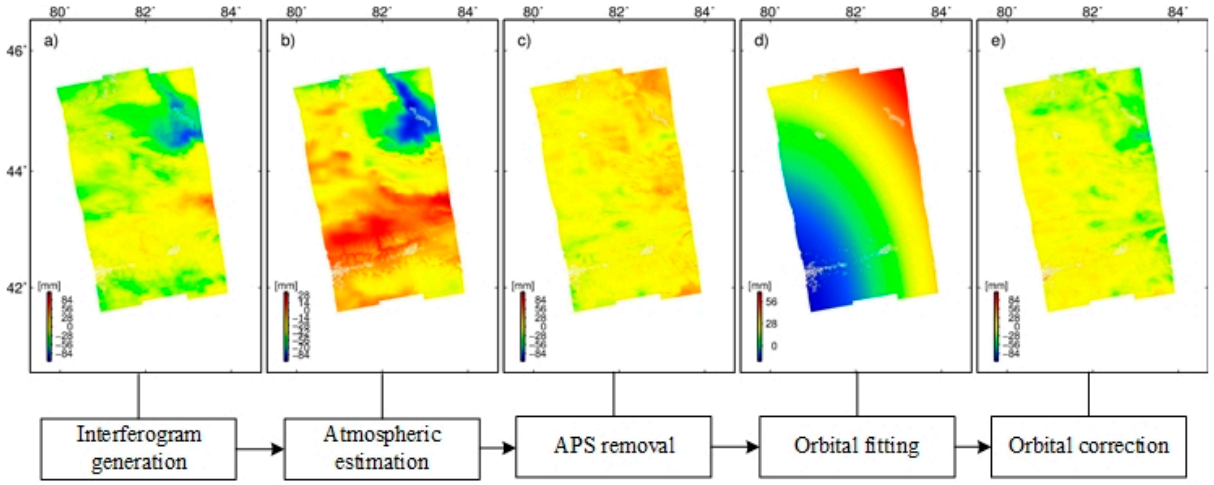


Figure S1. InSAR phase error correction process for Sentinel-1 interferograms on track 85; (a) Original unwrapped interferogram; (b) GACOS atmospheric delay phase; (c) Interferogram following atmospheric correction; (d) Estimate of quadratic orbital ramp errors; (e) Interferogram after removing atmospheric delay phase and orbital errors.

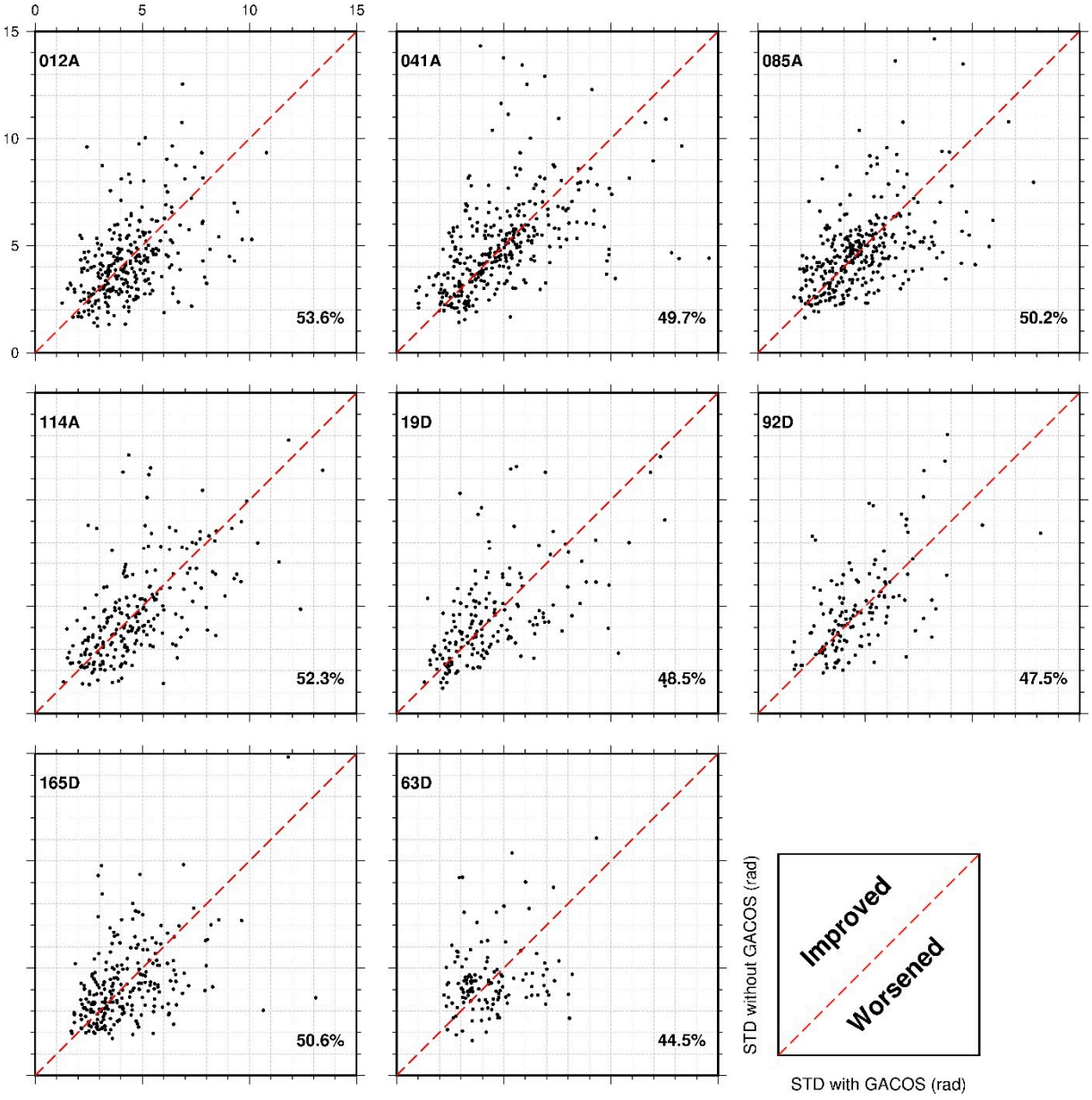


Figure S2. Change in the standard deviation of all interferograms resulting from the application of the GACOS correction for each track. Black dots above the red dashed line indicate an improvement in terms of interferogram noise from the application of the atmospheric model. The percentage given in the bottom right of each subplot showing a reduction in standard deviation for each frame.

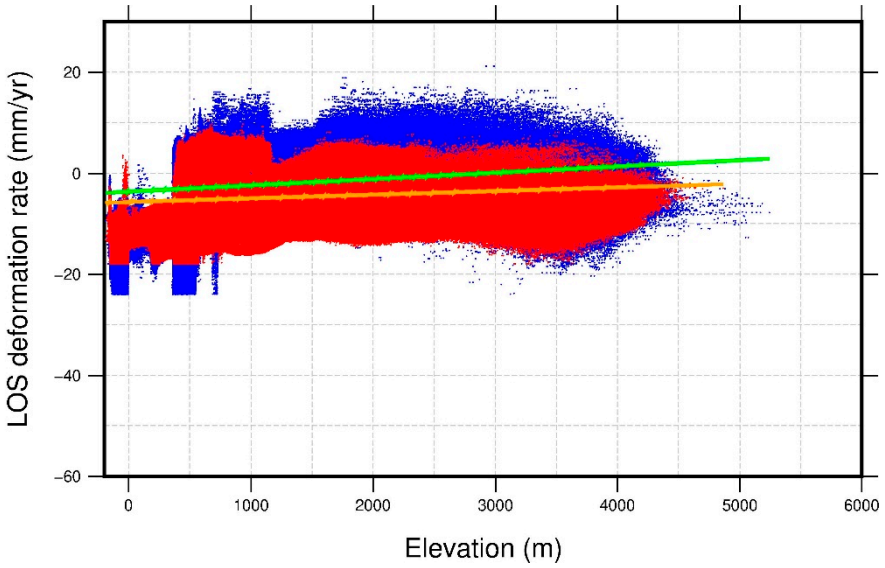


Figure S3. The relationship of elevation and deformation. The blue dots are before atmospheric correction, red dots are after correction, the green and orange line are the trend of linear fitting before and after atmospheric correction respectively.

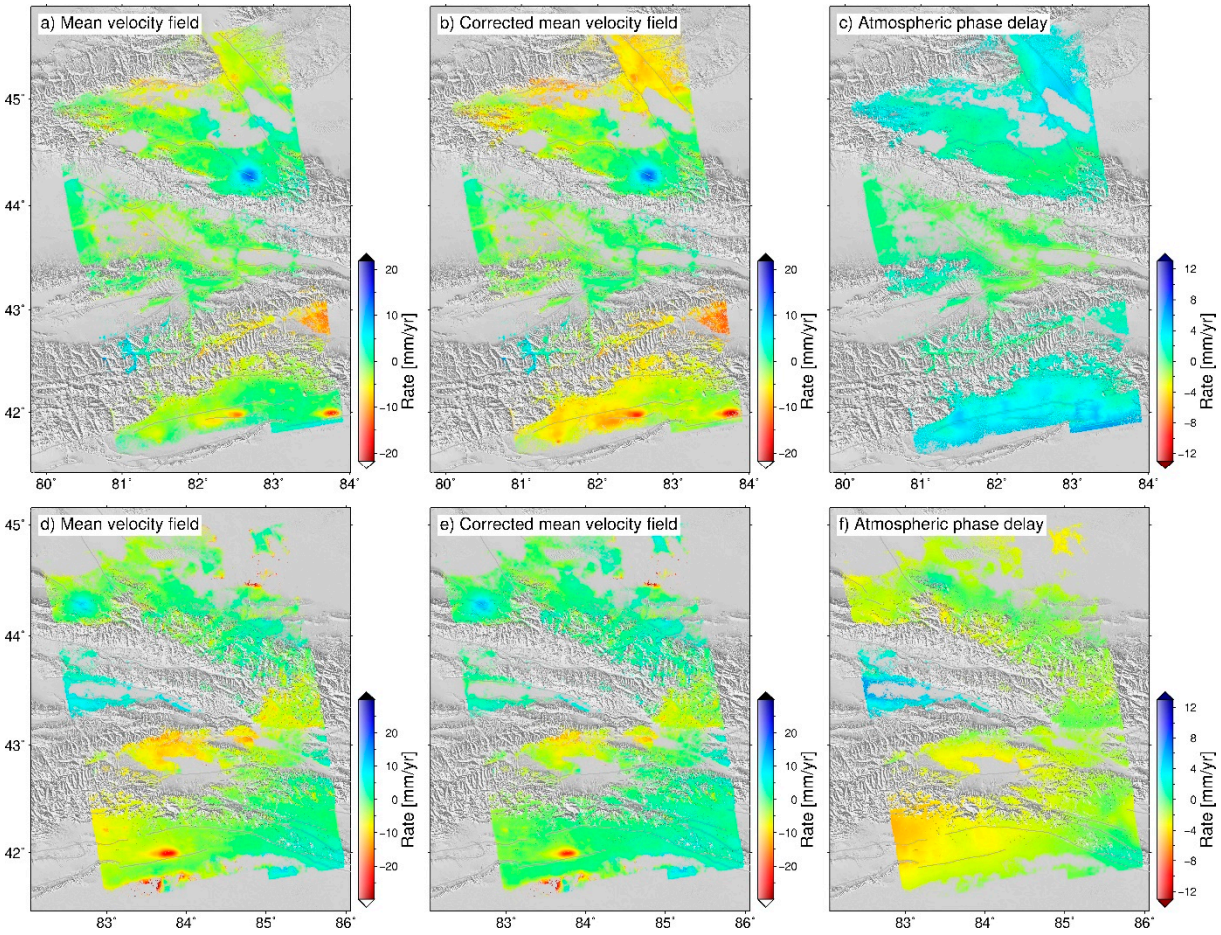


Figure S4. InSAR mean velocities before and after atmospheric correction. (a, d) Mean velocity fields from Sentinel-1 ascending track 85 and track 12, (b, e) corrected mean velocity fields, (c, f) estimated atmospheric phase delay.

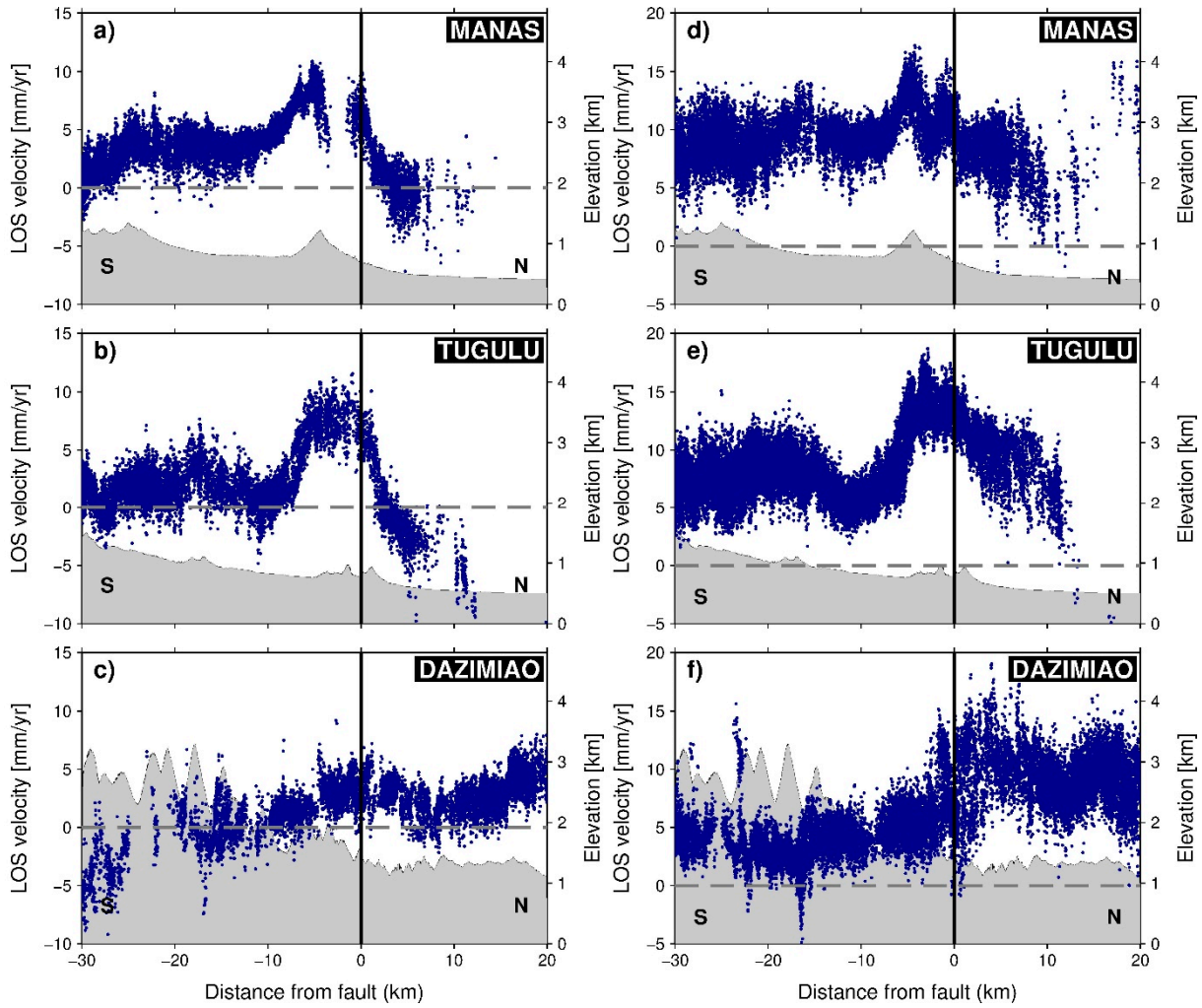


Figure S5. InSAR point cloud maps projected onto the line A-A', B-B' and C-C'.

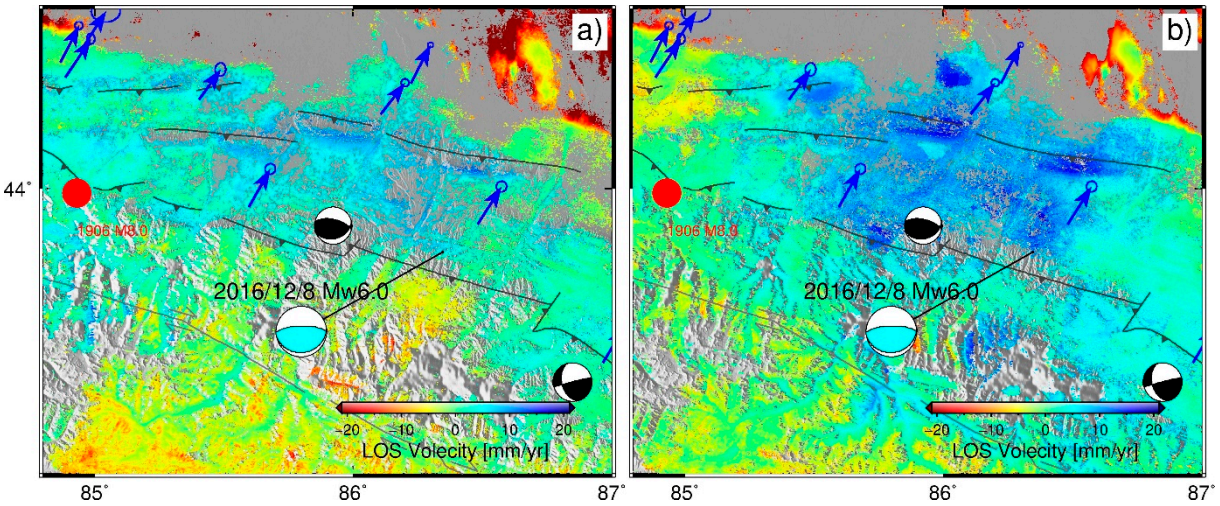


Figure S6. InSAR Mean LOS ratemap for partial region of North Tianshan foreland thrust belt.