Supporting Information for

The 2021 Mw6.7 Lake Hovsgol, Mongolia earthquake: Irregular normal faulting with slip partitioning controlled by an adjacent strike-slip fault

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This supplementary file includes:

Figures S1 to S8

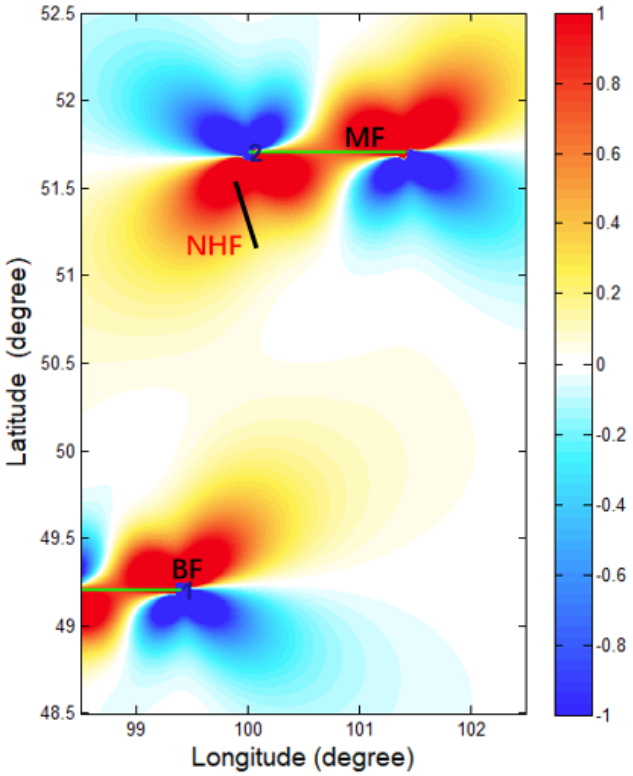

Figure S1. The shear stress change on NHF (black line) due to the Mondy Fault (MF, green line 2#) and Bolnay Fault (BF, green line 1#).

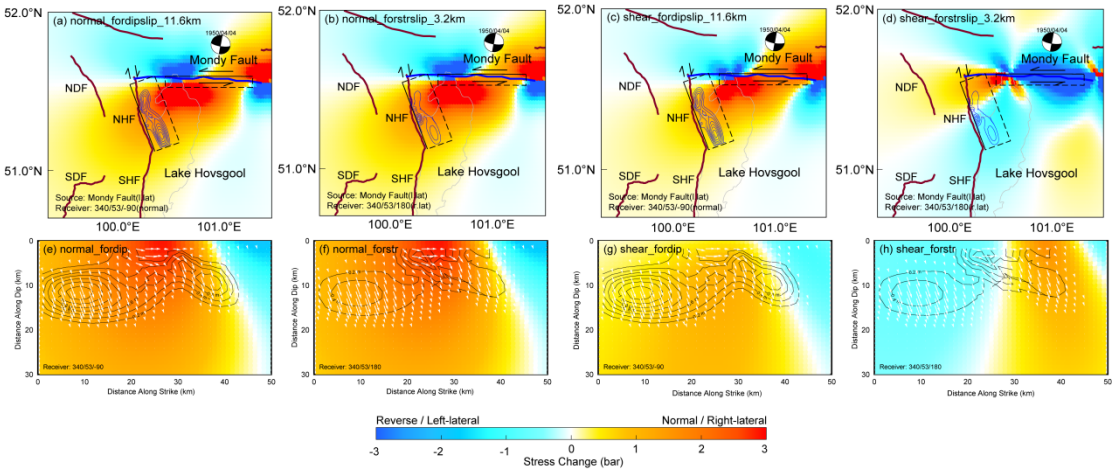

Figure S2. The normal and shear stress change analyses for dip and strike slips on NHF based on the middle and eastern segment of Mondy Fault from Liu, G. et al. (2021). (a-d) Map views of normal and shear stress changes for purely dip and strike slips on the NHF caused by the MF at the depths of 11.6 km and 3.2 km, respectively, where maximum dip and strike slips occur in our slip model. Black rectangles represent the outlines of the NHF and MF, respectively, with solid lines showing the upper boundaries. The blue contours show the dip and strike slips, respectively. (e-h) are related stress change profiles of NHF fault plane based on the (a-d). The black contours show the dip and strike slips, respectively. The white arrows represent the slip directions of the fault patches depicted in Figure 3.

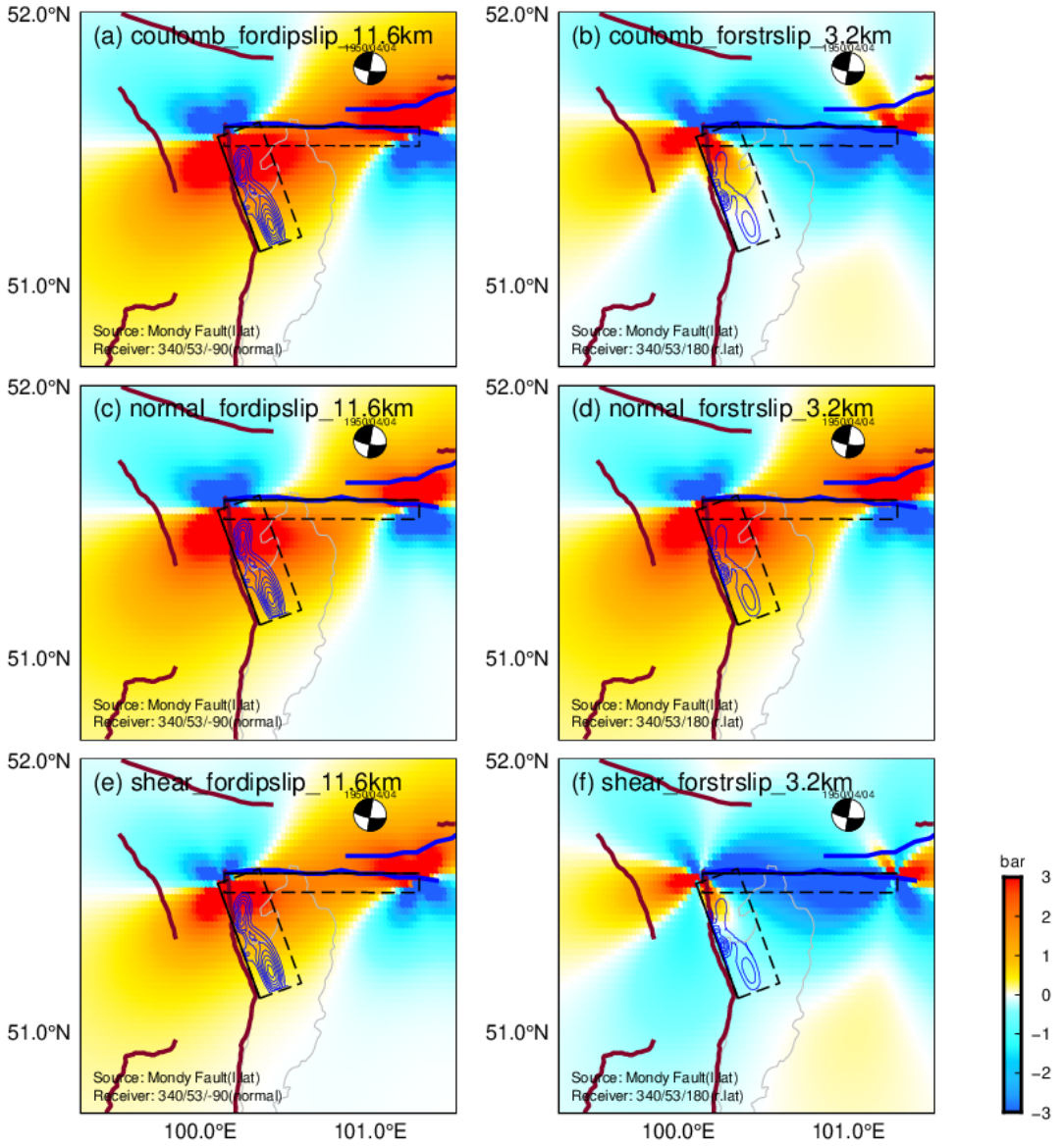

Figure S3. The Coulomb (a-b), normal (c-d), and shear (e-f) stress change analyses for dip and strike slips on the NHF based on the Mondy Fault from Liu, G. et al. (2021). The stress changes are calculated at the depths of 11.6 km and 3.2 km, respectively, where the corresponding maximum dip and strike slips occur in our slip model. Blue line represents the fault location of Mondy Fault. Warm (cold) color means facilitating (inhibiting) slips on the receiver faults. Black rectangles show the surface projections of source (MF) and receiver (NHF) fault, respectively, with solid lines showing the upper boundaries.

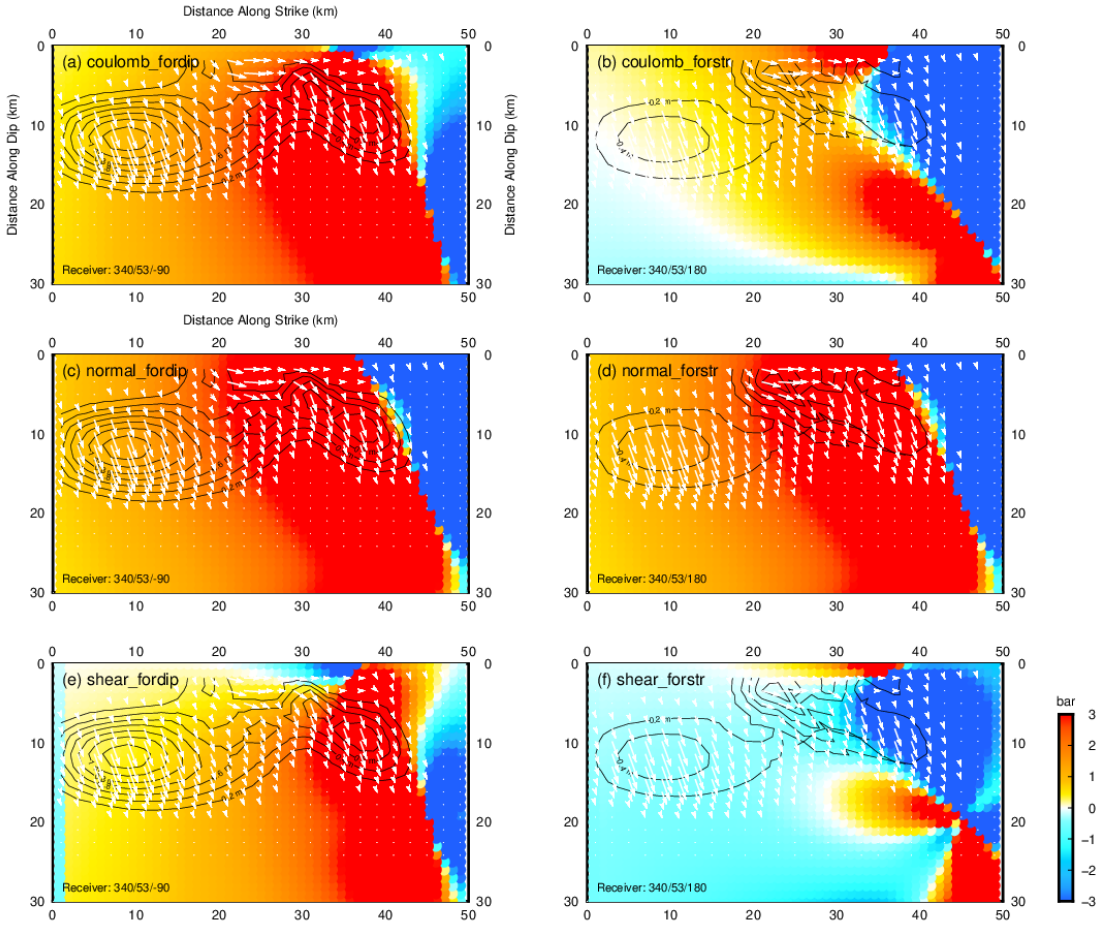

Figure S4. The Coulomb (a-b), normal (c-d), and shear (e-f) stress changes on the NHF fault plane according to Figure S3.

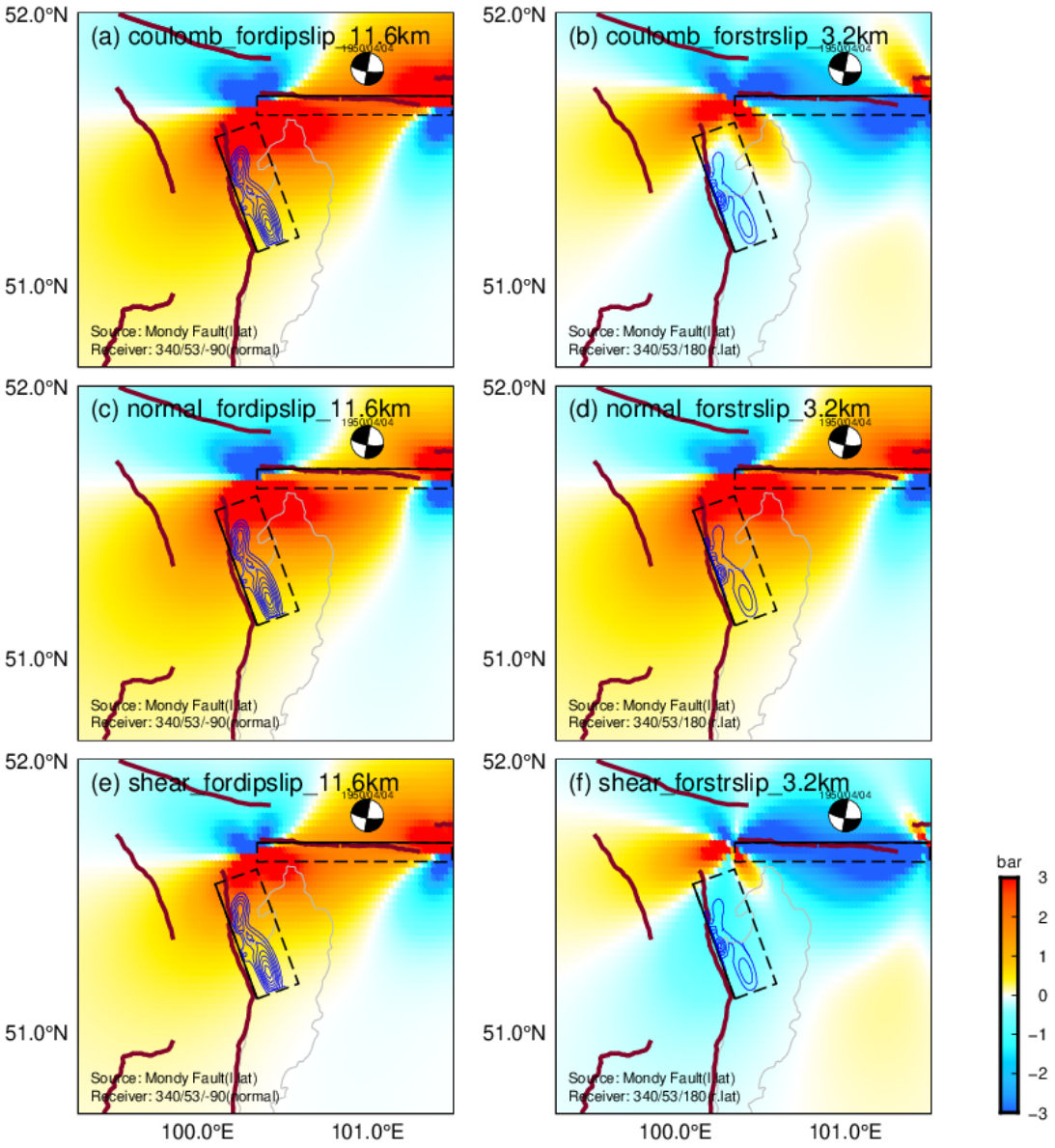

Figure S5. The Coulomb (a-b), normal (c-d), and shear (e-f) stress change analyses for dip and strike slips on the NHF based on the Mondy Fault from GAF-DB. The stress changes are calculated at the depths of 11.6 km and 3.2 km, respectively, where the corresponding maximum dip and strike slips occurred in our slip model. The dark-red line represents the fault location of the Mondy Fault. Warm (cold) color means facilitating (inhibiting) slips on the receiver faults. Black rectangles show the surface projections of source (MF) and receiver (NHF) fault, respectively, with solid lines showing the upper boundaries.

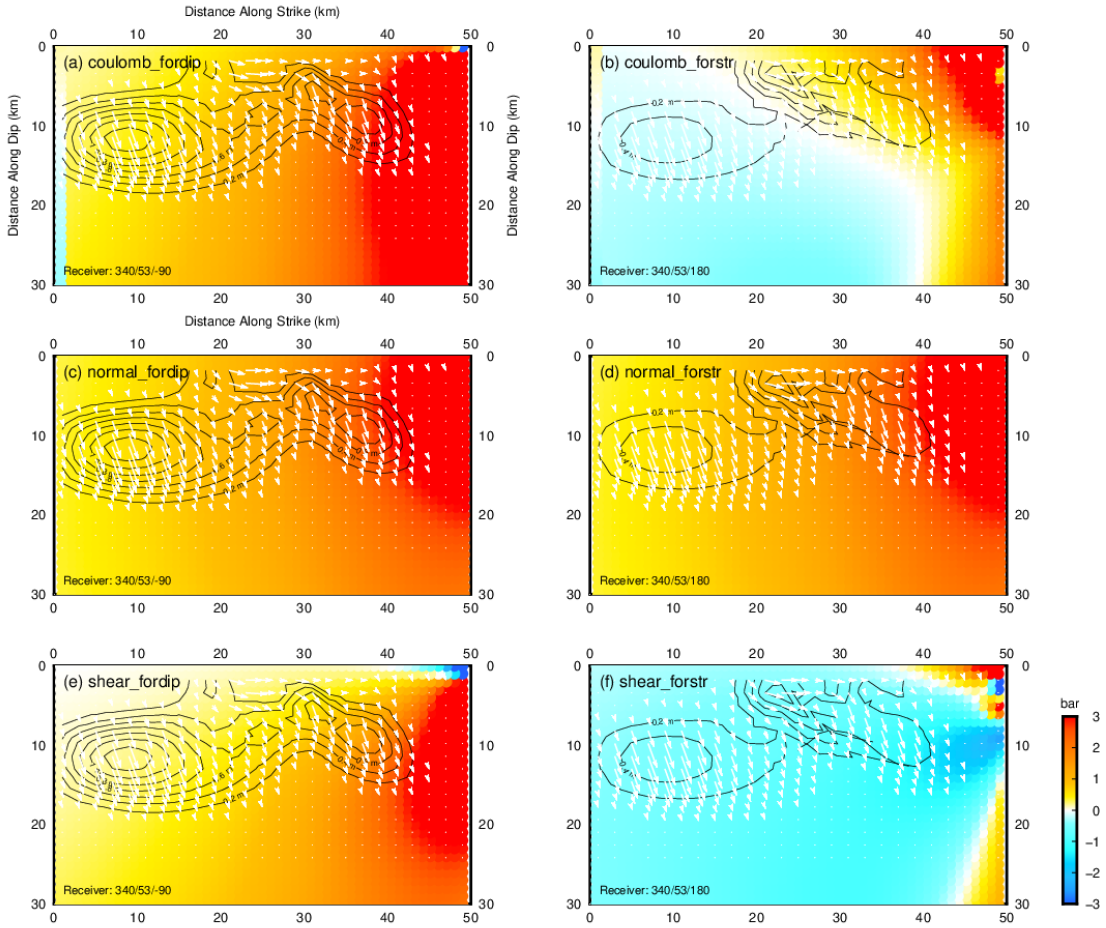

Figure S6. The Coulomb (a-b), normal (c-d), and shear (e-f) stress changes on the NHF fault plane according to Figure S5.

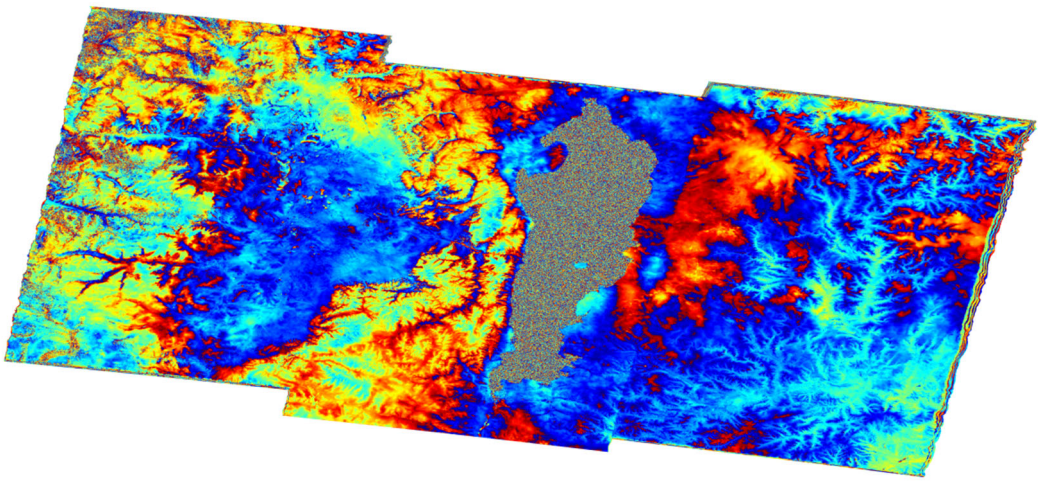

Figure S7. Surface LOS deformation during the 20210119-20210131 obtained from Sentinel-1B SAR satellite.

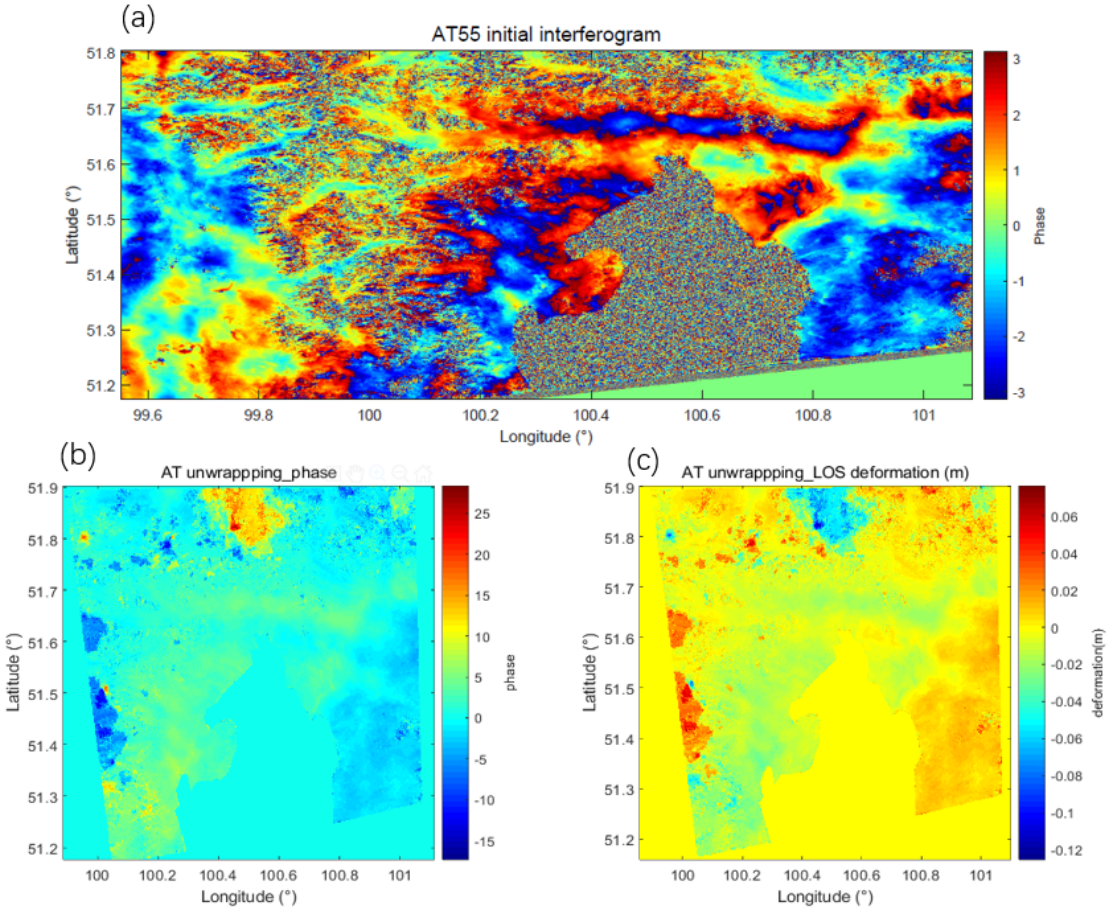

Figure S8. Surface LOS deformation associated with the 2021 Mw5.6 aftershock obtained from Sentinel-1B ascending orbit.