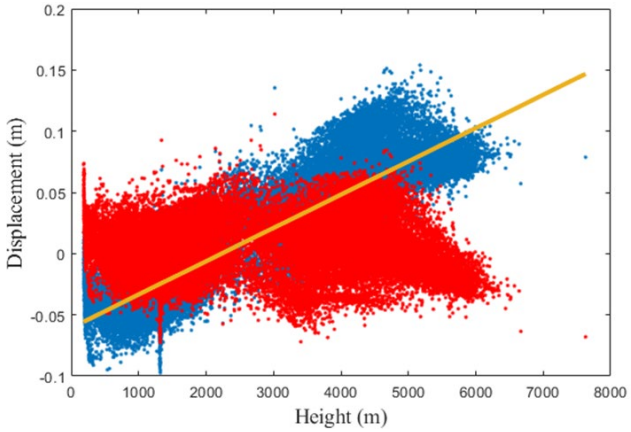


**Figure S1.** The relationship of elevation and deformation; The blue dot is before linear correction; The red dot is after linear correction, The orange line is the trend of linear fitting before correction.

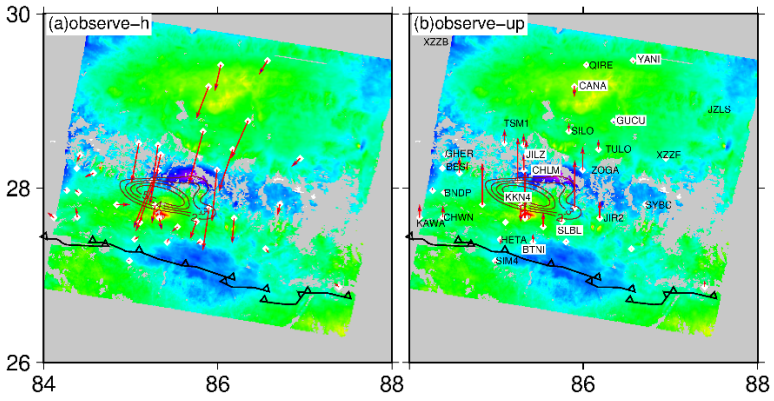


**Figure S2.** The contribution of the GPS sites; the color background is the InSAR deformation field in 4.5yr; the red triangular arrows is the GPS velocity in horizontal (**a**) and vertical dimension (**b**).

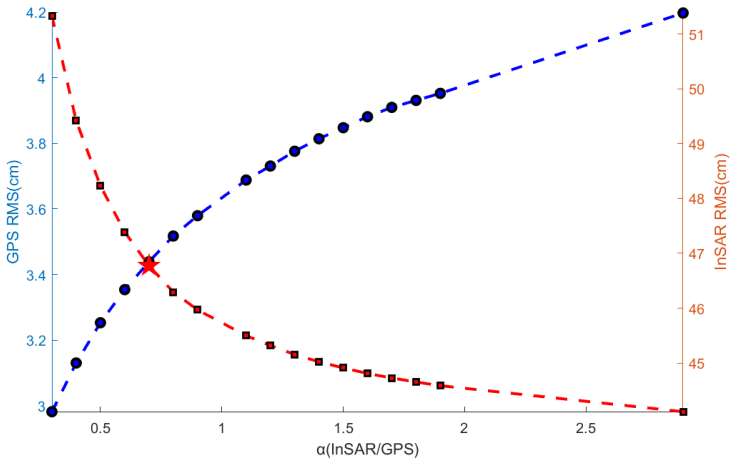


**Figure S3.** The optinal weight of GPS/InSAR. The red star represents the optimal value.

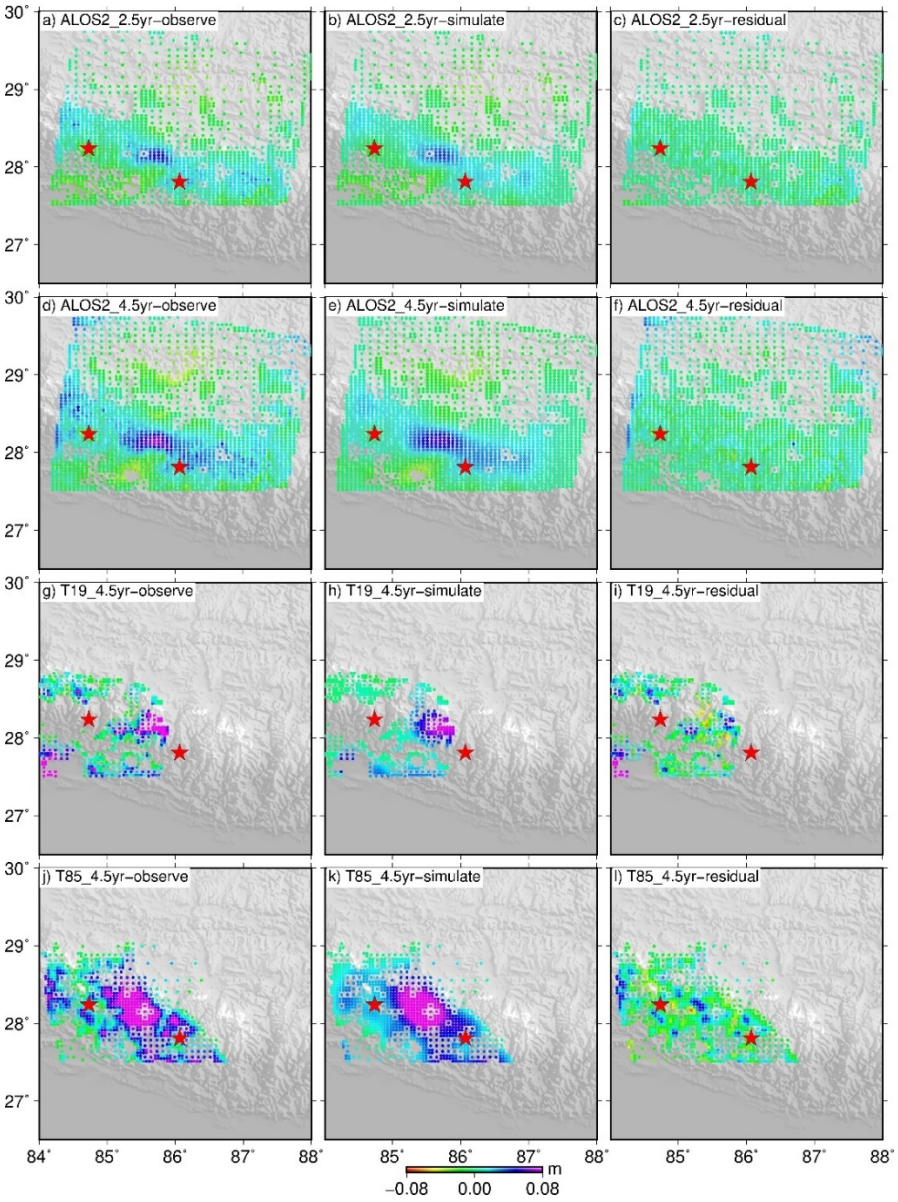


**Figure S4.** Simulated and residual maps of ALOS-2 and Sentinel-1A data. (**a**), (d), (**g**), (**j**) is the observation data of 2.5yr ALOS-2, 4.5yr ALOS-2, 4.5yr T19 Sentinel-1A and 4.5yr T85 Sentinel-1A respectively; (**b**), (**e**), (**h**), (**k**) is the simulation data; (**c**), (**f**), (**i**), (**l**) is the residual data.

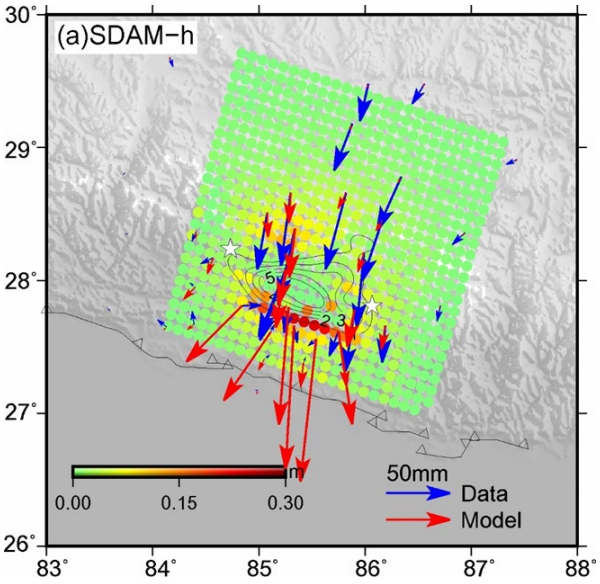


**Figure S5.** Stress-driven afterslip mdel, the updip area not locked.

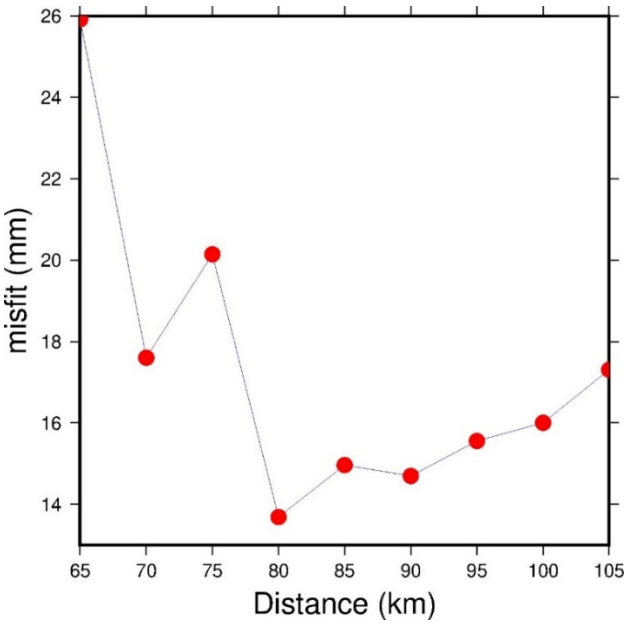


**Figure S6.** The optinal value of $y_0$.

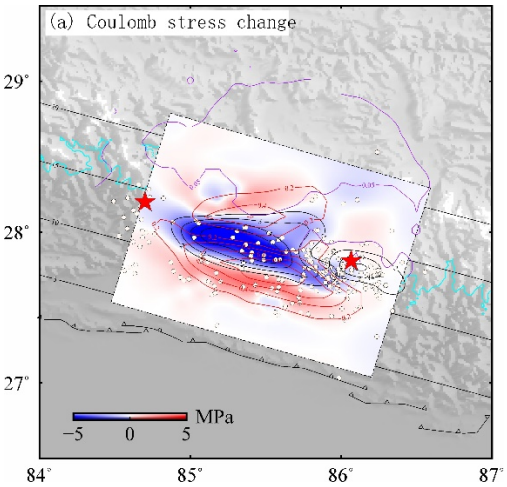


**Figure S7.** The coulomb stress change of the mainshock; the purple contour line represents the stress-driven afterslip; the black contour line represents the coseismic afterslip; the red contour line represents the coseismic deformation; the red star represents the epicenter.