Supplemental Material for "The InSAR lookbook: an illustrated guide to earthquake deformation interferograms"

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Description of Supplemental Material

Supplemental materials for the InSAR lookbook consist of twenty-six figures: unwrapped interferograms at variable strike angles for the fourteen faulting types (Figures S1a–S1n), and wrapped interferograms at fixed strikes and variable rake angles (Figures S2a–S2l). See Table 1 in the main text for the fault parameters of all suites of models, and Section 3.3 for more details of the application of these figures.

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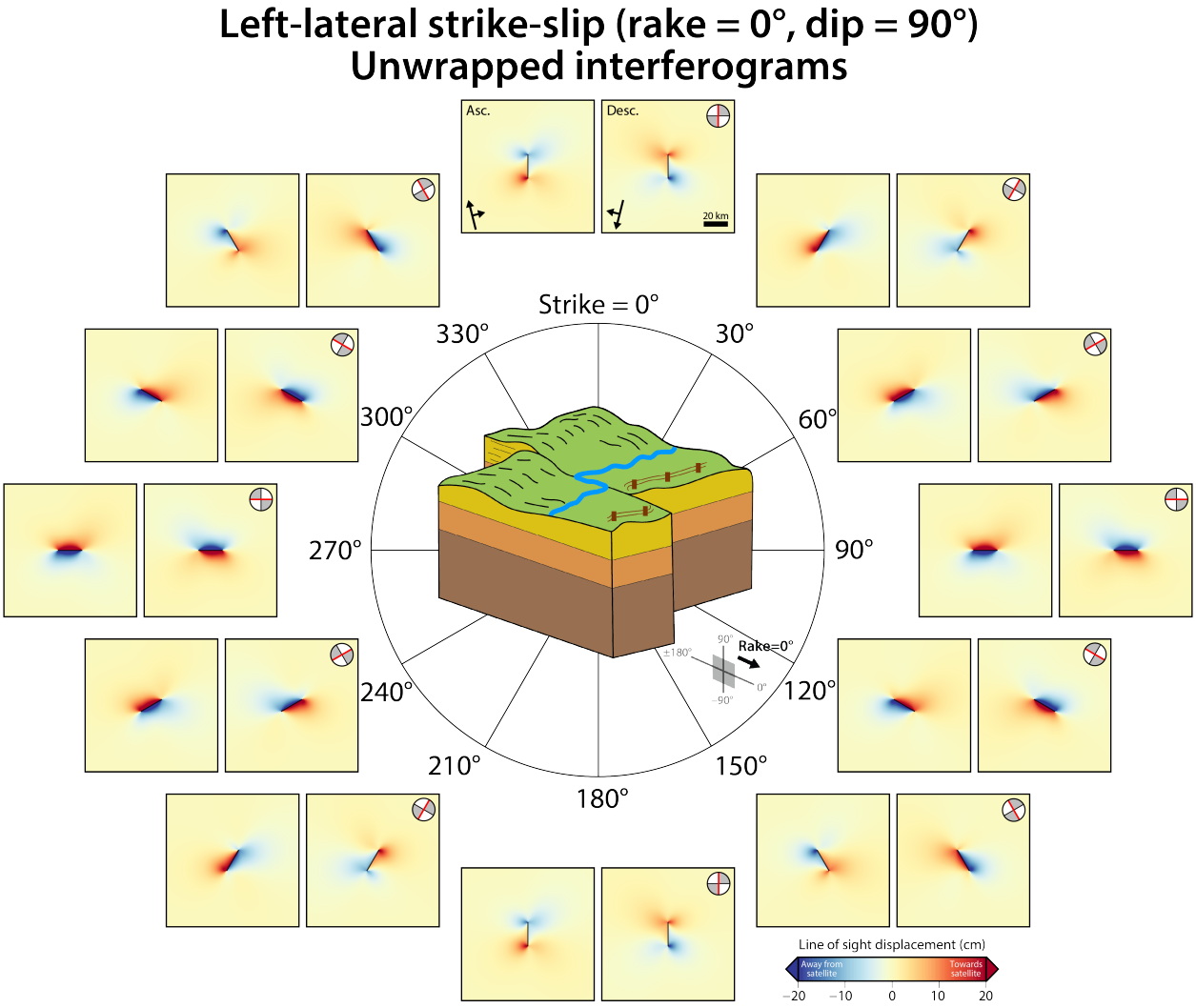
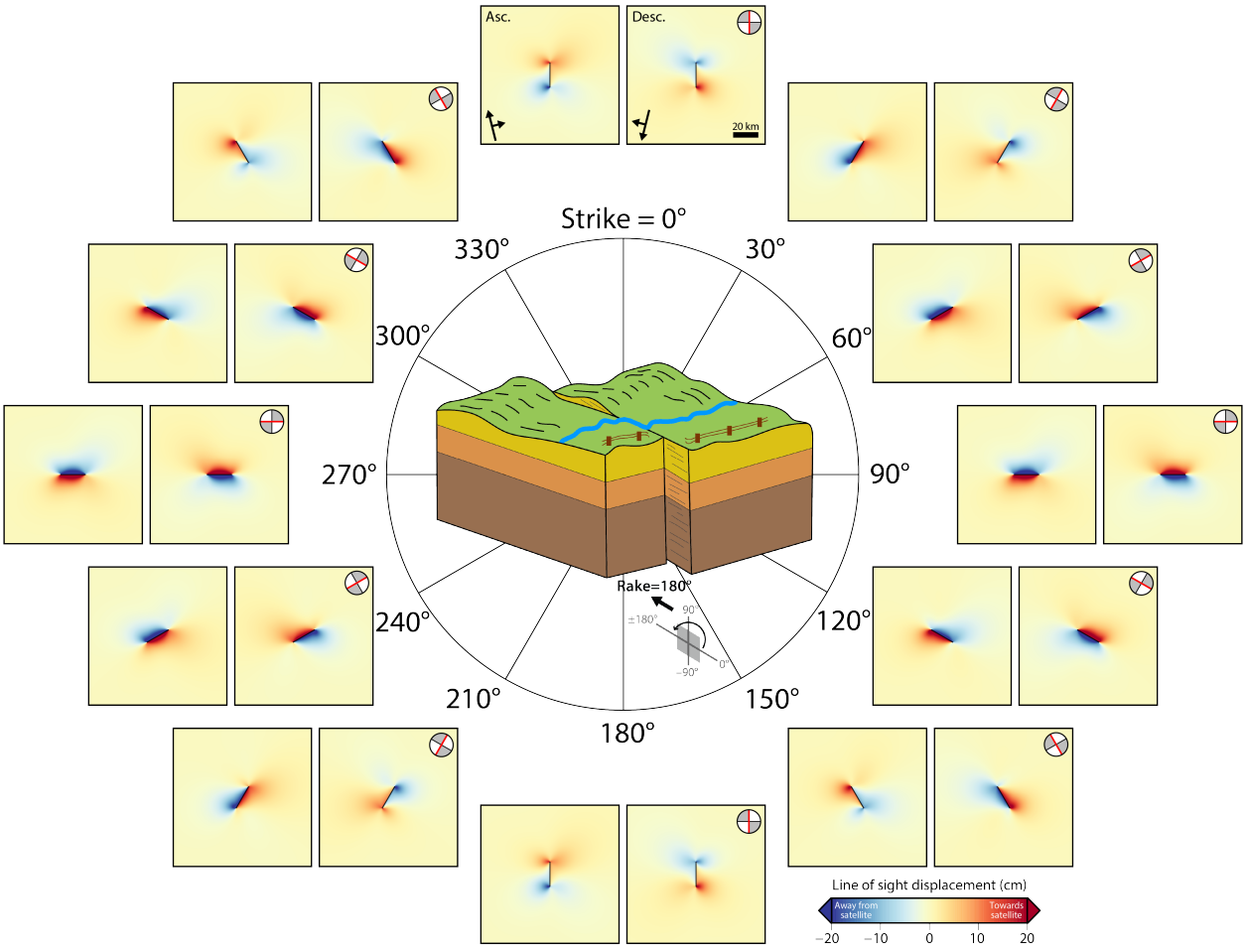
(xxvi) Figure S2l: Interferograms for strike 330° faulting, varying rake

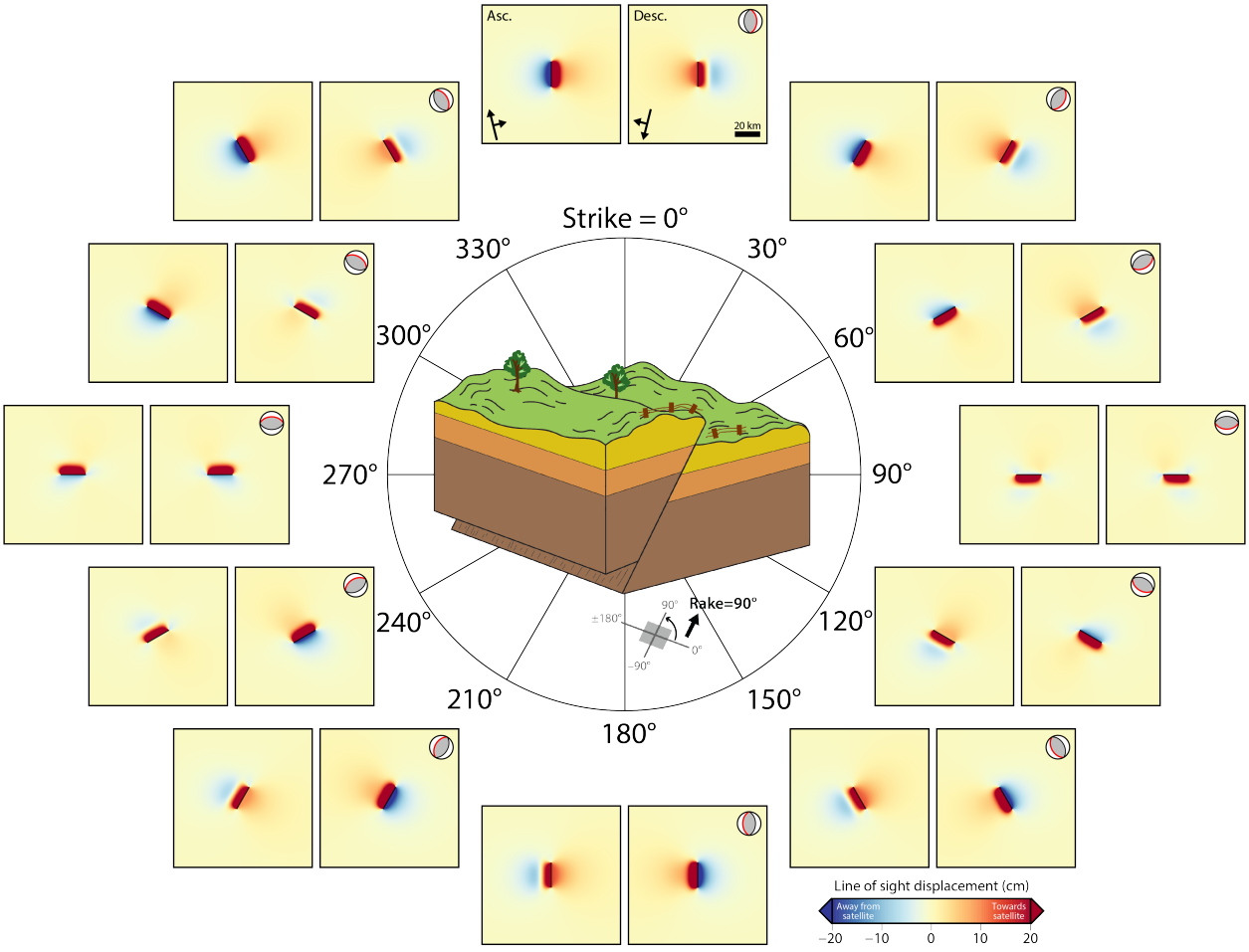
Figure S1: In each subfigure (a) to (n), pairs of (left) ascending and (right) descending unwrapped interferograms are plotted radially at 30° increments in fault strike around a block diagram illustrating the displayed fault type. In the 0° strike panels, long and short arrows indicate the satellite azimuth and the horizontal component of the LOS vector, respectively (these are the same for all strike values). In all panels, red indicates motion towards the satellite and blue is motion away from the satellite. Solid black lines mark the 20 km-long model fault trace; for gently-dipping faults, a dashed rectangle marks the model fault in plan view. The beach ball in the corner of each descending interferogram is the earthquake focal mechanism, with the fault plane outlined in red.



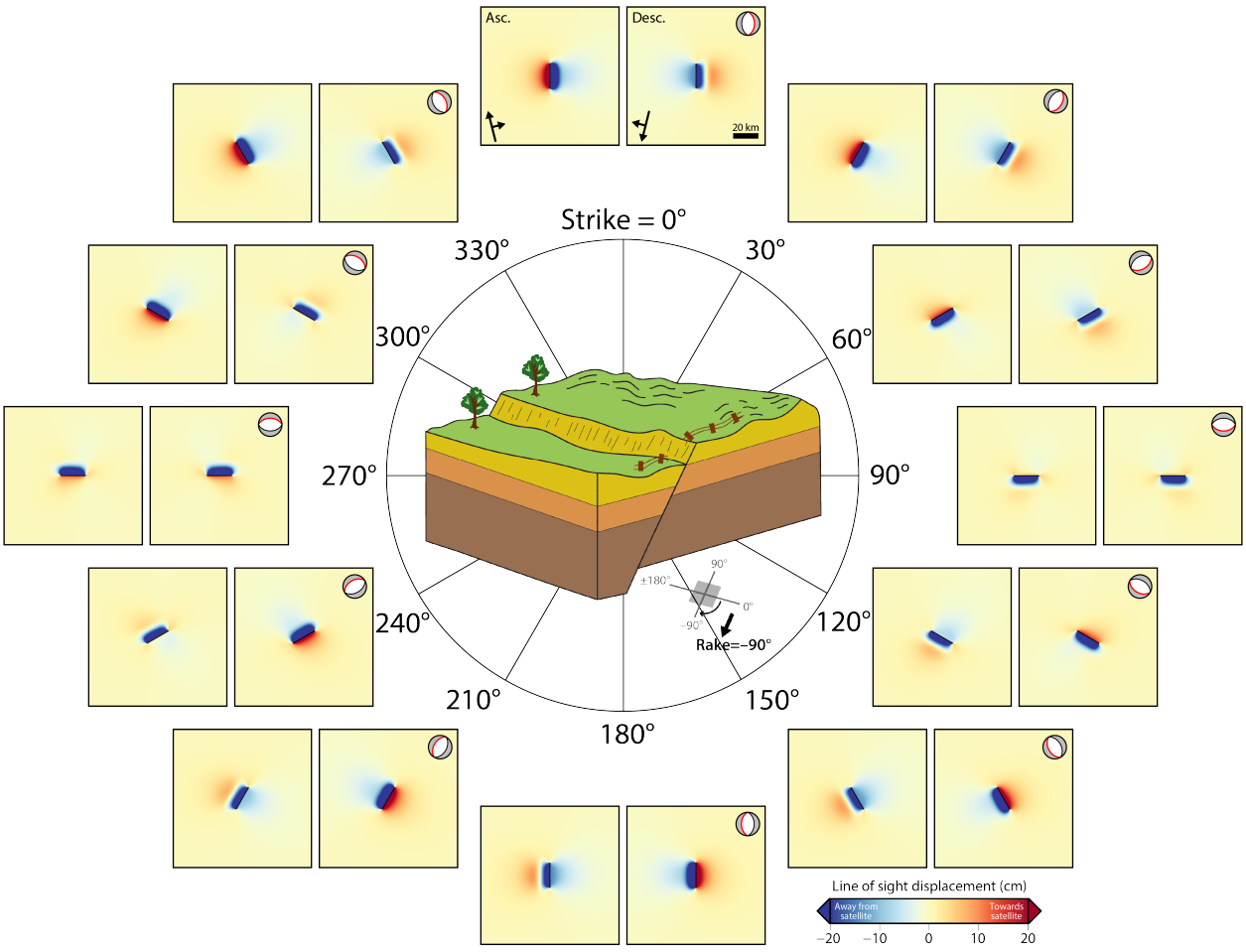
a InSAR forward model unwrapped interferograms for variably striking left-lateral strike-slip earthquakes (rake 0°, dip 90°).



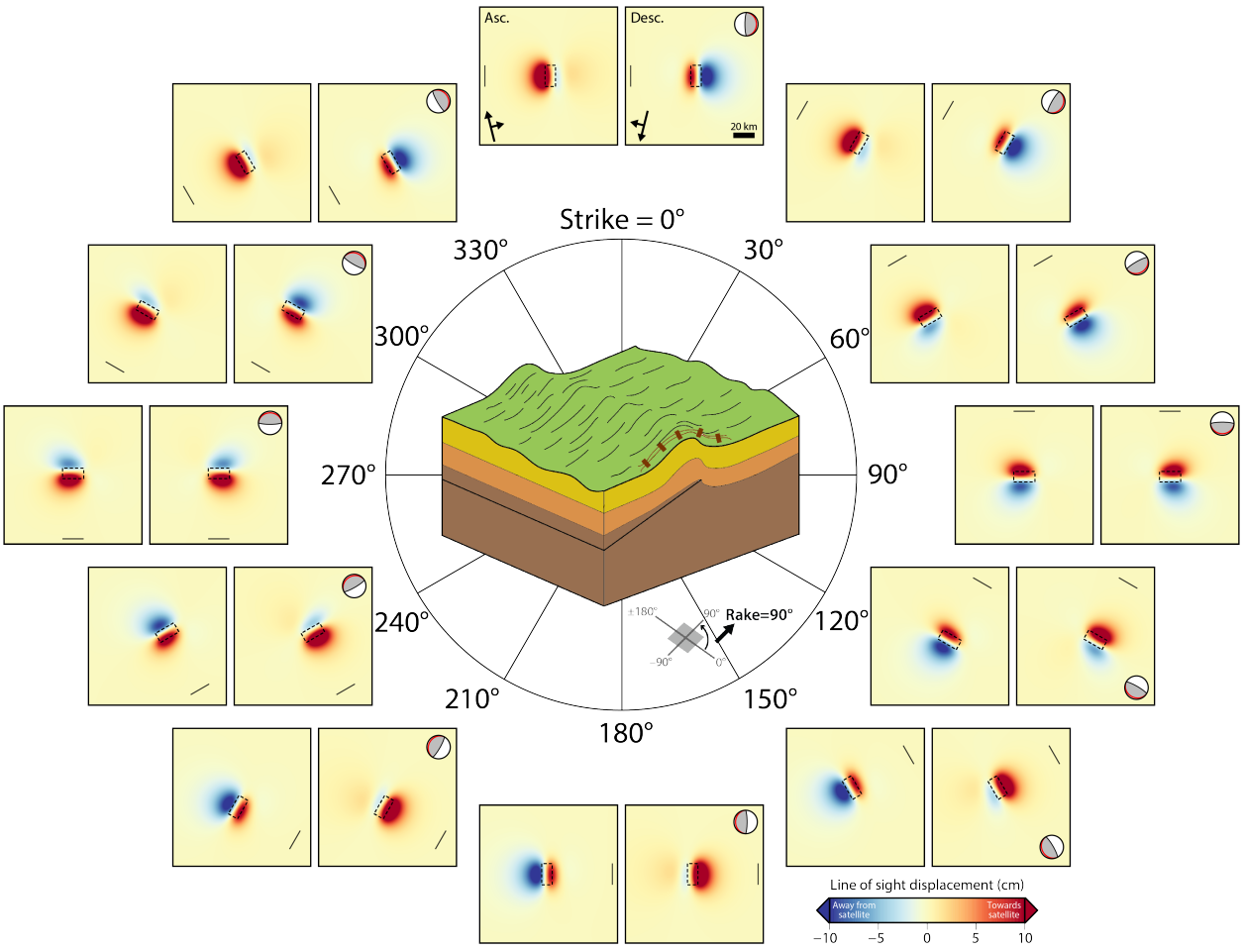
b InSAR forward model unwrapped interferograms for variably striking right-lateral strike-slip earthquakes (rake 180°, dip 90°).



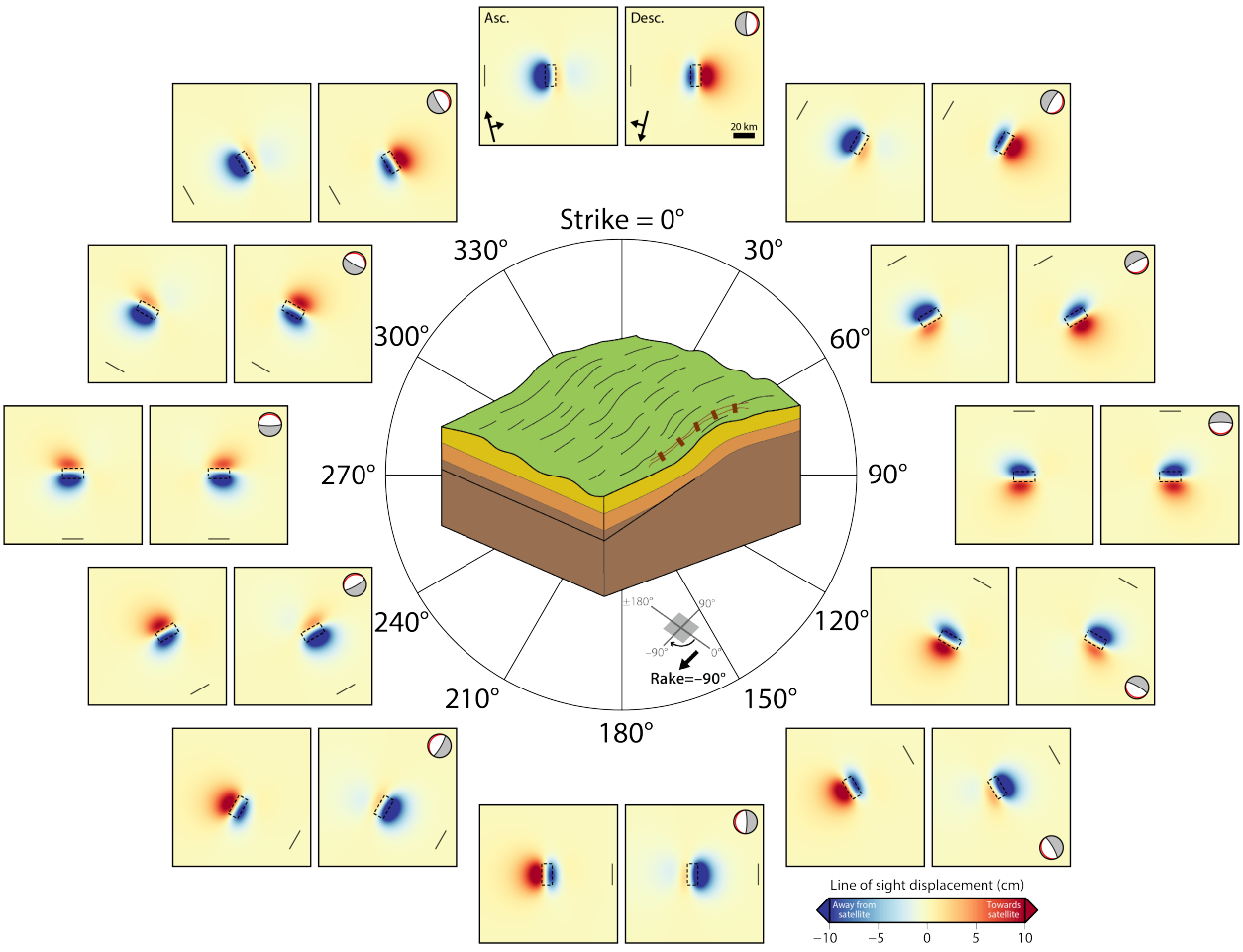
c InSAR forward model unwrapped interferograms for variably striking reverse faulting earthquakes (rake 90°, dip 45°).



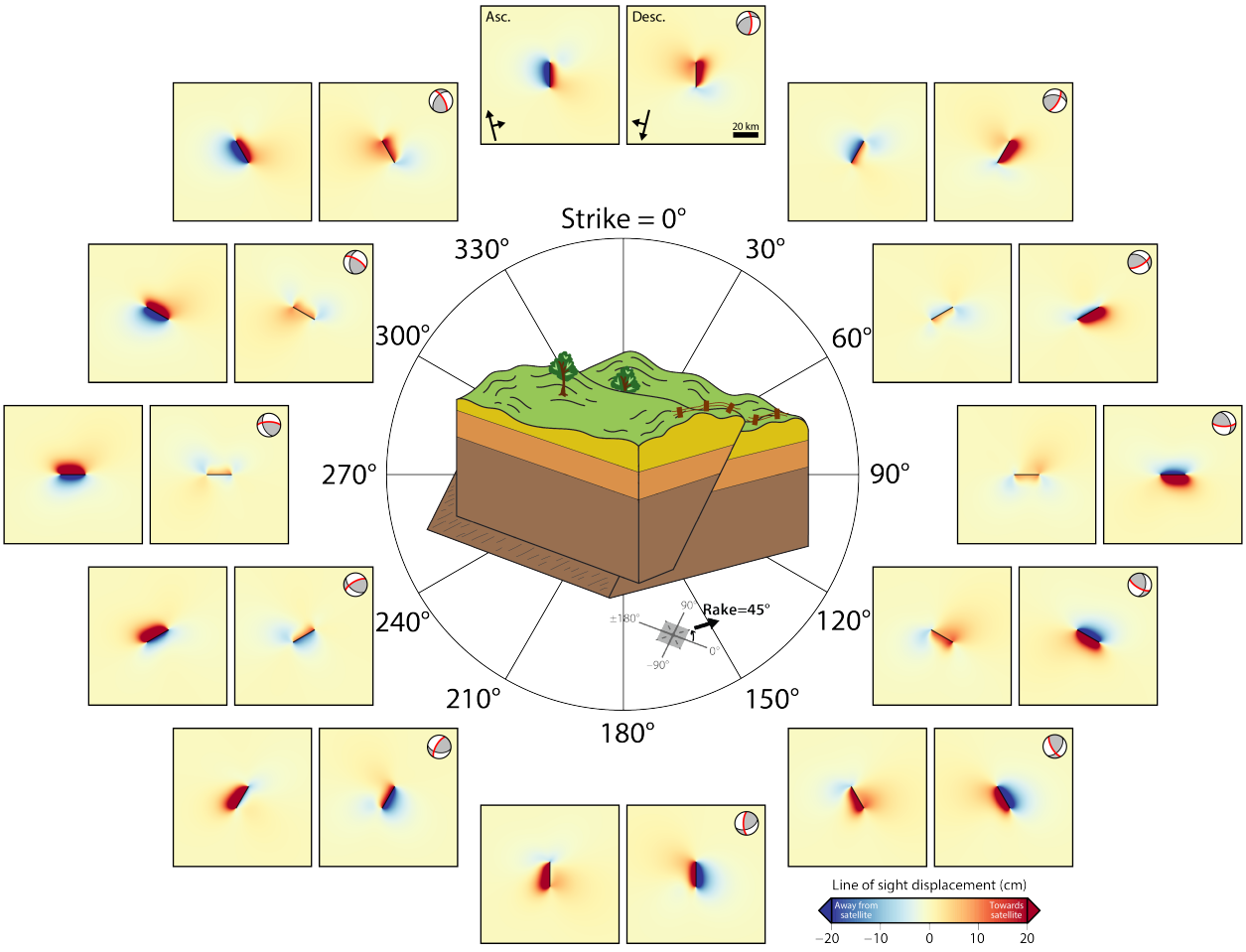
d InSAR forward model unwrapped interferograms for variably striking normal faulting earthquakes (rake −90°, dip 45°).



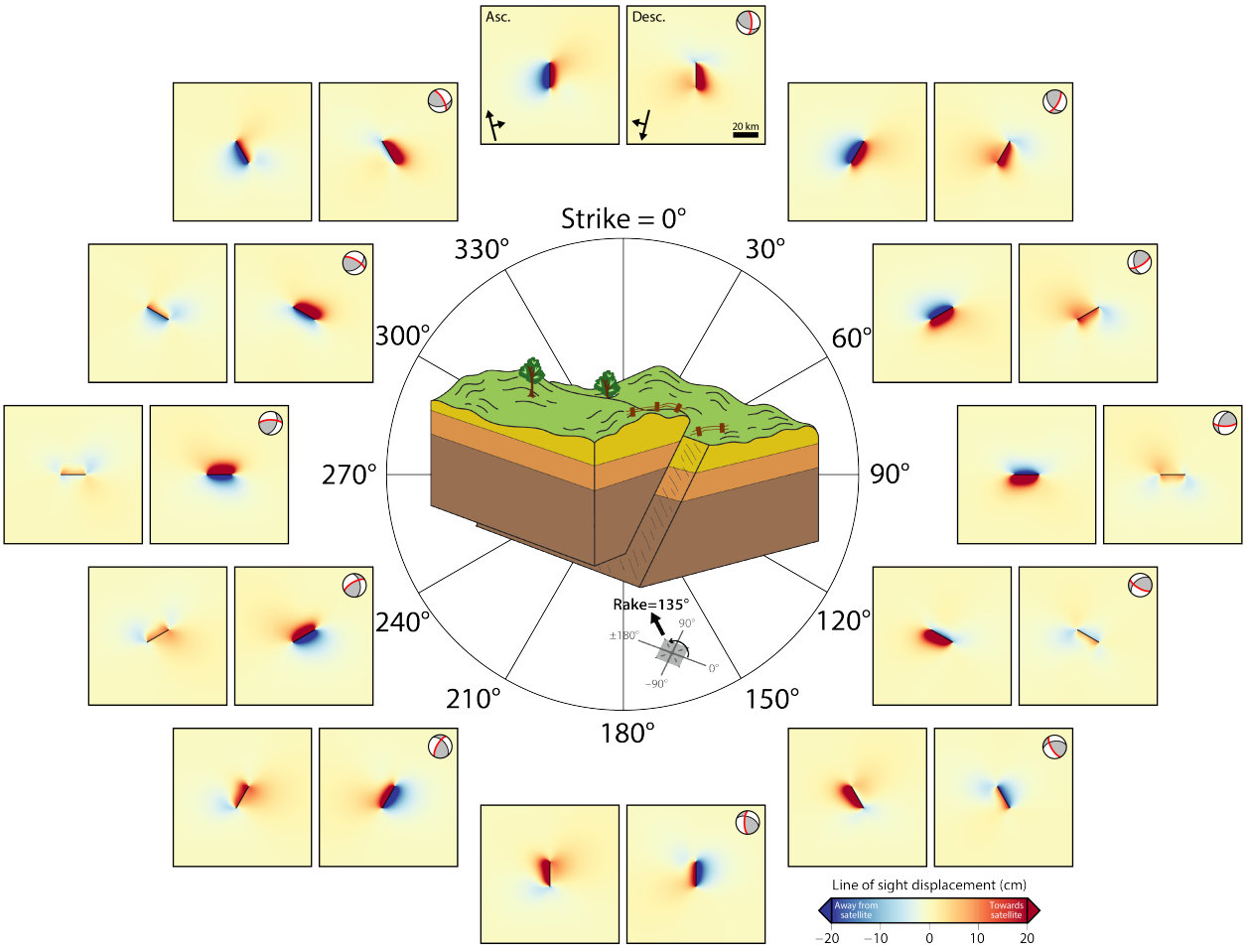
e InSAR forward model unwrapped interferograms for variably striking, buried, low-angle thrust faulting earthquakes (rake 90°, dip 10°).



f InSAR forward model unwrapped interferograms for variably striking, buried, low-angle normal faulting earthquakes (rake −90°, dip 10°).

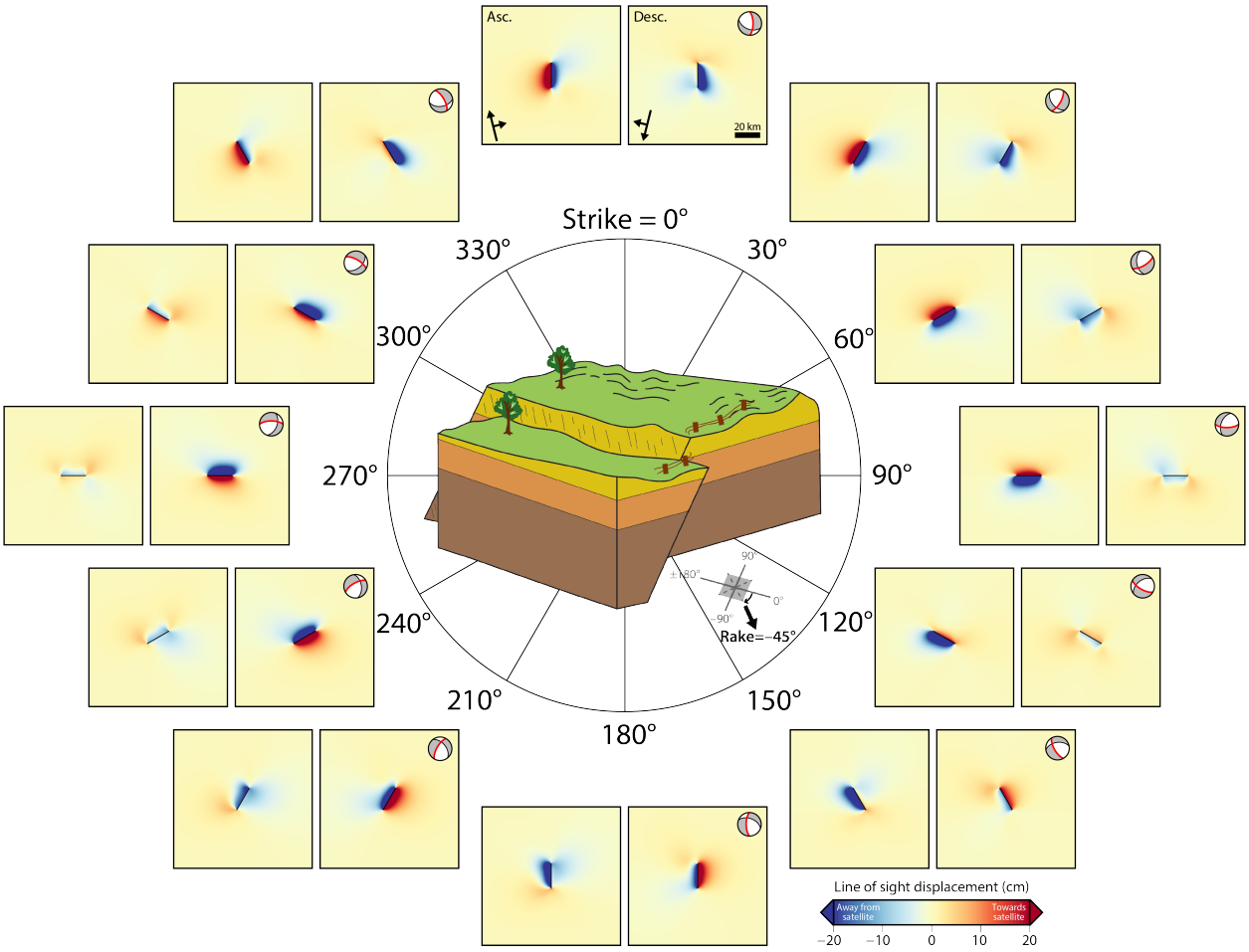


g InSAR forward model unwrapped interferograms for variably striking, steep-angle, left-lateral/reverse, oblique-slip earthquakes (rake = 45°, dip = 67.5°).



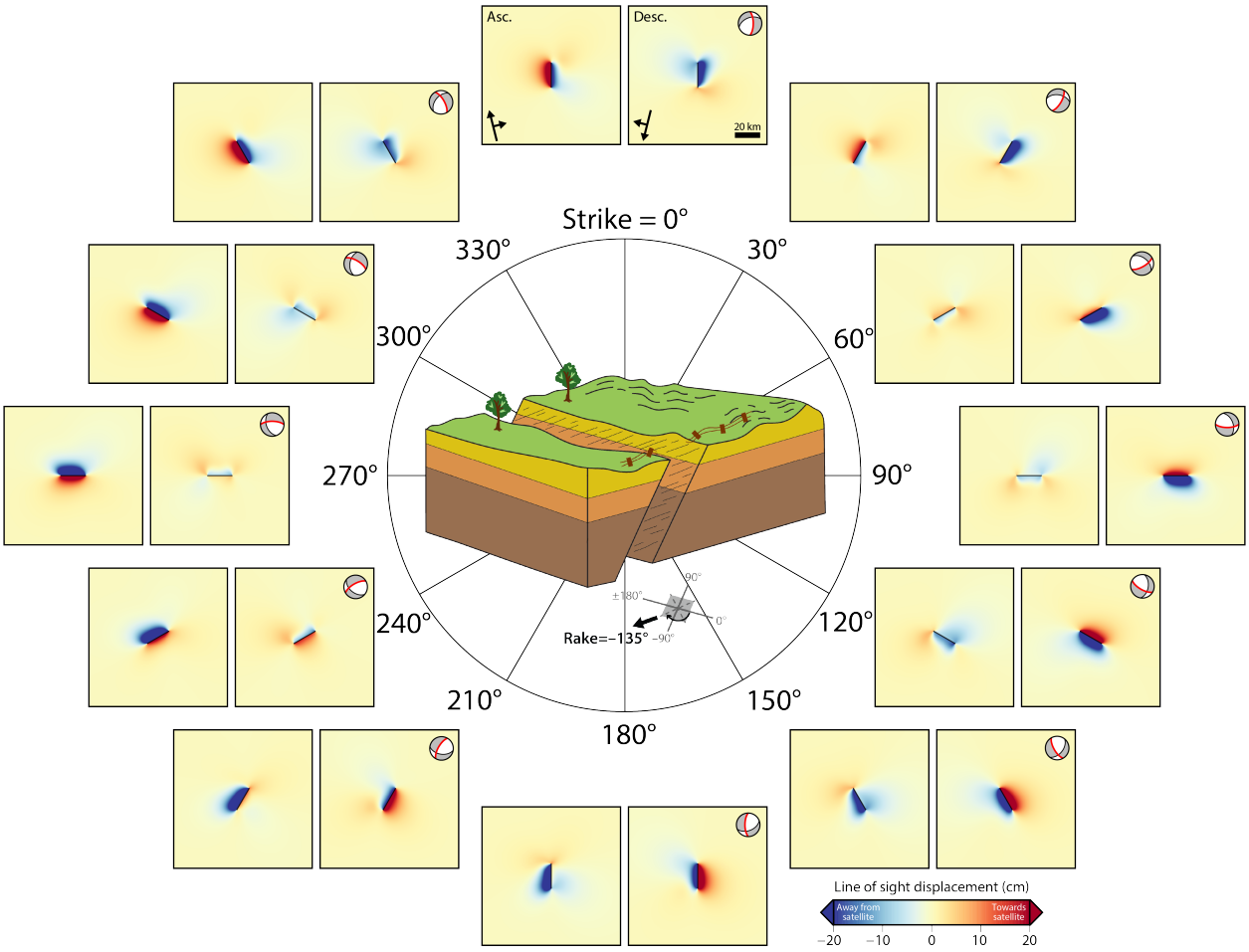
h InSAR forward model unwrapped interferograms for variably striking, steep-angle, right-lateral/reverse, oblique-slip earthquakes (rake = 135°, dip = 67.5°).

Steep left-lateral/normal oblique-slip (rake = –45°, dip = 67.5°)
Unwrapped interferograms

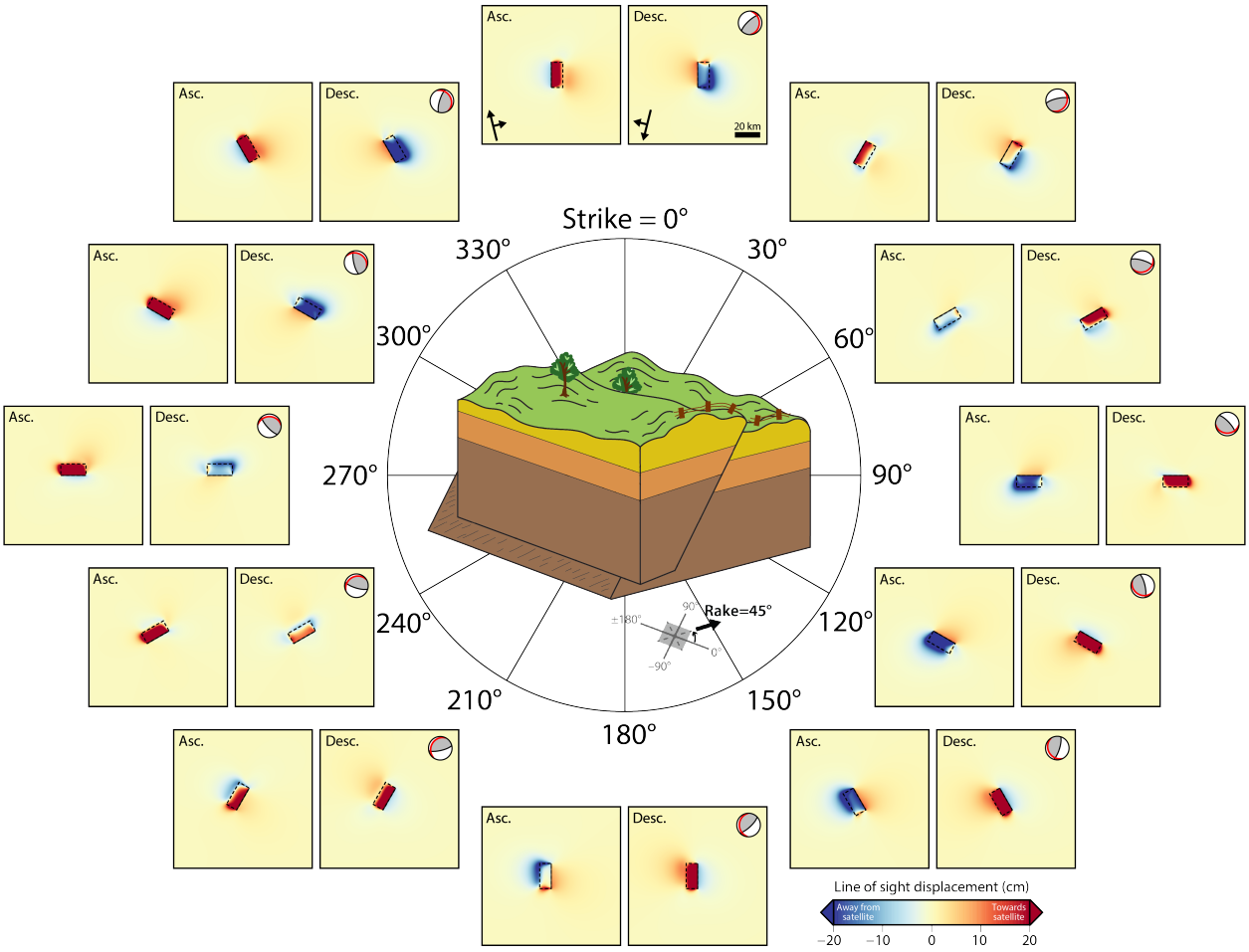


i InSAR forward model unwrapped interferograms for variably striking, steep-angle, left-lateral/normal, oblique-slip earthquakes (rake = −45°, dip = 67.5°).

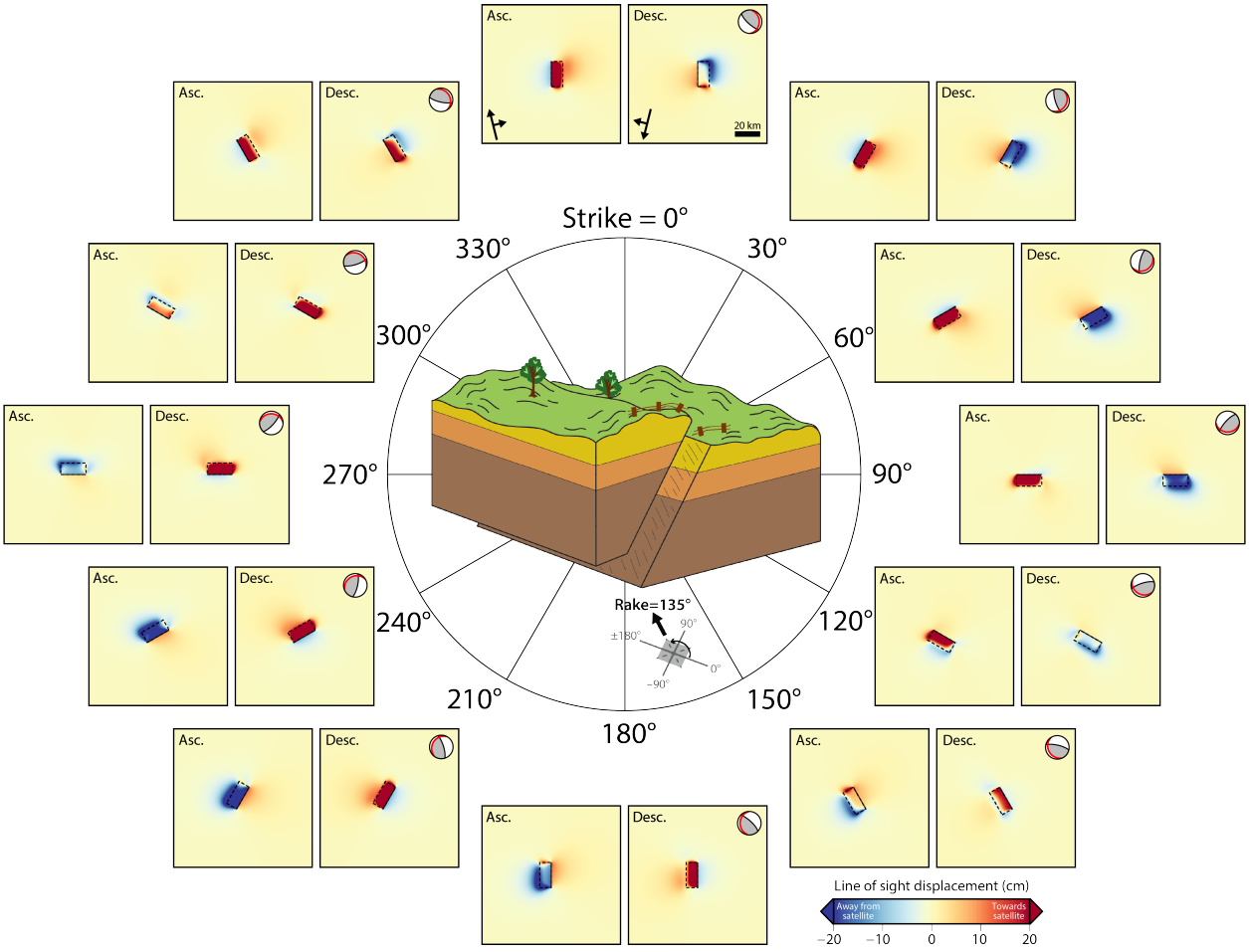
Steep right-lateral/normal oblique-slip (rake = −135°, dip = 67.5°)
Unwrapped interferograms



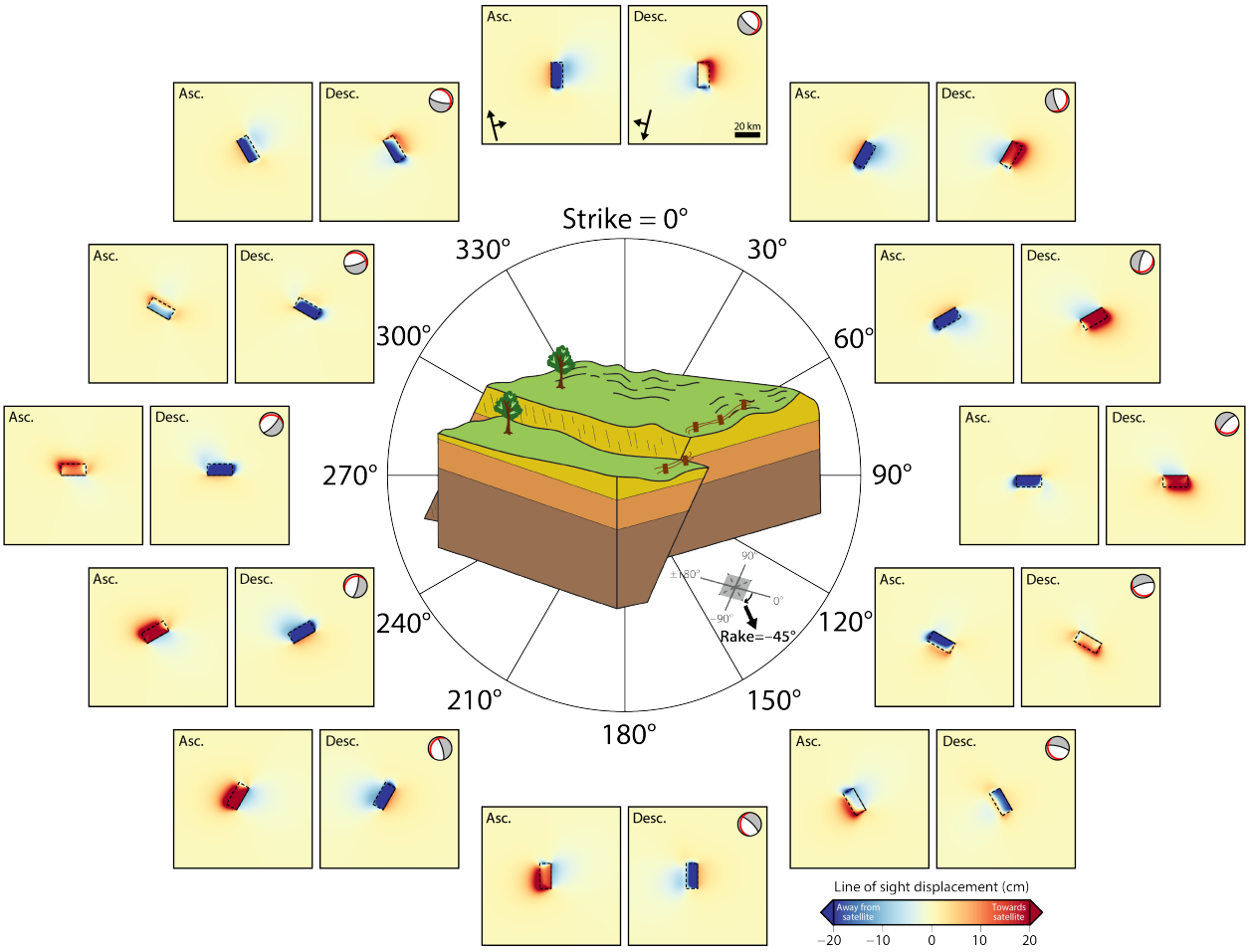
j InSAR forward model unwrapped interferograms for variably striking, steep-angle, right-lateral/normal, oblique-slip earthquakes (rake = −135°, dip = 67.5°).



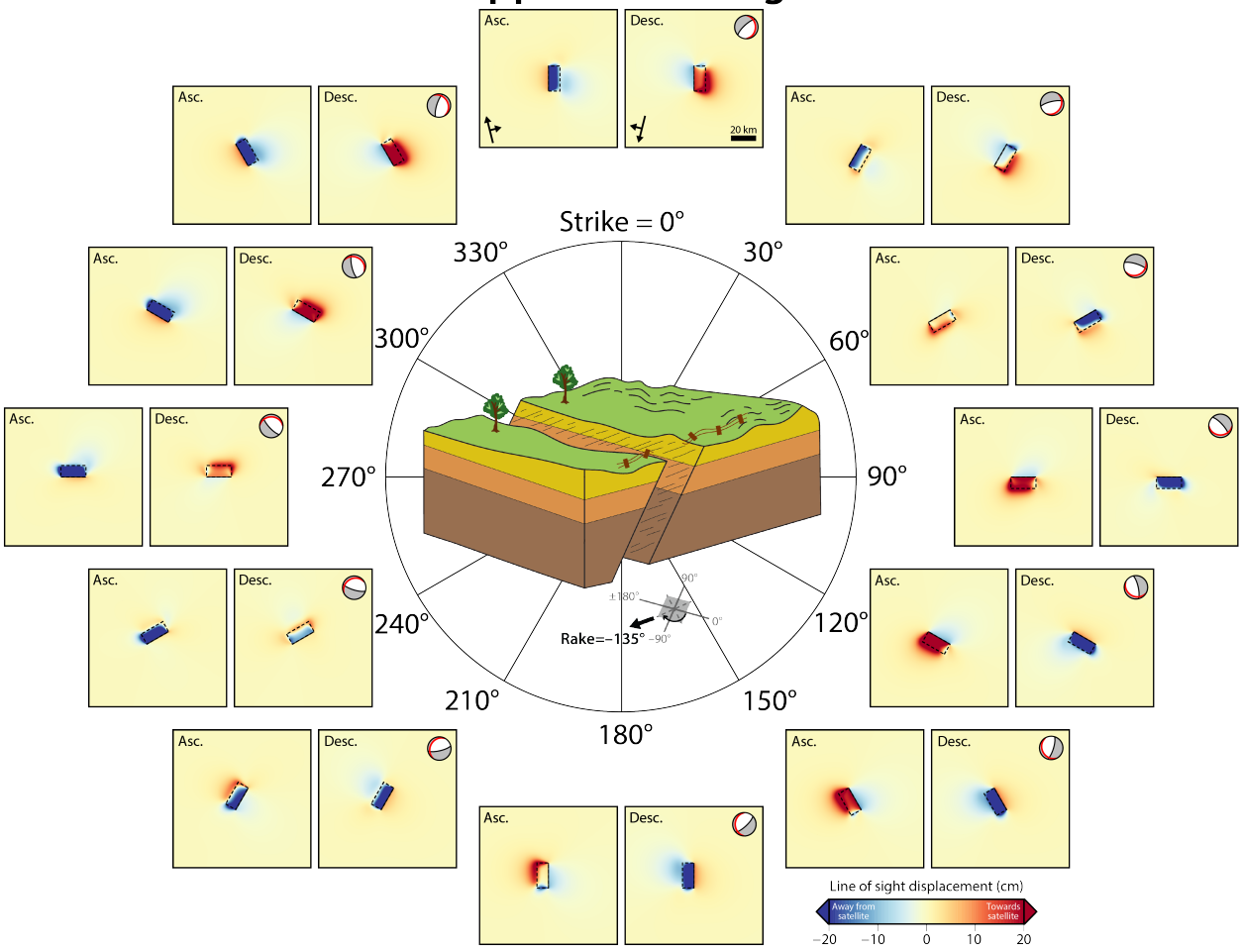
k InSAR forward model unwrapped interferograms for variably striking, gentle-angle, left-lateral/thrust, oblique-slip earthquakes (rake = 45°, dip = 22.5°).



I InSAR forward model unwrapped interferograms for variably striking, gentle-angle, right-lateral/thrust, oblique-slip earthquakes (rake = 135°, dip = 22.5°).

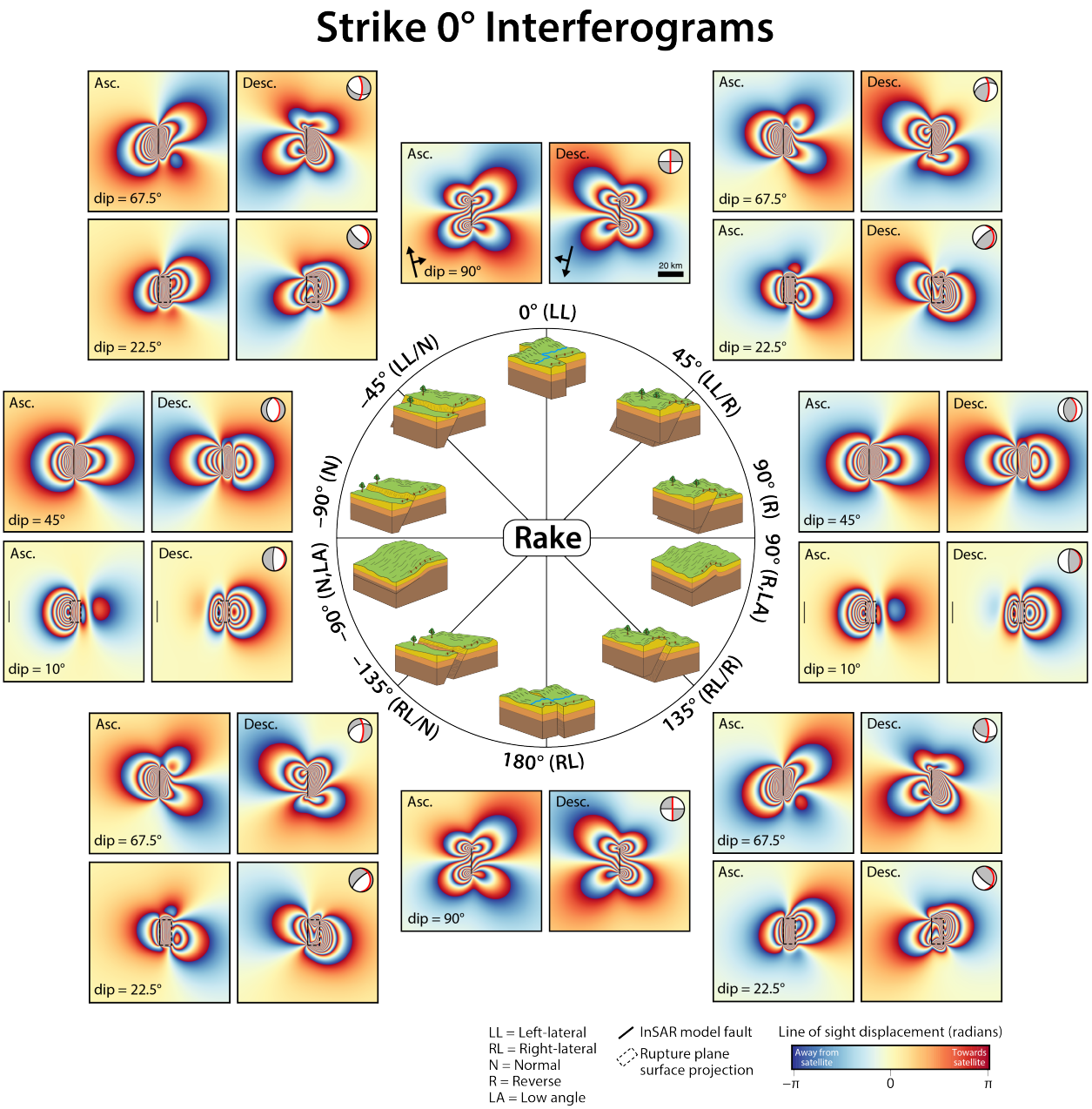


m InSAR forward model unwrapped interferograms for variably striking, gentle-angle, left-lateral/normal, oblique-slip earthquakes (rake = −45°, dip = 22.5°).

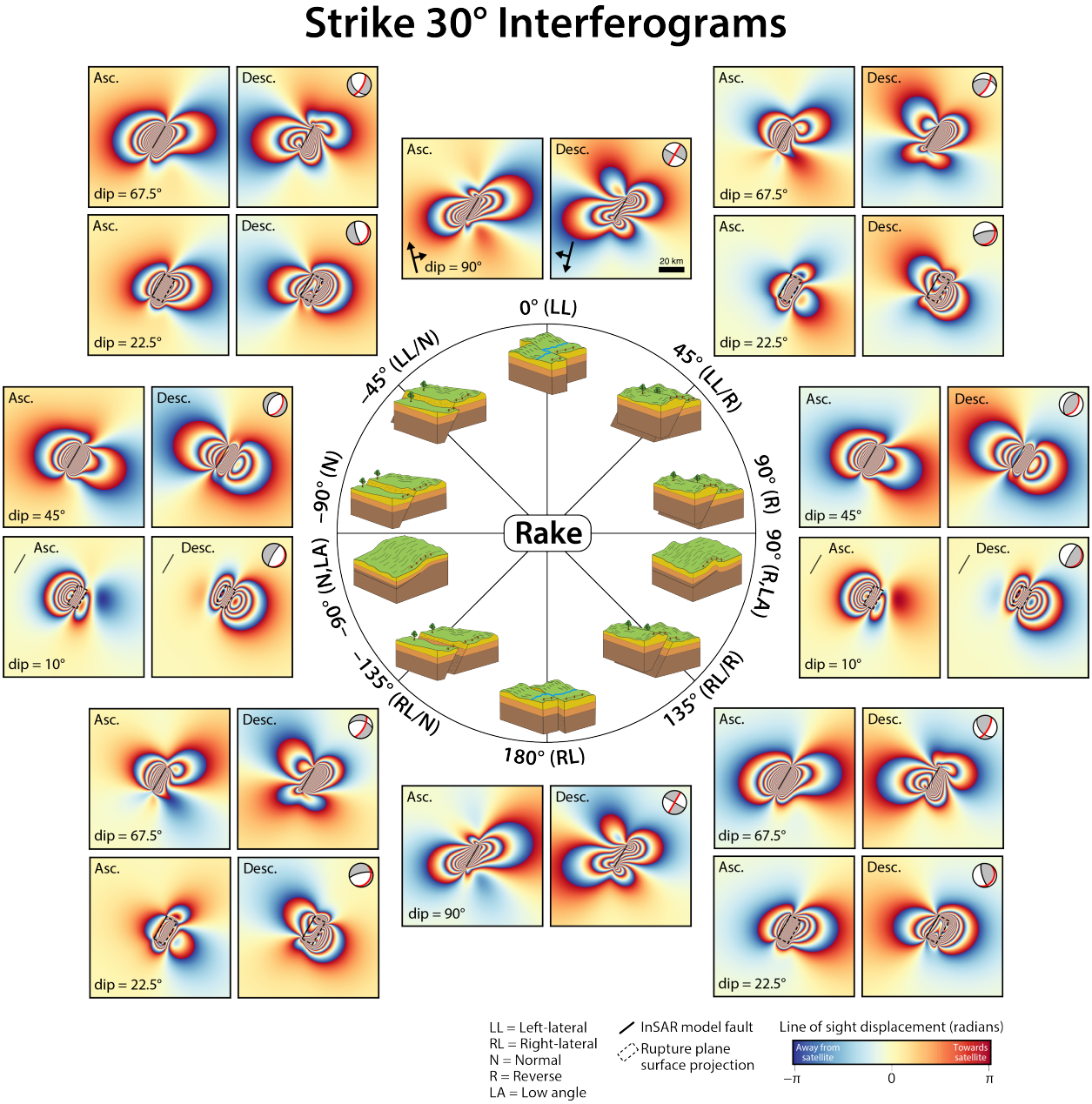


n InSAR forward model unwrapped interferograms for variably striking, gentle-angle, right-lateral/normal, oblique-slip earthquakes (rake = −135°, dip = 22.5°).

Figure S2: In each subfigure (a) to (l), pairs of (left) ascending and (right) descending interferograms for earthquakes are plotted radially at 45° increments in fault rake. Each subfigure denotes a fixed fault strike. Fault kinematics and geometries are abbreviated as follows: left-lateral (LL), right-lateral (RL), N (normal), R (reverse), and low-angle (LA). For dip-slip and oblique-slip mechanisms, interferogram pairs for steeper faults are plotted above those for gentler faults, with dip angles indicated in the ascending panels. Solid black lines mark the 20 km-long model fault trace; for gently-dipping faults, a dashed rectangle marks the model fault in plan view. The beach ball in the corner of each descending interferogram is the earthquake focal mechanism, with the fault plane outlined in red.

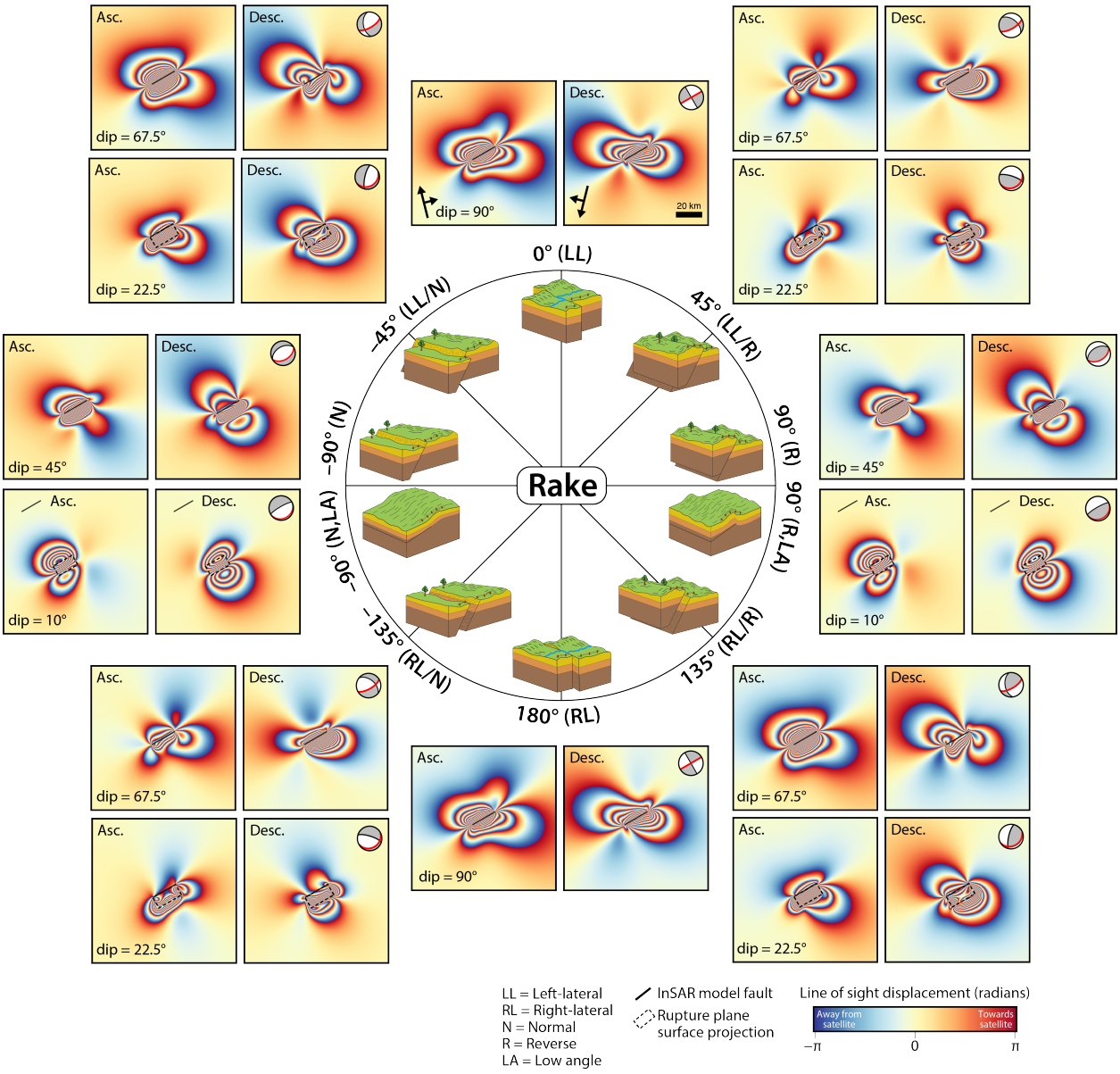


a Wrapped interferograms for strike 0° earthquakes, with variable rake.

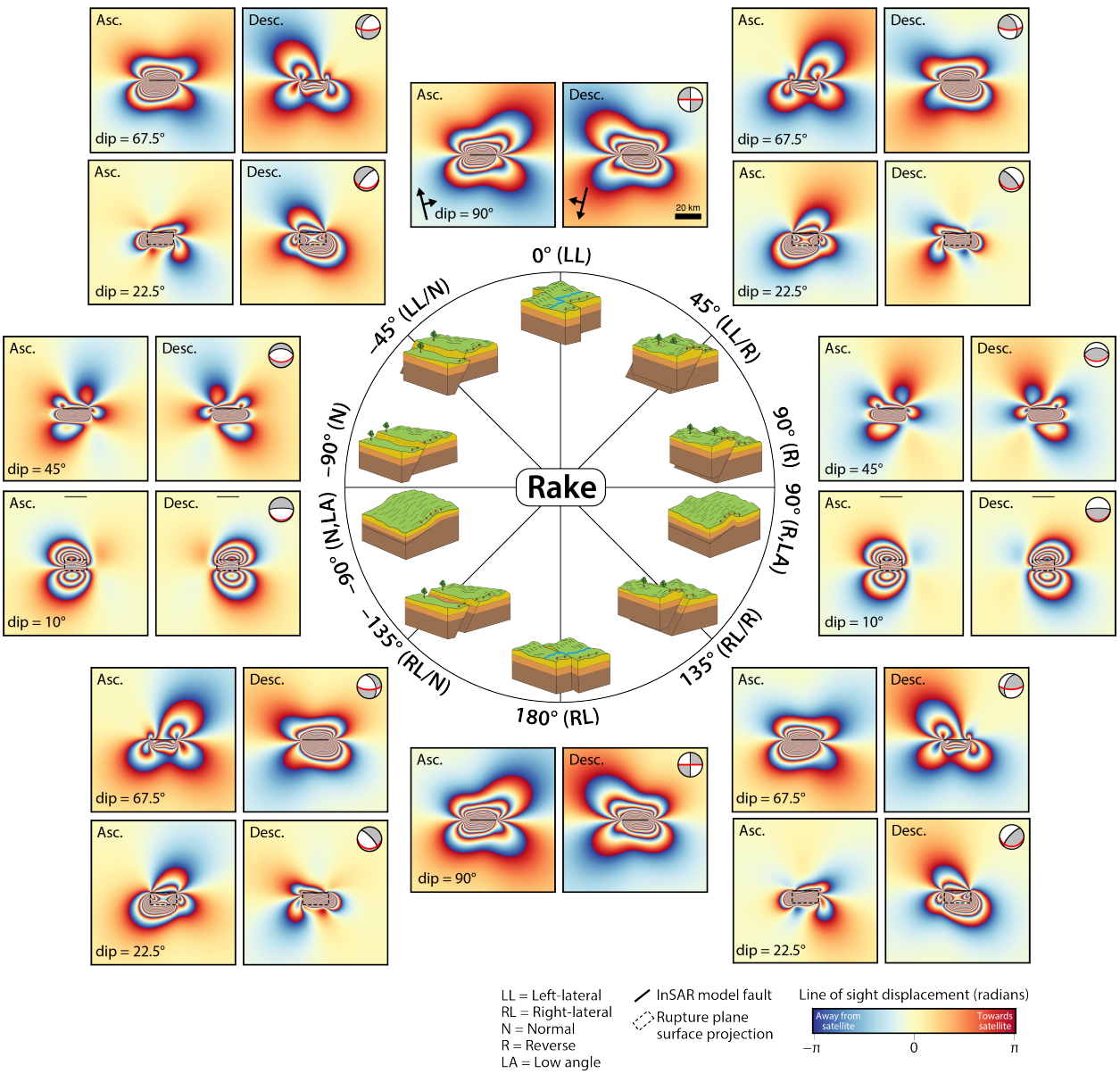


b Wrapped interferograms for strike 30° earthquakes, with variable rake.

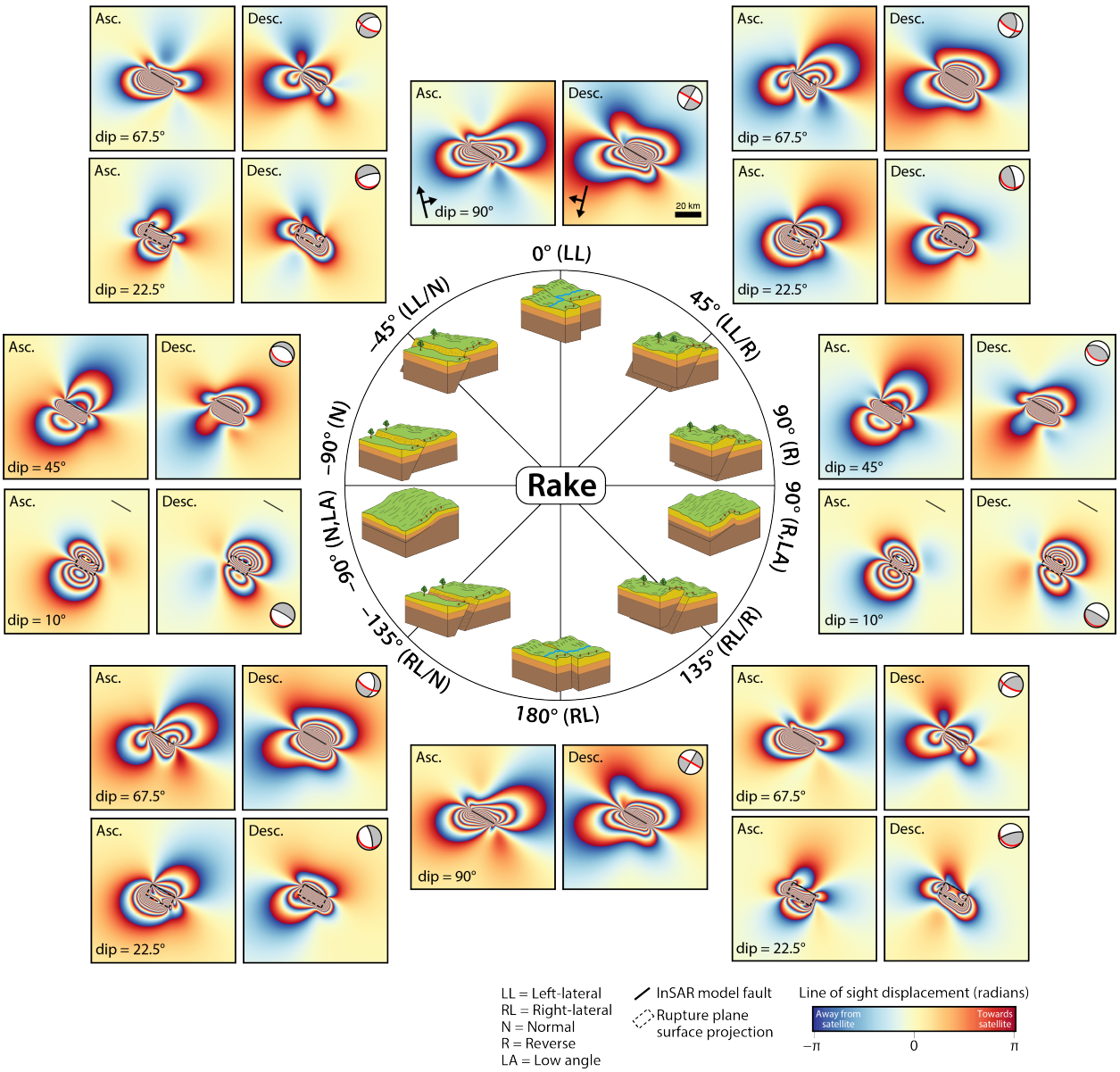
Strike 60° Interferograms



c Wrapped interferograms for strike 60° earthquakes, with variable rake.

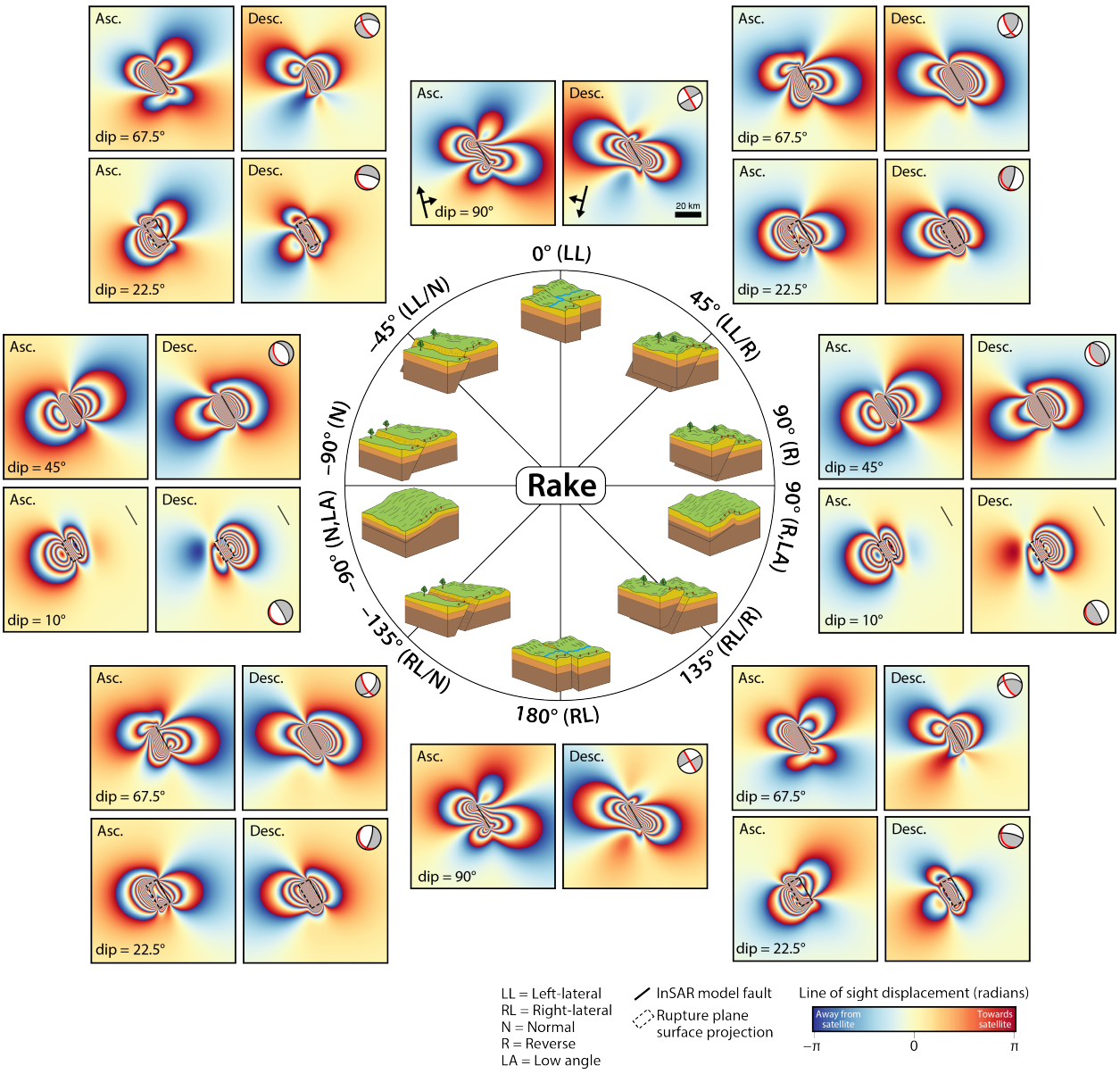


d Wrapped interferograms for strike 90° earthquakes, with variable rake.

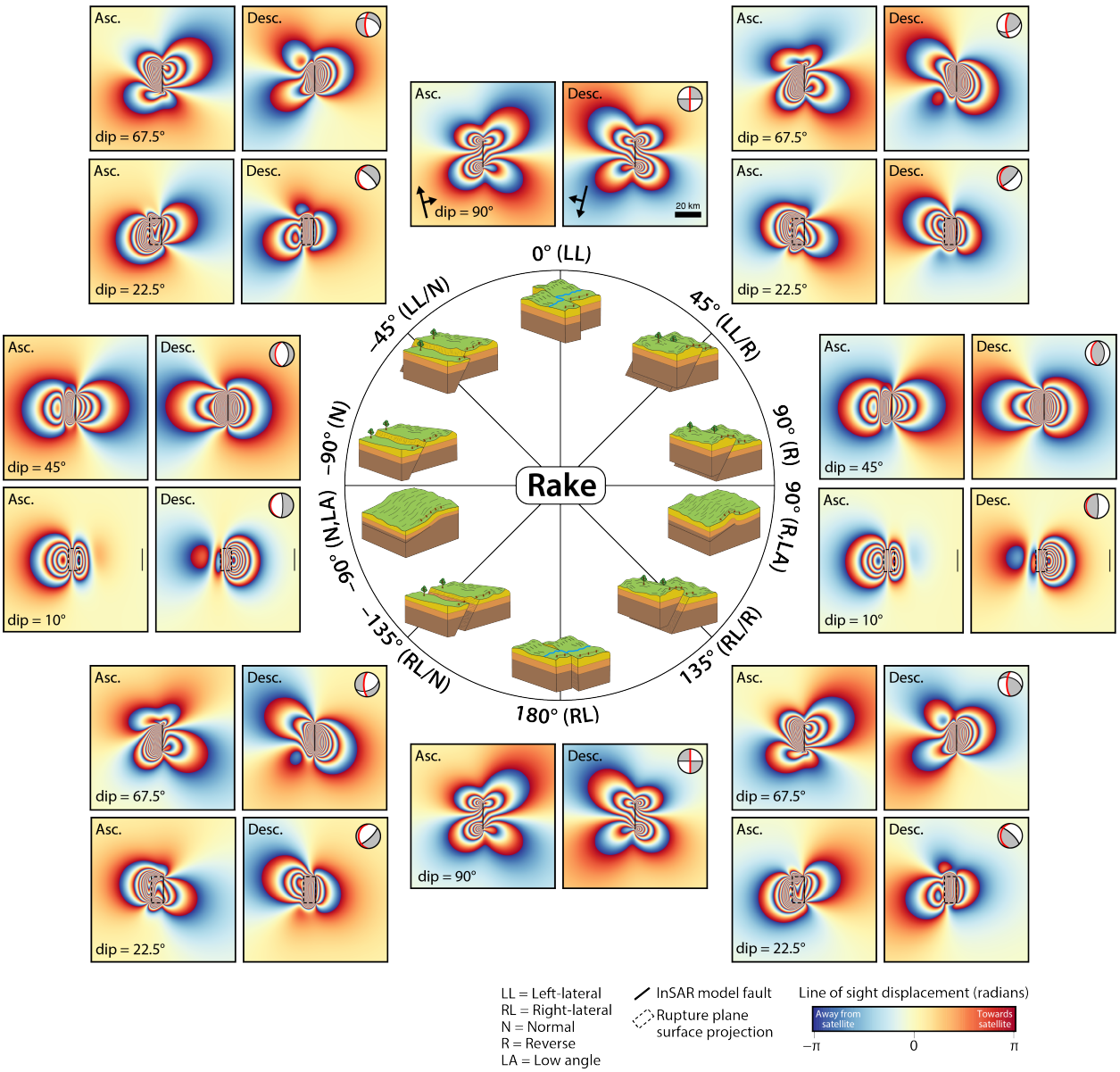


e Wrapped interferograms for strike 120° earthquakes, with variable rake.

Strike 150° Interferograms

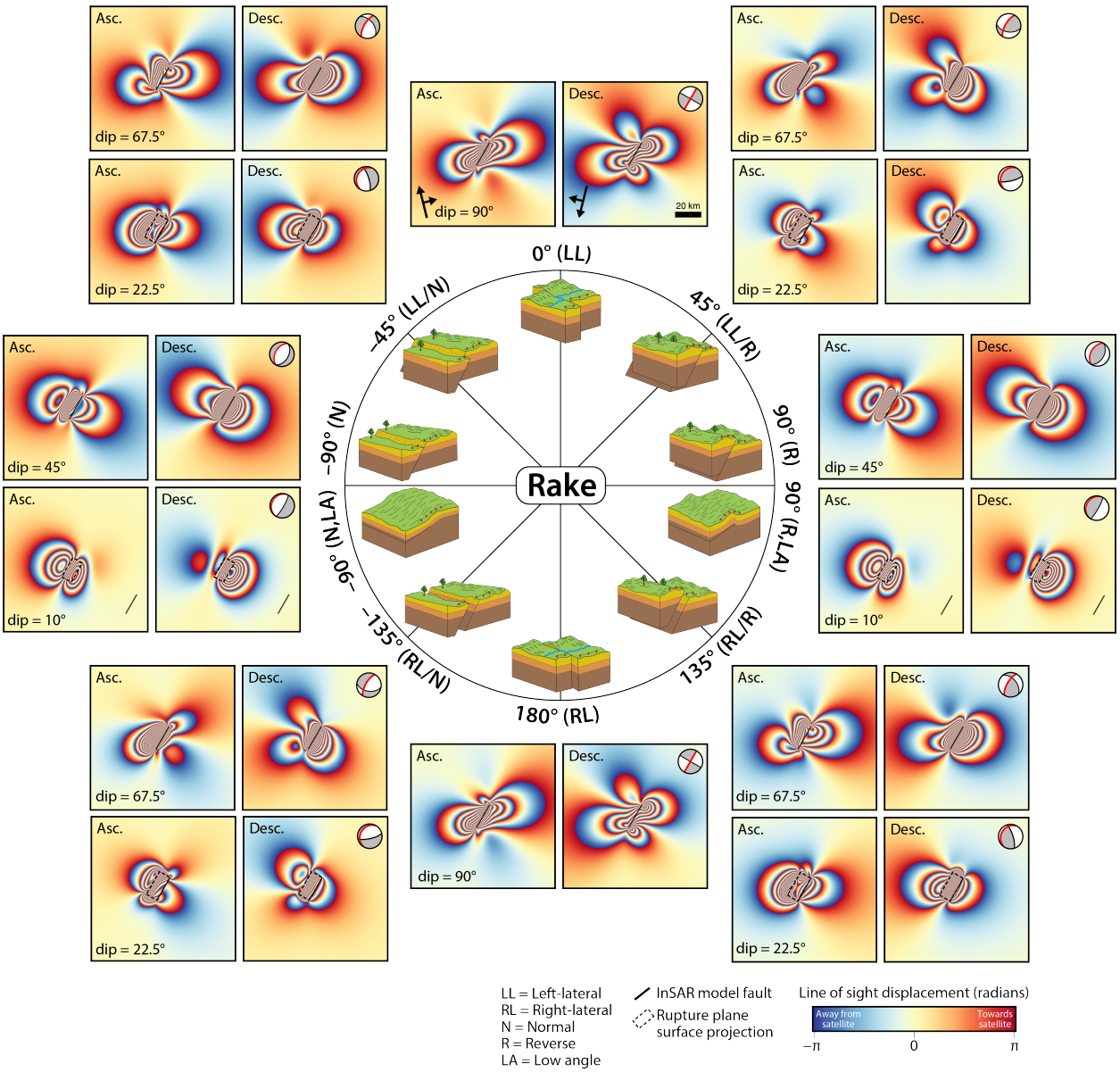


f Wrapped interferograms for strike 150° earthquakes, with variable rake.



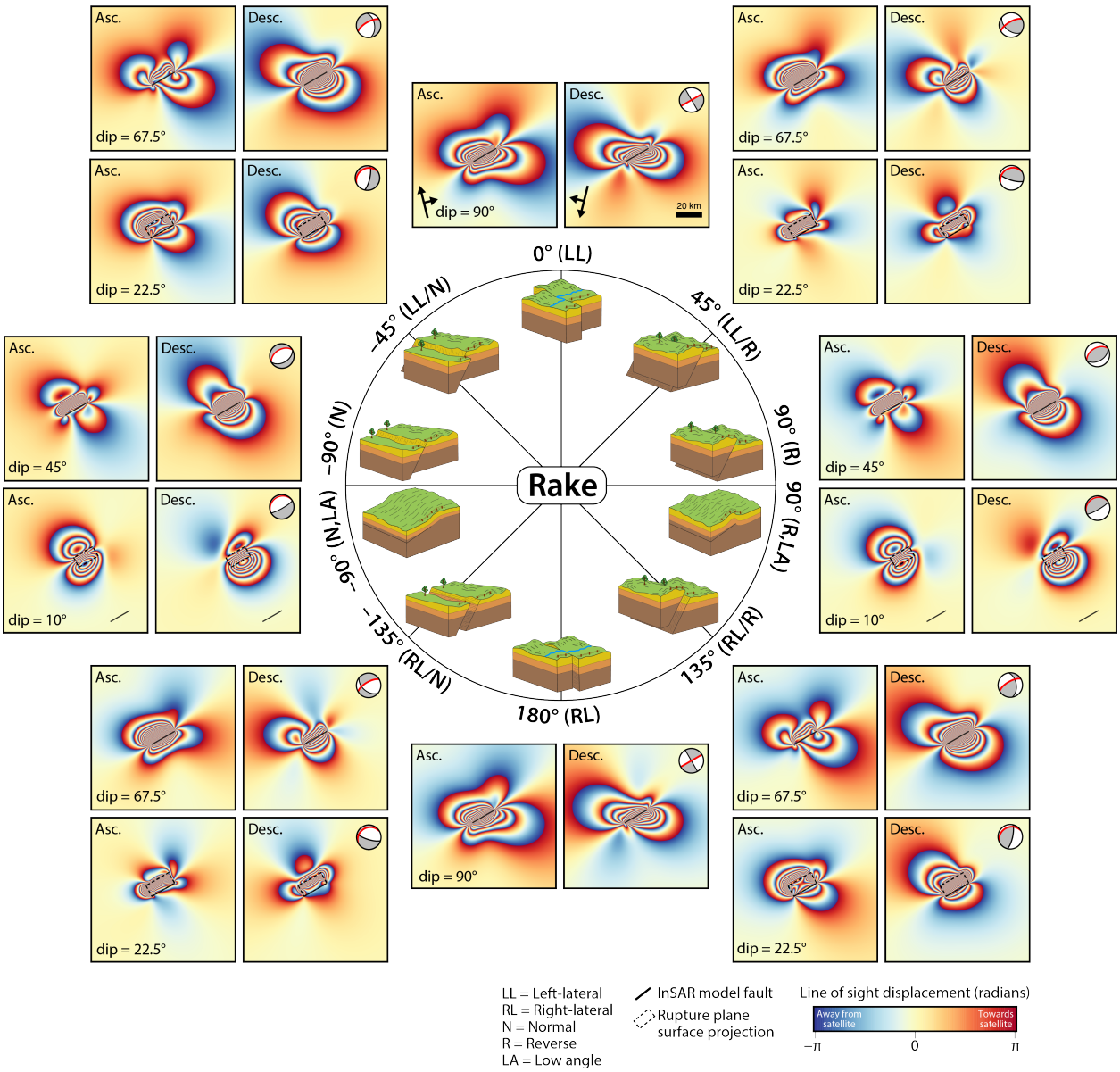
g Wrapped interferograms for strike 180° earthquakes, with variable rake.

Strike 210° Interferograms

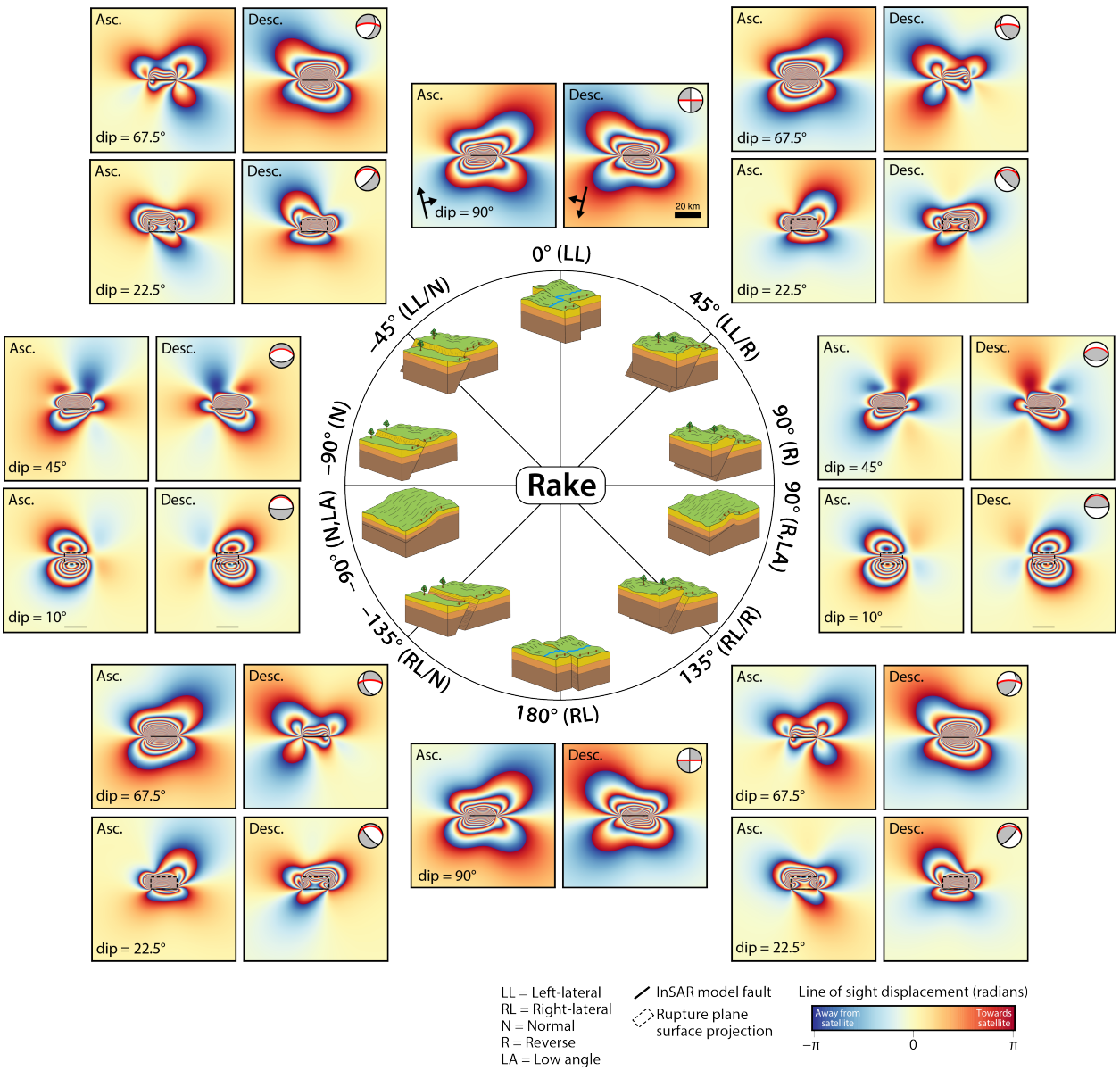


h Wrapped interferograms for strike 210° earthquakes, with variable rake.

Strike 240° Interferograms

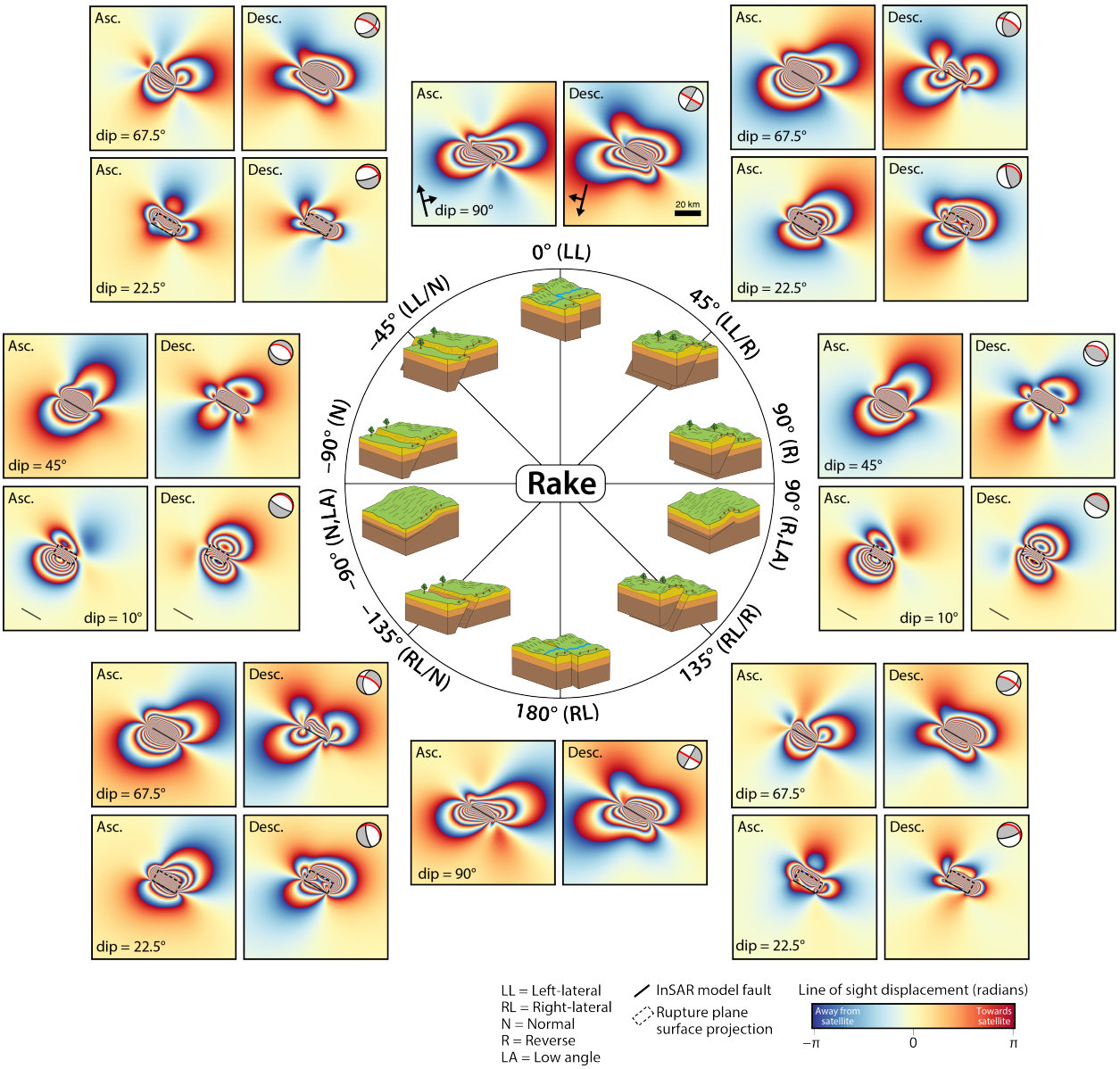


i Wrapped interferograms for strike 240° earthquakes, with variable rake.

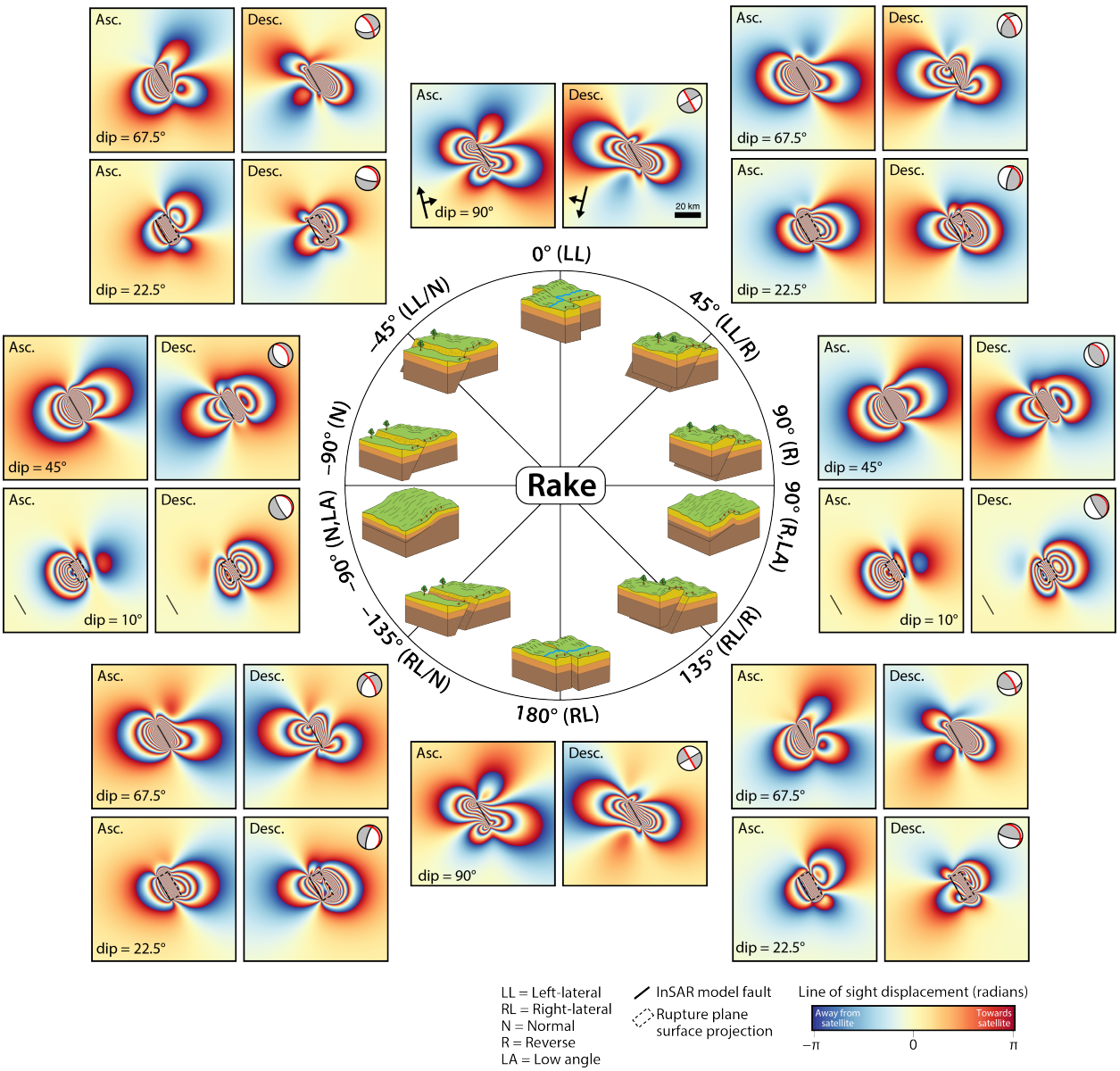


j Wrapped interferograms for strike 270° earthquakes, with variable rake.

Strike 300° Interferograms



k Wrapped interferograms for strike 300° earthquakes, with variable rake.



I Wrapped interferograms for strike 330° earthquakes, with variable rake.