



**Figure S2.** Recovery for October 8th, 2015 14:24 – 16:00 UTC, during a time dominated by body waves. The R-wave recovery is shown in (a), P waves in (b), horizontally-polarized S waves in (c), and vertically polarized S waves in (d). The dominant contribution is due to body waves, with the dominant body-wave contribution being an upgoing P wave (darkest red spot in (b)) and a downgoing  $S_v$  wave (darkest red spot in (d)). While our formalism does not account for the free surface, the downgoing  $S_v$  waves may be best thought of as contributions from free-surface P reflections and the reflected P wave may be misestimated due to the correlation with the upgoing direct P wave [42]. We also note that there is still some evidence of Rayleigh waves propagating in the same direction as on October 4th, 2015, but at a lower amplitude. Note that for (a), we have shifted the azimuth such that West is in the center solely for illustrative purposes.