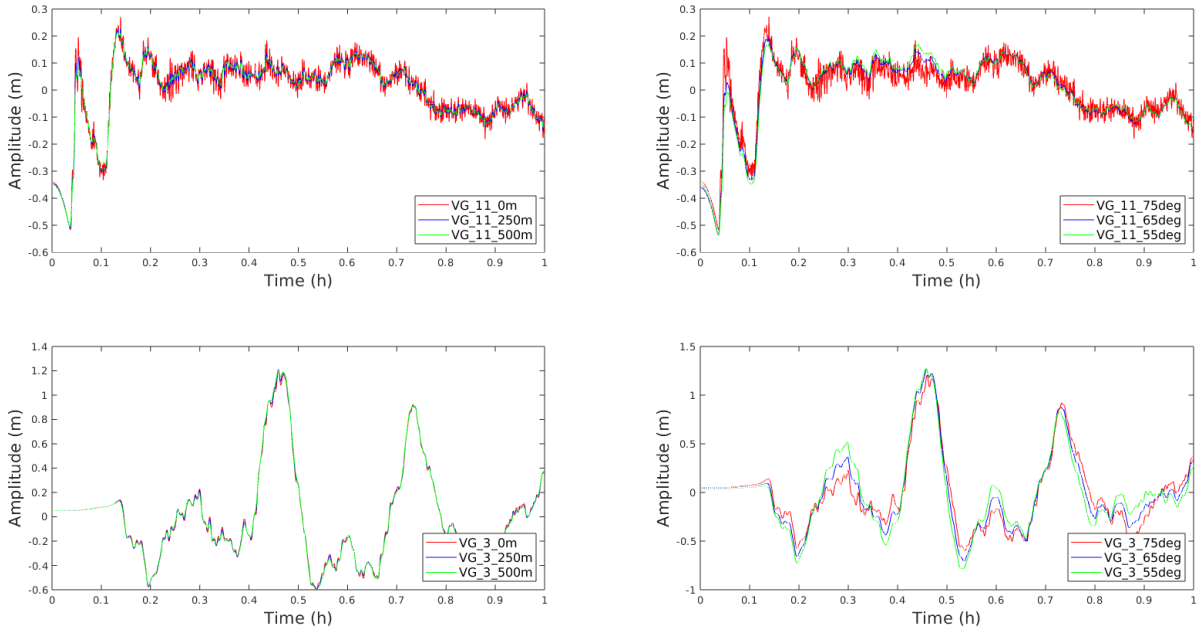

Figure SM 1: Tests on (i) Left column: Variation of depth from 0 to 250 and 500m, all other parameters constant, depth has little influence on the surface deformation either on a virtual sensor (V11) located close to the rupture zone or on a virtual sensor (V3) located further, within the Les Saintes Archipelago. The scenario with the top of the fault rupturing the surface (depth = 0m) triggers high-frequency waves which could result from a numeric instability and is to be considered carefully . (ii) Right column: Variations of dip from 55 to 65 and 75°, all other parameters constant, have little influence on the surface deformation on a virtual sensor (V11) located close to the rupture zone. However, the difference on a virtual sensor (V3) located further, within the Les Saintes Archipelago, is notable especially on the first peak amplitude, from 0.2 m (75°) to 0.5 m (55°). The following waves show less difference (Figure SI 1).