

**Supplementary Movie 1 :** Tsunami generated IGWs in the neutral atmosphere (as fig.1a in the main text). The start time correspond to the fault-braking.

**Supplementary Movie 2 :** Ionospheric response to neutral motion induced by tsunami-generated IGWs (as fig.1b in the main text). The first frame show the 3D ionospheric background where the IEA heterogeneities, at the sunrise time, are visible. The start time correspond to the fault-braking.

**Supplementary Movie 3 :** Modeled tsunami signature in the TEC (as Fig. 2 in the main text). The start time correspond to the fault-braking.