Additional file 1 for the paper:

Simulation study of atmosphere-ionosphere variations driven by the eruption of Hunga Tonga-Hunga Ha'apai on 15 January 2022

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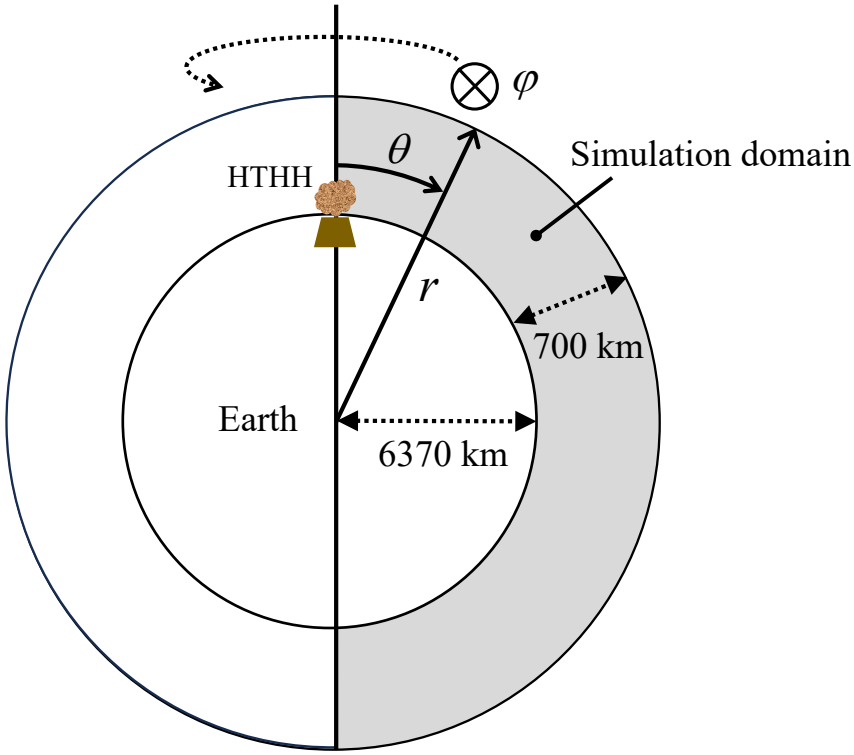

Figure S1. Schematic figure of the axisymmetric spherical coordinate system of the nonhydrostatic atmosphere model. The altitude region in the model is from 0 km altitude to 700 km altitude. The horizontal region is from θ=0˚ (the eruption point of the HTHH volcano) to θ=180˚(the opposite side of the Earth). Grey region is the simulation domain. The vertical (radial) grid size is 2 km, and the horizontal grid size is 180˚/1000 (=0.18˚), which is about 20 km. It is assumed that the neutral wind velocities are zero in the zonal (φ) direction, and that all the physical quantities are uniform in the zonal direction.

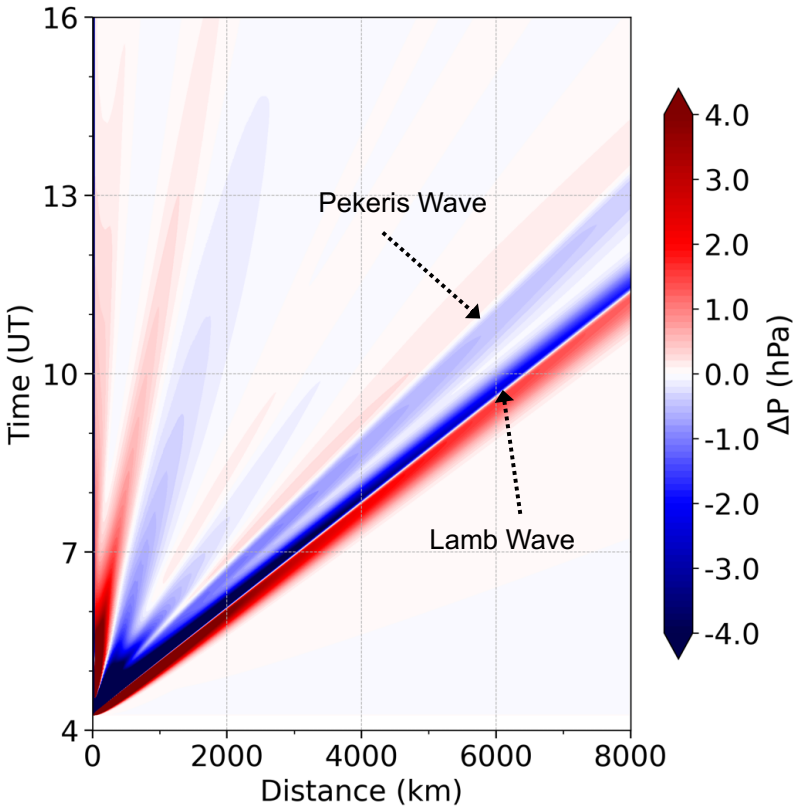

Figure S2. Distance–time cross-section of sea surface pressure perturbations (hPa) from HTHH obtained by the NHM simulation. The horizontal axis indicates the distance from HTHH, and the vertical axis is UTC. Lamb and Pekeris waves are identified as sudden pressure jumps moving at speeds of 310 m/s and 240 m/s, respectively.