{rokbox title=| Comparison of the Lamb wave observed from satellite observations and the numerical simulation during 15 January 2020 at different times :: Image: Authors|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-numerical-simulation-atmospheric-villalonga-2022-thumb-et-al.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-numerical-simulation-atmospheric-villalonga-2022-et-al.jpg{/rokbox}

Angel Amores, Sebastian Monserrat, Marta Marcos, Daniel Argüeso, **Joan Villalonga**, **Gabriel Jordà**
and Damià Gomis, 2022.
Numerical Simulation of Atmospheric Lamb Waves Generated by the 2022 Hunga-Tonga Volcanic Eruption.
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Abstract:On 15 January 2022, around 4:30 UTC the eruption of the Hunga-Tonga volcano, in the South Pacific Ocean, generated a violent underwater explosion. In addition to tsunami waves that affected the Pacific coasts, the eruption created atmospheric pressure disturbances that spread out in the form of Lamb waves. The associated atmospheric pressure oscillations were detected in high-frequency in-situ observations all over the globe. Here we take advantage of the similarities in the propagation and characteristics between atmospheric Lamb waves and long ocean waves and we use a 2DH ocean numerical model to simulate the phenomenon. We compare the outputs of the numerical simulation with in-situ atmospheric pressure records and with remote satellite observations. The signal in the model matches the observed atmospheric pressure perturbations and reveals an excellent agreement in the wave arrival time between model and observations at hundreds of locations at different distances from the origin.

Keywords:Lamb wave and volcano explosion.