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Wave generation and transformation in the ionosphere possibly caused by seismic effects

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The dielectric model of waves in the Earth's ionosphere presented at the EGU General Assembly 2014 is further developed and applied to electromagnetic phenomena in seismoactive regions. The dielectric model consists of the magnetohydrodynamic system of equations describing the partially-ionized stratified convecting ionosphere and of the system of Maxwell equations. While in 2014, a new wave model was presented which takes the atmospheric stratification better into account in the Maxwell equations, now improved mathematical solutions for the dispersion relation of the excited waves are obtained. Especially, the influence of neutral gas winds is considered. Applications are performed for Alfvén and magnetohydrodynamic waves, as well as for the transformation of seismic infrasound waves into electromagnetic ionospheric ones. Expressions for ionospheric heating at different altitudes are derived and numerically analysed.