Terrestrial atmosphere shows a high variability over a broad range of periodicities, which mostly consists of wave-like perturbations characterized by various spatial and temporal scales. Many different mechanisms are likely to contribute to acoustic-gravity wave generation: for instance, excitation at high latitudes induced by geomagnetic and consequent auroral activity, meteorological phenomena, excitation in situ by solar terminators and by the occurrence of solar eclipses. During a solar eclipse, atmosphere strongly reacts to the break of ionization flux and heating. At thermospheric heights, the reduction in temperature cause a decrease of pressure over the totality footprint to which the neutral winds respond. Thermal cooling and downward transport of gases lead to neutral composition changes in thermosphere that has significant influence on the resulting electron density distribution. The lunar shadow creates a cool spot in the Atmosphere that sweeps at supersonic speed across the Earth. The very sharp border between sunlit and eclipsed regions, defined by strong gradients in temperature and ionization flux, moves throughout atmosphere and drives it into a non-equilibrium state. Acoustic-gravity waves contributes to the return to equilibrium. This contribution consists of principles of acoustic-gravity wave generation and propagation in the atmosphere-ionosphere system during solar eclipse events, experimental results, techniques and observation limits.