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## On the source of the anomalous June 23, 2020 Pc5 waves detected at both ground and satellite data.

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We examine the characteristics of ULF waves observed in the magnetosphere and at ground on June 23, 2020 during super solar quiet geomagnetic conditions. A highly monochromatic and large-amplitude wave at  $f = 1.67$  mHz was observed between 6:10 and 7:00 UT at CSES LEO satellite orbit and across a wide longitudinal range of ground stations from low to high latitudes. We found the possible driver of such global ULF wave activity in the impact of a Tangential Discontinuity intersecting the bow shock quasi-parallel to it. As a consequence, a foreshock bubble (FB) was generated, producing pressure pulses which in turn generates Pc5 waves in magnetosphere. The combination of the long period of these pulsations, their extended duration, the latitude-independent frequency, and the small azimuthal wave number suggests the occurrence of a global magnetospheric waveguide mode. The amplitude and cross-phase analysis of the wave activity on the ground and the polarization pattern indicate that the waveguide mode coupled to the field line resonance (FLR) occurs at different latitudes at different local times. Such FLRs occurred at latitudes smaller than usually observed at the same frequency, suggesting a significant reduction of the local field line eigenfrequencies as compared with usual values. A model estimation of such eigenfrequencies suggests a change in the magnetospheric field geometry characterized by more stretched field lines than those for usual conditions probably caused by the compression of the magnetosphere driven by the TD coupled with the stable northward orientation of the interplanetary magnetic field.

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