Multipoint observations of spatial and temporal characteristics of Pc 4-5 pulsations in the dayside magnetosphere and particle signatures.

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We use multipoint magnetic field, plasma, and particle observations to study the spatial, temporal and spectral characteristics of Pc 4-5 pulsations observed in the recovery phase of a strong magnetic storm on January 1, 2016. The magnetosphere was compressed and periodic increases of the total magnetic field strength occurred every 20-40 min at the times of generation of the pulsations. The frequencies of the Pc4 pulsations varied from 14 mHz to 25 mHz with radial distance. An explanation for this behavior can be given in terms of standing Alfvén waves along resonant field lines. By contrast, Fourier analysis of the magnetic field observations shows that the compressional Pc5 pulsations exhibited similar spectra at different radial distances. The long duration of the Pc5 pulsations and their nearly constant frequencies indicate that the plasma conditions in the morning sector of magnetosphere were stable for more than two hours. The Pc4 and Pc5 pulsations displayed wave properties consistent with the second harmonic waves. The energetic particles observed by Van Allen Probes and GOES 15 exhibited a regular periodicity over a broad range of energies from tens of eV to 2 MeV with periods corresponding to those of the compressional component of the ULF magnetic field. We searched for possible solar wind triggers and discussed generation mechanisms for the compressional Pc5 pulsations in terms of drift mirror instability and drift bounce resonance.