THE LONG-PERIOD DP-1 AND DP-2 VARIATION EFFECTS IN RADIATION BELTS

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The global DP-2 geomagnetic variations are well-known (Nishida, 1968) to correlate with the IMF Bz fluctuations. The large-amplitude (up to ~1000 nT in polar cap) ~1-hour DP-2 variations were observed during the flat-step stage in the main phases of large geomagnetic storms (Tverskaya and Khorosheva, 1974). Those particular DP-2 variations accelerate effectively the radiation belt protons of the respective L~2.5 drift periods (Vernov et al., 1972). The IMF Bz fluctuations redistribute the trapped radiation in a geosynchronous orbit (Parks and Pellat, 1972). We use the Molniya-1 data to demonstrate the DP-2 variation effects on radiation belt particles in the distant magnetosphere.

The long (~2-3 hours)-period stormtime DP-1 variations during a persistent southward Bz were first examined in (Tverskaya and Khorosheva, 1975). The present report analyzes the energetic electron increases in the inner belt, which are due to the resonant acceleration resultant from those variations. The quasi-periodic (a few hours) variations of the relativistic electron intensity in a geosynchronous orbit are analyzed on the basis of the GOES-8,10 measurements and ACE interplanetary data.