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# Energetic ions on Interball-1: an empirical model of the upstream flux

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The ions with energy 20 - 500 keV observed by the Interball-1 spacecraft upstream from the Earth's bow shock over long time period are analyzed. The enhanced energetic ion flux events occurred when Interball-1 was magnetically connected to the bow shock. Using the geometry to the model bow shock and geomagnetic activity indices, we present a linear model of the ion flux for the 2 min bins when satellite is magnetically connected to the bow shock. The strong anticorrelation of energetic ion flux with thetaBn is apparent, especially at low energies and for isotropic distribution. While geomagnetic activity has little influence on the flux for lower-energy ions, for ions $>$150 keV the flux is better correlated with Dst than with thetaBn. Fermi acceleration accounts for most of the observed lower-energy ions. At higher energies the magnetospheric leakage becomes more important. Both solar wind and magnetosphere contribute to the seed particles for the Fermi process at the quasi-parallel bow shock. Using the geometry to the model bow shock and geomagnetic activity indices, we present a linear model of the upstream ion flux at different energies for the 2 min bins when satellite is magnetically connected to the bow shock. The limits of the empirical model are discussed. Analysis is supported by VEGA grant agency, project 4064.