Geophysical Research Abstracts
Vol. 18, EGU2016-17073, 2016
EGU General Assembly 2016

Short-Term Velocity Distributions of He^+ Pickup-Ions : STEREO/PLASTIC Observations

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Recent studies revealed that the classical picture that the velocity distributions of pickup ions consist of fully isotropic shells, centered at the local solar wind speed, is highly oversimplified. STEREO/PLASTIC observations on long-term average show clear signatures of torus distributions, which are the intitial state of newly created pickup ions. These findings strongly indicate that the assumption of strong pitch-angle scattering leading to a rapid isotropisation or more general the classical description of the velocity phase space evolution of pickup ions is not sufficient.

In turn, long-term averages are not sufficient to prove whether these non-isotropic features are ubiquitous or only appear under certain conditions. Thus, we have analysed velocity spectra of He^+ observed by STEREO/PLASTIC with a cadence of 1 hour and studied their short-term behaviour. Here we present our results.