



Energy-dispersed ion structures observed by Akebono (LEP) satellite inside the diffuse auroral region

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A variety of energy-dispersed ion structures have been frequently observed by different satellites such as Polar, CLUSTER, Equator-S, Viking, Freja. They usually display a rather complicated picture: many structures can exist simultaneously at different energies with different latitudinal extents. The Akebono satellite was launched into an elliptical orbit with an inclination of 75.1 degrees and with initial perigee of 272 km and apogee of 10482 km with an evolution period of 212 min. The LEP (Low Energy Particles) instrument measured electrons and ions with energies of 10 eV-16 keV and 13 eV/q-20 keV/q, respectively. We analysed 9 years of measurements made by Akebono LEP in terms of looking for the energy-dispersed structures inside the diffuse auroral region. The observed ion structures extended in energies from 100 eV up to few keV, with maximum flux at above 1 keV. Their latitudes coincide with those of the ion drop-offs, observed by Akebono at around 10 keV energy. The pitch angle measurements showed that such structures consist of trapped ions. We discuss the MLT and activity dependences of these structures. The 212 min-period of Akebono makes it possible to study the time evolution of ion dispersions by analysing consecutive orbits. Some of the observed structures show the similar features in shape and energies (< 1 keV) to the Type 1, 2, 3 wedge-like structures observed on Viking and CLUSTER satellites. A possible mechanism of their formation is discussed as temporal and spatial variations of the source population in the near-Earth magnetotail.