Statistical description of low-latitude plasma blobs as observed by DMSP F15 and KOMPSAT-1

J. Park (1), K. W. Min (1), V. P. Kim (2), H. Kil (3), H. J. Kim (1), J. J. Lee (4), E. Lee (4), S. J. Kim (1), D. Y. Lee (5), M. Hairston (6)

(1) Department of Physics, Korea Advanced Institute of Science and Technology, Daejeon, Korea, (2) IZMIRAN, Moscow Region, Russia (3) Applied Physics Laboratory, Johns Hopkins University, MD, USA (4) Space Science Laboratory, U. C. Berkeley, CA, USA (5) Dept. of Astronomy and Space Science, Chungbuk National University, Cheong-ju, Korea, (6) The William B. Hanson Center for Space Sciences, University of Texas at Dallas, TX, USA (jhpark@space.kaist.ac.kr)

We investigated the global distribution of low-latitude plasma blobs using in-situ plasma density measurements from Korea Multi-Purpose Satellite-1 (KOMPSAT-1) and Defense Meteorological Satellite Program (DMSP) F15. The seasonal-longitudinal(S/L) distribution of blobs is generally consistent with that of equatorial plasma bubbles (EPBs), but between them exist two notable differences. First, during equinoxes the blob activity is inhibited around the Atlantic region. Second, during the June solstice the African peak is rather suppressed in the distribution. KOMPSAT-1 at the lower altitude encountered blobs more frequently than DMSP F15. The occurrence probability of plasma blobs is less subjected to the yearly variation of solar activity. And the latitudinal distribution of the blobs shows strong asymmetry during solstices. Most of them are concentrated on the winter hemisphere where the background density is low and the inter-hemispheric plasma transport is poleward along the geomagnetic field line. And the asymmetry becomes weak as the solar activity decreases, suggesting that the blob generation bears connection with the fountain effect inside EPBs and the poleward plasma transport.