



The tail formation and ion escape processes for the Martian ionosphere: The comparison between no IMF case and finite IMF cases

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Mars does not possess a significant global intrinsic magnetic field, and hence the solar wind directly interacts with the Martian ionosphere. The Phobos-2 and recent Mars Express spacecraft observed the Martian tail and estimated ion escape flux. The observations indicate that heavy ions consisting of O^+ , O_2^+ and CO_2^+ escape from Mars and form a complex tail having rays. Because the heavy ions such as O_2^+ and CO_2^+ are produced at the low-altitude region of the ionosphere, the escape mechanisms are required. We treat the following problems by using a 3-D MHD numerical code including the realistic Martian ionosphere. (1) We clarify the global night-side structure extending from the terminator to the tail region. (2) We investigate the ion escape flux and escape path. To especially investigate the effect of IMF, we compared the results of no IMF case and finite IMF cases.