Authors response to referee comments/remarks. The comments are taken separately as listed below, with authors responses in *italics*. In the revision of the paper, we have marked the relevant additions in blue. The previous additions are still there; these are marked with red text.

• Does there exist (or if you have carried some) comparisons with experimentally determined magnetopause speeds? What are the typical model magnetopause speeds?

Authors response: Some observations are now reported concerning magnetopause speeds and we have added a few comments on this, i.e., *Phan, T. D. and Paschmann, G.: Low-latitude dayside magnetopause and boundary layer for high magnetic shear: 1. Structure and motion, J.Geophys. Res. Space Phys., 101, 7801–7815, doi:10.1029/95JA03752, 1996. and Paschmann, G. et al.: Structure of the dayside magnetopause for low magnetic shear, J. Geophys. Res. Space Phys., 98, 13 409–13 422, doi:10.1029/93JA00646, 1993. The observations of this type have a common problem due to the accelerated motion of the magnetopause. The observed velocities are merely samples in this time-interval. We point this out in the text. The observed orders of magnitudes are consistent with our results.*

• Why did you prefer to base your argumentation on ExB drift? Perhaps a direct explanation of why the velocity of compression is not important (particularly because the total magnetic field in this model is the sum of the Earth's magnetic field and the magnetic field resulting from the Chapman-Ferraro current) would be more appropriate?

Authors response: the text already had a comment on the ExB-drifts: they are the magnetic field line velocities (in an MHD sense as stated; generally, it is meaningless to have magnetic field lines moving, they are merely a guide to be drawn at fixed times. However, in MHD we can let magnetic lines move without introducing inconsistencies. This is mentioned in most textbooks.) We use this as a basis or reference velocity, where in addition the individual particle motions are given by their respective drift velocities, i.e., gradient drifts, polarization drifts, etc. Concerning the compression velocity, the referee has a point. The text as it was written referred to adiabatic compression of an isolated system. We have added more details on this, arguing that the compression is fast (as also supported by the observed velocities of the magnetopause), so the contact with surroundings had no time to be materialized.