Transient reactivation of theta-aurora-associated sunward flow channels during the anti-sunward decay of theta auroras

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We report one case study of enhanced sunward flow channels in the theta aurora associated with an interplanetary magnetic field (IMF) Bz spike during anti-sunward decay of the theta aurora. In general, the theta aurora persists for more than one hour even after the southward turning of the IMF. In this case study, during the anti-sunward retreat of the theta aurora, an IMF Bz spike hit the magnetopause and in response to this jolt fast sunward flows were observed in both the northern and southern ionospheres on the nightside. We discuss implications of this phenomenon, in particular, the magnetospheric response to the series of IMF changes.