Role of IMF *By* during geomagnetic storms: An overview

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Abstract: An important aspect of the solar-terrestrial interaction is the coupling of the Interplanetary Magnetic Field (IMF) with the Magnetosphere-Ionosphere system of our planet. This coupling becomes strongest and causes intense geomagnetic storms when the north-south (*Bz*) component of the IMF turns completely southward and remains in that state for a sufficient interval of time. However, under southward *Bz*, understanding the effects of the dawn-dusk (*By*) component of IMF becomes crucial for addressing problems related to the ionospheric responses to space weather events, globally in general, and over the low-latitude regions in particular. In this colloquium, I will give a brief overview of the important role played by IMF *By* and will present a recent work that explores the effects of IMF *By*, in combination with IMF *Bz*, in causing anomalous magnetic field variations over the low latitudes during a strong space weather event.