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## High spatial resolution observations of ionospheric convection in the midnight sector during the growth of a geomagnetic storm

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A magnetic cloud in the solar wind impinged the Earth's magnetosphere on the 7<sup>th</sup> January 2005. Episodic enhancements in the coupling of solar wind energy initiated a familiar sequence of Geospace events including a succession of substorms of increasing intensity throughout the day. Perturbations in the SYM-H index began at 0930UT, with a sharp negative swing at 1420UT, culminating in a minimum value of  $-112nT$  at 0006UT on the 8<sup>th</sup>. This study reports comprehensive TIGER radar observations of the mid-night sector convection during the early stages of the geomagnetic storm. These observations included a well developed Harang Banana (HB), a pre-midnight large-scale vortex located poleward of the HB (features indicative of the meridional current system of Kamide et al. 1994), an auroral westward flow channel (AWFC) imbedded in the equatorward side of the HB, a previously unobserved auroral eastward flow channel (AEFC) of 20 minute duration imbedded in the poleward side of the Harang banana, and regions of flow stagnation probably associated with intense particle precipitation. The behaviour of these features was characterised at high spatial resolution using the original beam-swinging algorithm of Ruohoniemi et al. (1989), and a modified version of the map potential analysis which exploits the full spatial resolution of the SuperDARN radar data.