Production mechanism of low energy neutral atom in a Sudden Commencement (SC) event

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The energetic neutral atom (ENA) is produced by the interaction between the solar wind plasma and the terrestrial magnetospheric neutral atom. The LENA imager on the IMAGE mission, however, does not always detect ENA during the periods when the magnetopause is compressed by the enhancement of the dynamic pressure of the solar wind. The fact shows that the ENA detection rate is dependent of not only the magnetopause position but also the direction of the magnetosheath flow. The simulation model of the magnetosphere during a sudden commencement event and the empirical altitudinal profile of the neutral atom in the geocorona is used to estimate the detectable ENA flux for LENA and the production mechanism of the ENA is discussed.