# CEJ発生日のプラズマバブルイベント

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# Plasma bubble event on CEJ occurrence day

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Plasma bubble is one of the ionospheric disturbance that occurs after sunset in magnetic equator. It causes amplitude and phase fluctuation (scintillation) of the received radio wave and affects communication system such as GPS satellites. Recently, it has been suggested that there is a relationship between plasma bubble and equatorial electrojet (EEJ) [e.g. Dabas et al., 2003; Uemoto et al., 2010]. The plasma bubble occurs due to Rayleigh-Taylor instability, so generation of eastward electric field is expected as necessary condition for development of plasma bubble. Therefore, occurrence of plasma bubble (PB) is supposed to be suppressed when counter electrojet (CEJ) accompanied by westward electric field occur [e.g., Uemoto et al., 2010].

The EE-index is one of the ICSWSE space weather indices for monitoring local and global components of geomagnetic disturbances at low and equatorial region, which was originally developed by Uozumi et al., (2008) and later updated by Fujimoto et al., (2016). Since then, ICSWSE has continued to monitor the EEJ activity by using this EE-index. The EE-index is composed of EDst (global component) and EUEL (local component), which correspond to magnetic field changes at dip equator caused by magnetospheric current such as ring current and, caused by ionospheric current such as EEJ and Sq, respectively.

In this study, we found that there were some days when PB occurred even though the CEJ also occurred by the EUEL at equatorial station (Langkawi (LKW), Malaysia (GG Lon. =99.78, Dip lat. =-1.07)) and S4-index (equivalent to amplitude scintillation of GPS signal) by ISEE, Nagoya University, in Kototabang (KTB), Indonesia (GG Lon. =100.32, Dip Lat. =-10.1). To investigate relation between occurrence of CEJs and PBs, we compare EE-index and differences of H-component at LKW and at KTB, which is often used to measure EEJ enhancement component, for events that CEJ and PB occur in same day.

As the result, when PB occurs in CEJ day, the electric field tended to change from westward to eastward between the peak of CEJ and around sunset. We may conclude that plasma bubble can be generated even if CEJ occurs, if the electric field turn to eastward at sunset region, like prereversal enhancement is occurs.