

Effects of the induction electric field on ionospheric current systems driven by field-aligned currents of magnetospheric origin

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The effects of induction electric field on ionospheric current systems driven by field-aligned currents of magnetospheric origin were studied, and a new method for estimating the equivalent current function representing the system was developed. It was found that a current system with a period of less than 4 min is significantly affected by the induction field and tends to be symmetric with noon, probably because the field overcomes the electrostatic field that creates the asymmetry. This result is consistent with the observed result for the preliminary impulse of storm commencement in which the local time variation of its appearance is symmetric with noon.