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[JJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

## [M-IS19] Atmospheric electricity

convener: Yasuhide Hobara (Graduate School of Information and Engineering Department of Communication Engineering and Informatics, The University of Electro-Communications), Masashi Kamogawa (Department of Physics, Tokyo Gakugei University)

Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

All aspects of research area on Atmospheric Electricity will be discussed in this session, including global circuit, ion and fair weather electricity, thunderstorm electrification, lightning physics, lightning and meteorology, electrical effects of thunderstorms on the middle and upper atmosphere such as transient luminous events and high energy phenomena, lightning protection, terrestrial electromagnetic environment and so on.

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## [MIS19-P02] Modeling spatio-temporal dependence of VLF/LF amplitude during solar eclipse occurred in 2012 by 3D FDTD method

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Keywords: solar eclipse, VLF/LF transmitter, Finite-Difference Time Domain

In this paper, we investigated the temporal variation of VLF/LF electric amplitude during Solar Eclipse occurred on May 22 in 2012 by using 3-D Finite-Difference Time-Domain (FDTD) method. First, we assumed the altitude dependences of the ion and electron densities as well as the collision frequency between electrons and neutrals for both background and disturbed (during the solar eclipse) lower ionosphere. The ground was assumed to be the perfect conductor. Second, locations of VLF/LF transmitter was placed on the ground in the simulation space. Computed temporal dependences of electric amplitude at several receivers by shifting the disturbed region in time were compared with those from observations by UEC's VLF/LF receiving network. Then we examined the effect of the wave propagation when the center of eclipse is not located over the path between the VLF/LF transmitter and receivers, which has not been studied by 2D approach.