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Spatio-temporal characteristics of subionospheric perturbations associated with annular solar eclipse

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In this paper, we analyse UEC's VLF/LF transmitter observation network data associated with annular solar eclipse in 2012. Clear temporal dependences of the VLF amplitude are observed by various transmitter-receiver paths. Numerical computations of VLF/LF signals with the ionospheric perturbations due to the solar eclipse are carried out by using 2D-FDTD method. As a result, temporal variations of the VLF/LF amplitude are in rather good agreement with those from the numerical modeling.

Keywords: Annular solar eclipse, Ionospheric perturbations, VLF radio waves, FDTD method