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## Timing of the VLF October effect in relation to mesospheric wind dynamics

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The seasonal variation of the daytime lower ionosphere, monitored using the propagation of Very Low Frequency (VLF) radio waves, shows an asymmetry when comparing the spring and autumn transitions. Considering the solar zenith angle variation, it can explain the spring transition but not the autumn one. The climatological variation exposes that the maximum of the VLF deviation is around the beginning of October. Thus, the deviation is called “the October effect”. This study aims to understand the possible atmospheric phenomena behind this effect. We use VLF signals transmitted from USA (NAA,  $f = 24$  kHz), UK (GQD,  $f=19.6$  kHz) and Iceland (NRK,  $f = 37.5$  kHz) recorded in Northern Finland from 2011 to 2019. We compare our results with the Whole Atmosphere Community Climate Model with the thermosphere-ionosphere eXtension (WACCM-X) data. The October effect is separated into climatological earliest and latest effect according to WACCM-X climatological earliest and latest transitions from eastward to westward mean zonal winds