

## Study of dependence of solar flare induced SuperDARN Doppler velocity on X-ray intensity, SZA and season

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Solar flares cause various ionospheric disturbances. Short wave fadeout (SWF) is one typical example, and has been studied for several years using several kinds of instruments. Doppler flash, which is a sudden increase in Doppler speed of ground scatter echoes observed by SuperDARN radars, has been recently reported, but has not been studied comprehensively yet. Watanabe and Nishitani (2013) investigated the dependence of Doppler speed on radar slant range and elevation angle, and they found that the effect of the D-region ionosphere change plays a dominant role in generating Doppler flash effect. In this study, we examined the dependence of X-ray flux, Solar Zenith Angle (SZA) and season. We analyzed 70 solar flare events from Feb 2011 to Sep 2017. Doppler speed is positively correlation with instantaneous X-ray flux. On the contrary, we cannot find the clear relationship between the Doppler speed and SZA / season. Possible reasons for such poor correlation will be discussed..

Keywords: SuperDARN, Solar flare, Doppler flash