

**Title:** Investigating Flares and Solar Global Oscillations in Mg II from GOES-16 EXIS

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**Abstract:**

The Extreme Ultraviolet and X-Ray Irradiance Sensors (EXIS) on the Geostationary Operational Environmental Satellite-16 (GOES-16) provides high cadence measurements to examine multiple questions regarding the solar atmosphere. Comparing the time series of the Mg II Index and the soft x-ray channel on GOES-16's X-Ray Irradiance Sensor (XRS), this study finds that solar flares peak in middle ultraviolet (MUV)  $151 \pm 25$  seconds on average before peaking in x-ray. This improves results from previous studies which consider only single flares and has implications for understanding the temporal evolution of solar flares (Lemaire et al. 1984, Kerr et al. 2015, Liu et al. 2015). Additionally, we aim to characterize MUV profiles of solar flares and long duration events (LDEs). Through wavelet analysis, we construct periodograms showing that 3- and 5-minute solar global oscillations vary in both power and frequency over time, which is in agreement with previous results (Abramov-Maximov et al. 2008). These results are of particular importance for understanding the dynamics of the solar atmosphere, the relationship between flares and solar global oscillations, and space weather.