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IRIS view of the solar cycle 24: variability of the Mg II k & h lines

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The poster presents observations of variability of the emission cores of Mg II k & h lines in the solar cycle 24 and their center-to-limb variations acquired by the Interface Region Imaging Spectrograph (IRIS) in the years 2013-2020. We use 91 full-disk NUV IRIS mosaics covering the raising phase, maximum, decline, and the end of the solar cycle 24. For this analysis, the solar disk is divided into ten concentric equiareal zones. Data averaged over the zones represent the center-to-limb variation of the Mg II k & h line cores. The time series of IRIS spectral irradiance correlates well with the UV indices (Bremen Composite Magnesium II Index and the Composite Solar Lyman-alpha Index) with the correlation coefficients of 0.90 - 0.94, thus verifying the long-term stability of IRIS radiometric calibration. The Mg II k & h emission cores show significant center-to-limb variation. Their wavelength-integrated intensities decrease toward the limb suggesting overall limb darkening. However, broadening of the emission cores toward the limb invokes the limb brightening in narrow wavelength intervals where the intensities are higher than in the disk center. The time series of calibrated full-disk IRIS mosaics allows also to answer a question whether the quiet areas of the solar atmosphere change over the solar cycle 24 at chromospheric layers.

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