Abstract Submitted
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Statistical Analysis of Chromospheric Evaporations in Solar Flares[1] VIACHESLAV SADYKOV, New Jersey Institute of Technology, ALEXANDER KOSOVICHEV, New Jersey Institute of Technology, NASA Ames Research Center, GRAHAM KERR, NASA Goddard Space Flight Center — Chromospheric evaporation is one of the key processes of solar flares. Properties of chromospheric evaporation are thought to be closely connected to the energy release rates and energy transport mechanisms. In this work, we present a study of flare events simultaneously observed by IRIS and RHESSI, focusing on spatio-temporal characteristics of the flare dynamics. Event selection is performed using the Interactive Multi-Instrument Database of Solar Flares (IMIDSF) recently developed by the Center for Computational Heliophysics at NJIT. The selection of IRIS observations was restricted to the fast-scanning regimes (coarse or sparse-raster modes with $\geq$4 slit positions, $\geq$6" spatial coverage, and $\leq$60 sec loop time). We have chosen 11 events, and estimated the spatially-resolved Doppler shifts of the transition region (CII 1334.5Å) and hot coronal (FeXXI 1354.1Å) lines reflecting the dynamics of the chromospheric evaporation and condensation. We also estimated parameters of the beam heating from RHESSI data assuming the thick-target beam heating model. The correlations of the derived line profile properties and hard X-ray characteristics are presented and compared with characteristics of the synthetic spectra calculated from the RADYN radiative hydrodynamic flare models.

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