

QSEBs with co-spatial IRIS Bursts

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Abstract

Ellerman bombs have been widely studied over the past two decades; however, only recently have counterparts of these events been observed in the quiet-Sun. We combine $H\alpha$ and Ca II 8542 line scans at the solar limb with spectral and imaging data sampled by the Interface Region Imaging Spectrograph. Twenty one QSEBs were identified and three of these QSEBs displayed clear repetitive flaring through their lifetimes, comparable to the behaviour of EBs in Active Regions. Two QSEBs in this sample occurred co-spatial with increased emission in SDO/AIA 1600 and IRIS slit-jaw imager 1400 data, however, these intensity increases were smaller compared to EBs. One QSEB was also sampled by the IRIS slit during its lifetime, displaying increases in intensity in the Si IV 1393 and Si IV 1403 cores as well as the C II and Mg II line wings, analogous to IRIS bursts. Using RADYN simulations, we are unable to reproduce the observed QSEB $H\alpha$ and Ca II 8542 line profiles leaving the question of the temperature stratification of QSEBs open. Our results imply that some QSEBs could be heated to Transition Region temperatures, suggesting that IB profiles should be observed throughout the quiet-Sun.