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Signatures of drama in the not-so-Quiet Sun

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The majority of the Sun is covered by a system of relatively weak magnetic fields called the Quiet Sun (QS) which, despite being far weaker than active regions, plays an important role in energizing the solar atmosphere. With new generations of simulations and instrumentation, it is becoming feasible to understand the dynamics of the QS with more precision than before. Using Bifrost, we have analysed a simulated QS heating event that generates coronal temperatures up to 1.47 MK and is caused by the reconnection of a magnetic arcade and twisted flux rope with an overlying, nearly anti-parallel horizontal field in the corona. Understanding the magnetic topology and field evolution of this event have been the main goals of our fundamental studies, but we move forward now to synthetic observables in order to establish an observational context for this type of event. Synthetic observables of the simulated reconnection event reveal strong signals in SiIV, FeIX and FeXII; all of which are observable with IRIS and/or MUSE among other instruments such as SDO AIA, Hi-C, and the EUI onboard the Solar Orbiter. First results indicate strong emissions during the reconnection event as expected, with characteristics consistent with magnetic braiding and fast jets emanating from the reconnection site. We present this simulation as a case study for QS reconnection and introduce preliminary comparison studies between synthetic and actual observables, providing a baseline for future collaborations and studies on QS activity.

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