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Type: **Contributed talk**

# Small and Large Scale Episodic Events in Smaller and Larger Scale Numerical Simulations Spanning the Convection Zone to the Corona

*Wednesday, January 22, 2025 12:00 PM (15 minutes)*

Field stored just below or rising to the photosphere will break through the surface and enter the upper atmosphere once the gradient of the sub-photospheric field strength becomes sufficiently large. Driven by convective motions and the expansion of field in the chromosphere's low- $\beta$  plasma, opposite polarity flux bundles will reconnect. Some of this emerging flux is likely due to a local dynamo, but also the emergence of larger scale magnetic structures from deeper layers is important, even in the quiet Sun. A significant proportion of this field likely reaches the chromosphere and leaves imprints on chromospheric and coronal dynamics and energetics. Using a number of numerical models, (24x24x17) and (72x72x60) Mm, the high resolution spectra and slit jaw images from IRIS, imaging data from SDO/AIA and Solar Orbiter's EUV/HRI, as well as ground based Ca II 854.2 and Ca II spectrograms, are synthesised and compared to observed data. We also synthesise observations from the upcoming MUSE and EUVST observatories in the context of episodic heating. The magnetic structure and dynamics of small scale events such as jets and dots, more energetic Ellerman bombs and a small C-class flare are discussed and analysed.

## Contribution Type

### Theme

Energetic Phenomena

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