


Check the paper here:
<https://iopscience.iop.org/article/10.3847/1538-4357/ab6664/pdf>

If you have any further questions regarding the work presented here, please send an e-mail to:
mariarita.murabito@inaf.it

Penumbral brightening events in a sunspot penumbra



Murabito Mariarita
INAF-Osservatorio Astronomico di Roma



What we know from literature

Bai et al. 2016

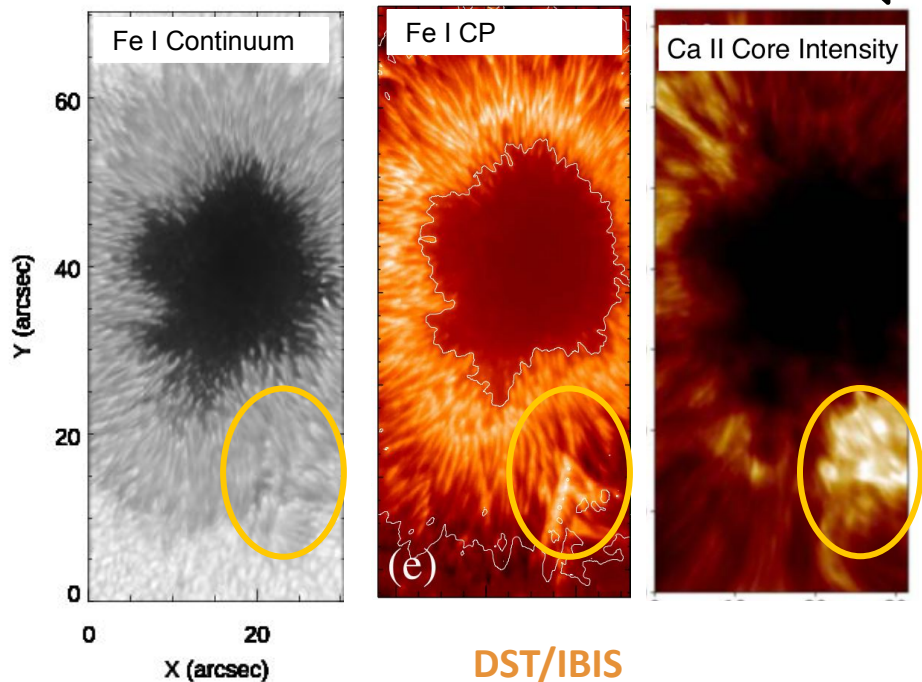
- Subarcsecond Nanoflare (10^{22} - 10^{25} erg) event
- MMFs appeared close to the penumbral boundary at the same location of one footpoint
- **no evidences of chromospheric evaporation**

Kano et al. 2010

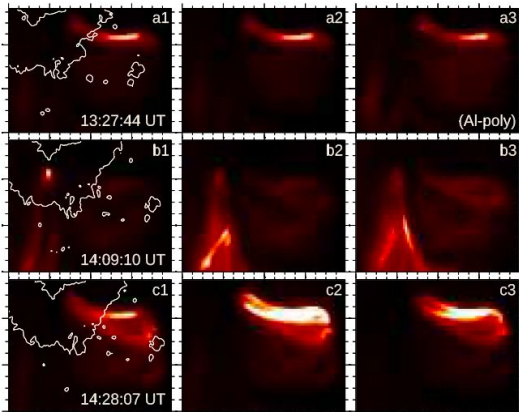
- ➔ 55 microflares identified, both point-like and loop type
- ➔ 35 % connected with the penumbra

- **DST/IBIS**: May 20, 2016, 3hrs
- **SDO/HMI**: 2 days from 19 to 21
- **SDO/AIA & IRIS 1400 filtegrams**
- **Hinode/XRT**
- **IRIS spectra**

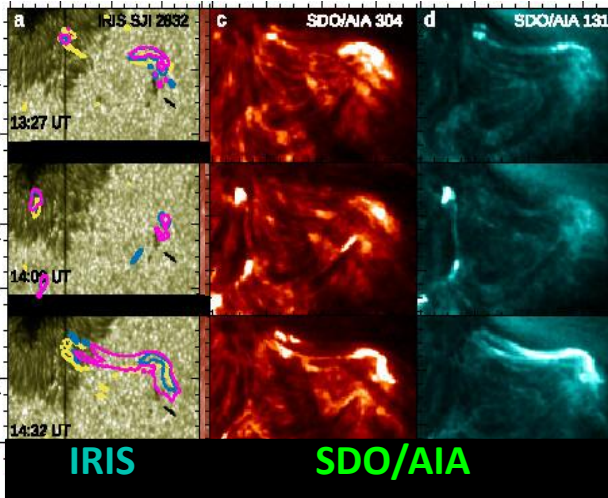
Our observations



Hinode/XRT



HOMOLOGOUS B-CLASS FLARES



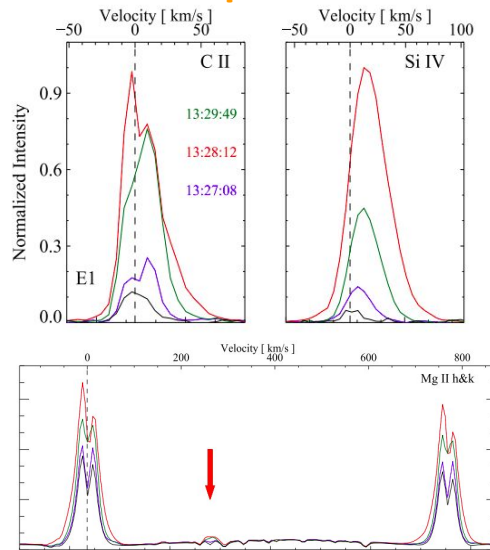
IRIS

SDO/AIA

Results

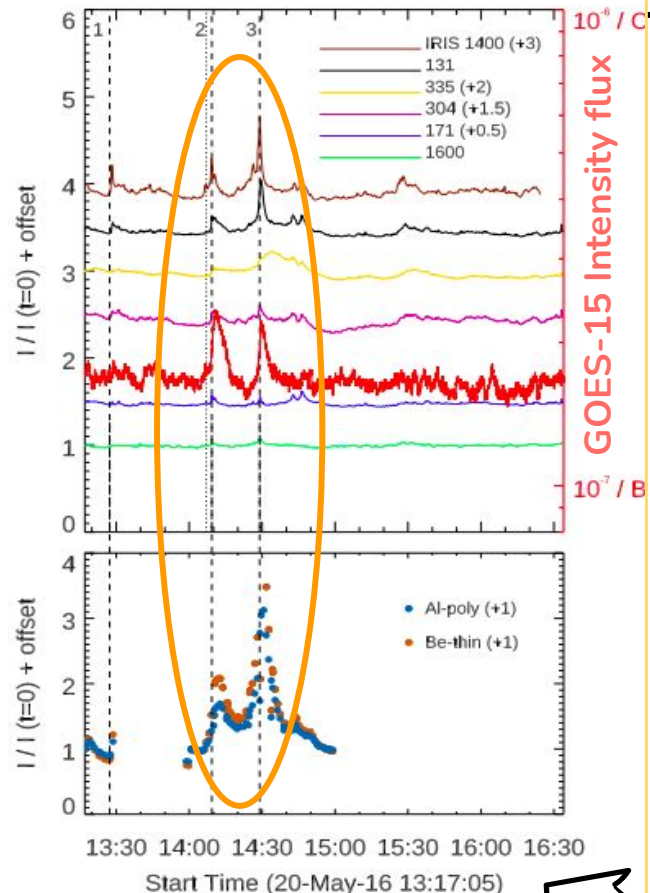
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IRIS spectra



WEAK EMISSION OF THE TRIPLET

Light curves



TWO B-CLASS FLARES

- **SDO/HMI**

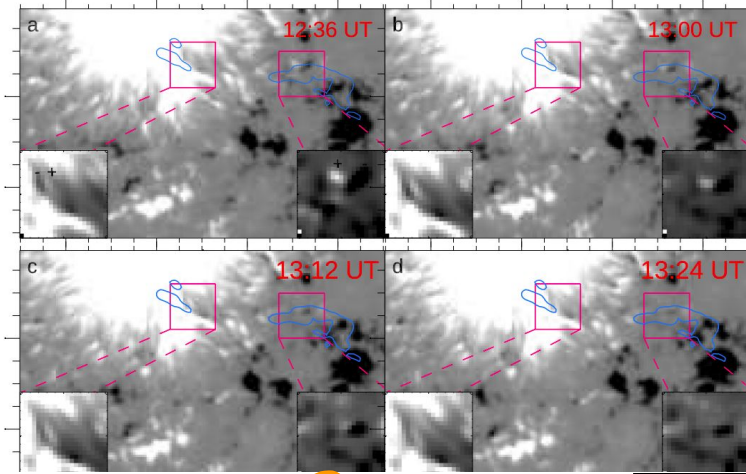
- **Two EFR** (3×10^{20} Mx and 5×10^{19} Mx) emerged close to penumbral field
- Some MMFs leading to partial cancellation events

- **SDO/AIA & IRIS 1400 filtegrams**

- **B-class and homologous flares** occurred with clear signatures from the chromosphere to the corona
- All the events had a footpoint inside the penumbra

- **IRIS spectra**

- During the two homologous flares, in the penumbral footprints, **asymmetries and enhanced emission** at the C II and Mg II h&k lines. **Weak emission** at the Mg II 2798.8 Å triplet



Conclusion

- ★ Two of the brightening events result from magnetic reconnection processes **at different heights**, activated by **interaction** of pre-existing fields and either **EFR or MMFs**
- ★ Clear signatures of the **chromospheric evaporation**, missed in the observations reported by Bai et al. (2016), are revealed

The answer could be correct!

This work has received funding from the European Union's Horizon 2020 research and Innovation program under grant agreements No. 739500 (PRE-EST) and No. 824135 (SOLARNET). This research has made use of the IBIS-A archive.

