

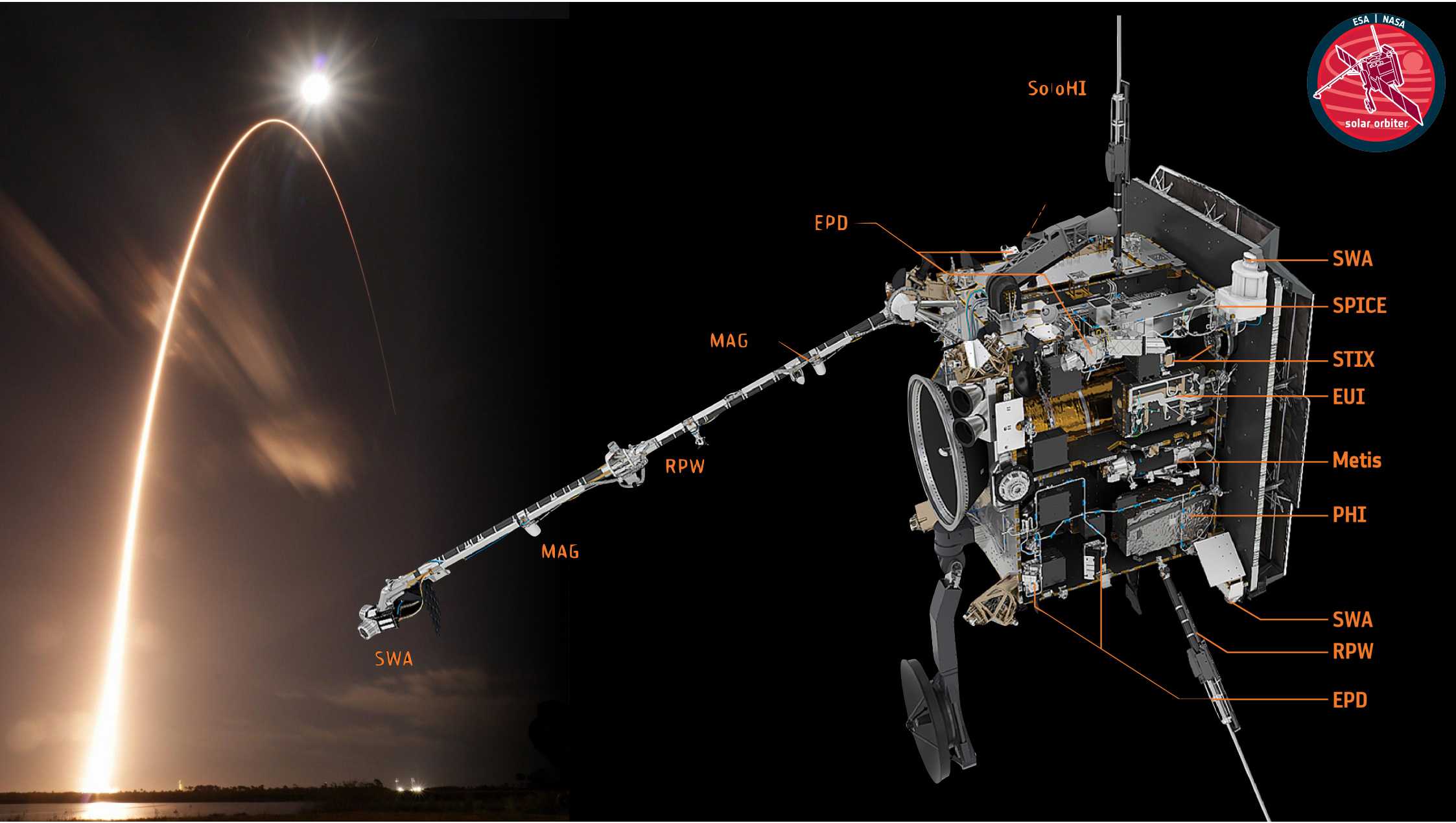
The many scales observed by EUI onboard Solar Orbiter

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SIDC-STCE, Royal Observatory of Belgium

Abstract

EUI is a set of (E)UV imaging telescopes that observe the solar corona from $>10 R_{\text{sun}}$ scales down to pixel scales of 100 km. EUI has been embarked on the ESA/NASA Solar Orbiter mission on a 10-year mission, while the imaging cadence can be as fast as 2s. This wide range of spatial and temporal scales allows to observe the scale invariance of events, from the largest to the smallest flares, and from the largest eruptions to the smallest jets. Besides identifiable events, also the background spatial structuring shows scale invariance over several orders of magnitude. In this presentation we will present the newest contributions of EUI at the smallest scales (picoflares, picojets) and discuss limitations on how much further down this coronal scale invariance can extend.



SoloHI

EPD

SWA

SPICE

MAG

STIX

EUI

RPW

Metis

PHI

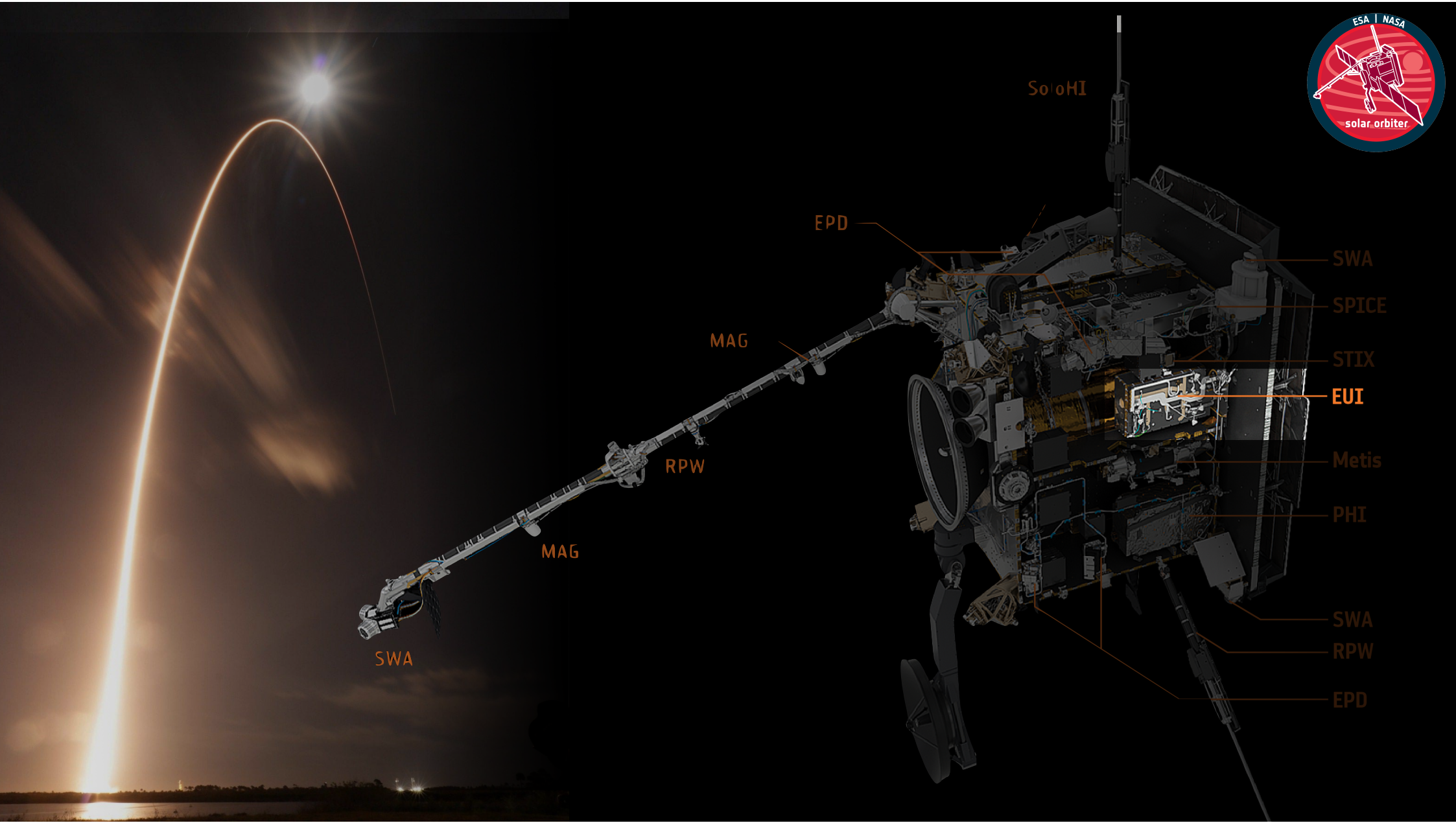
MAG

SWA

SWA

RPW

EPD



SolarHI

EPD

SWA

SPICE

MAG

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RPW

Metis

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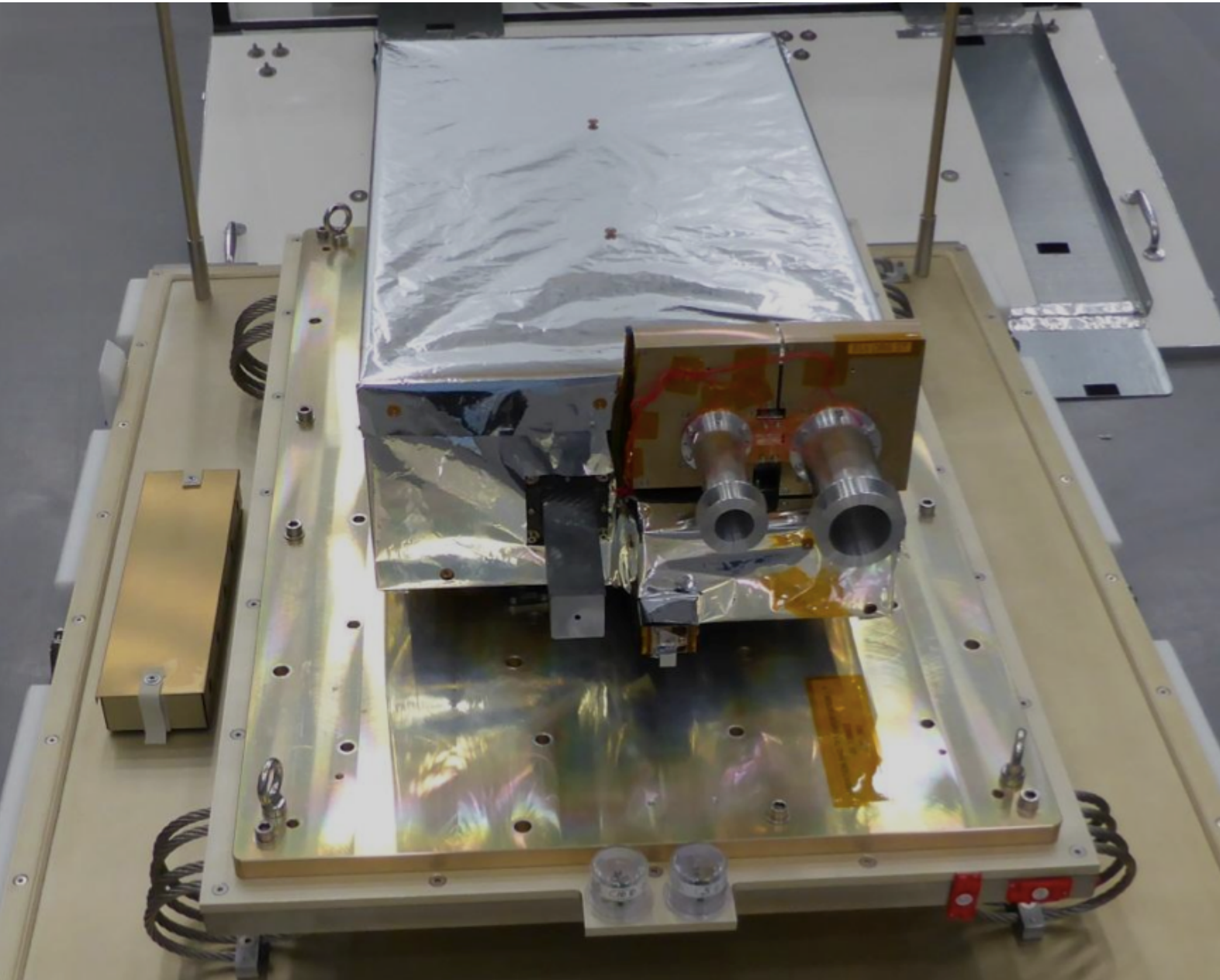
MAG

SWA

RPW

SWA

EPD



“Extreme Ultraviolet Imager”



Centre Spatial de Liège



Institut d'Astrophysique Spatiale



Laboratoire Charles Fabry,
Institut d'Optique



Max Planck Institute for
Solar System Research



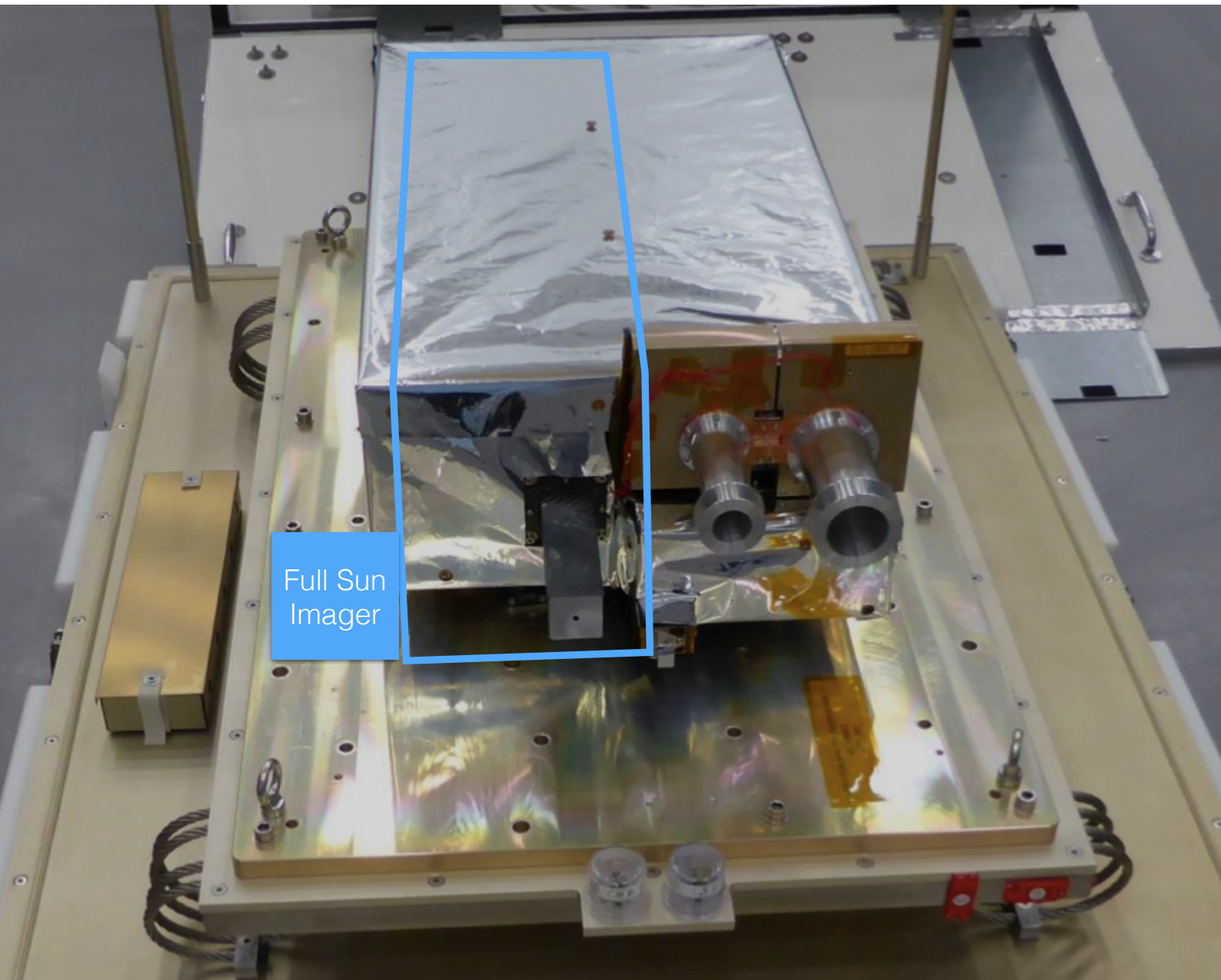
Physikalisch-Meteorologisches
Observatorium Davos



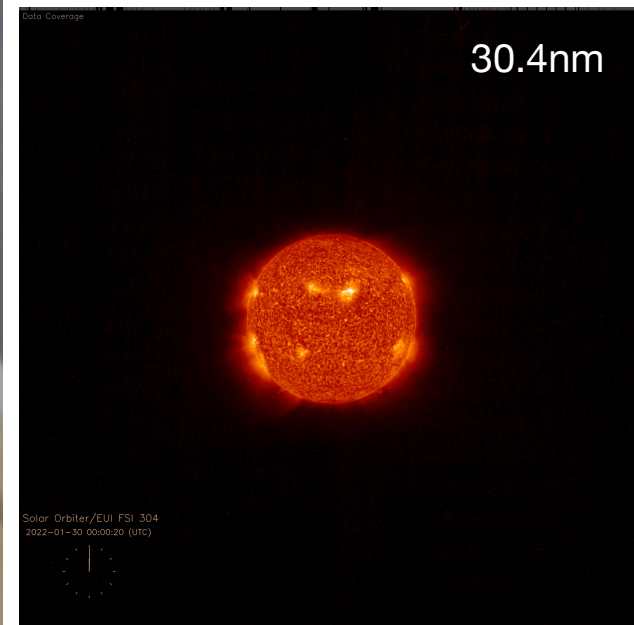
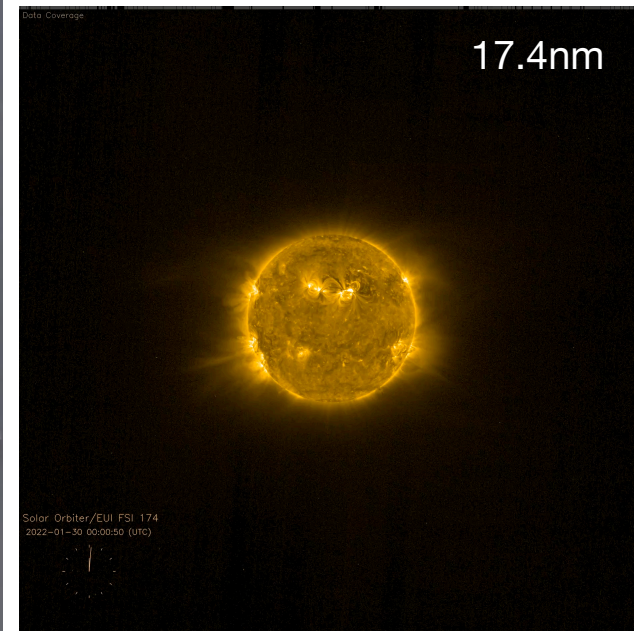
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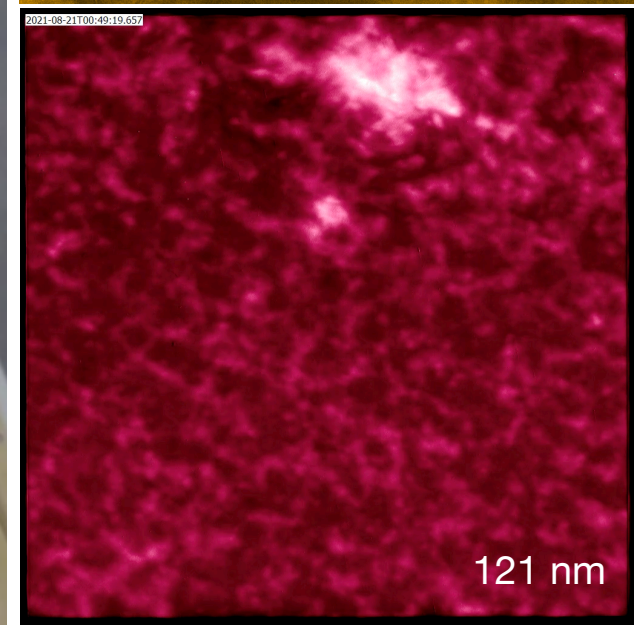
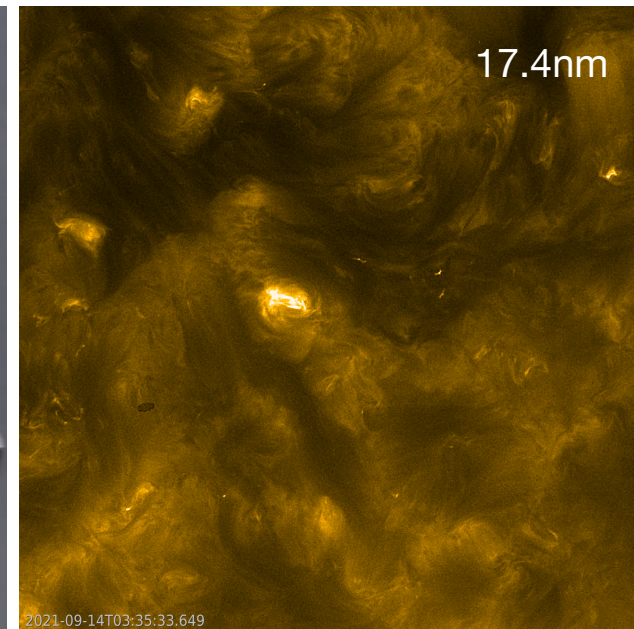
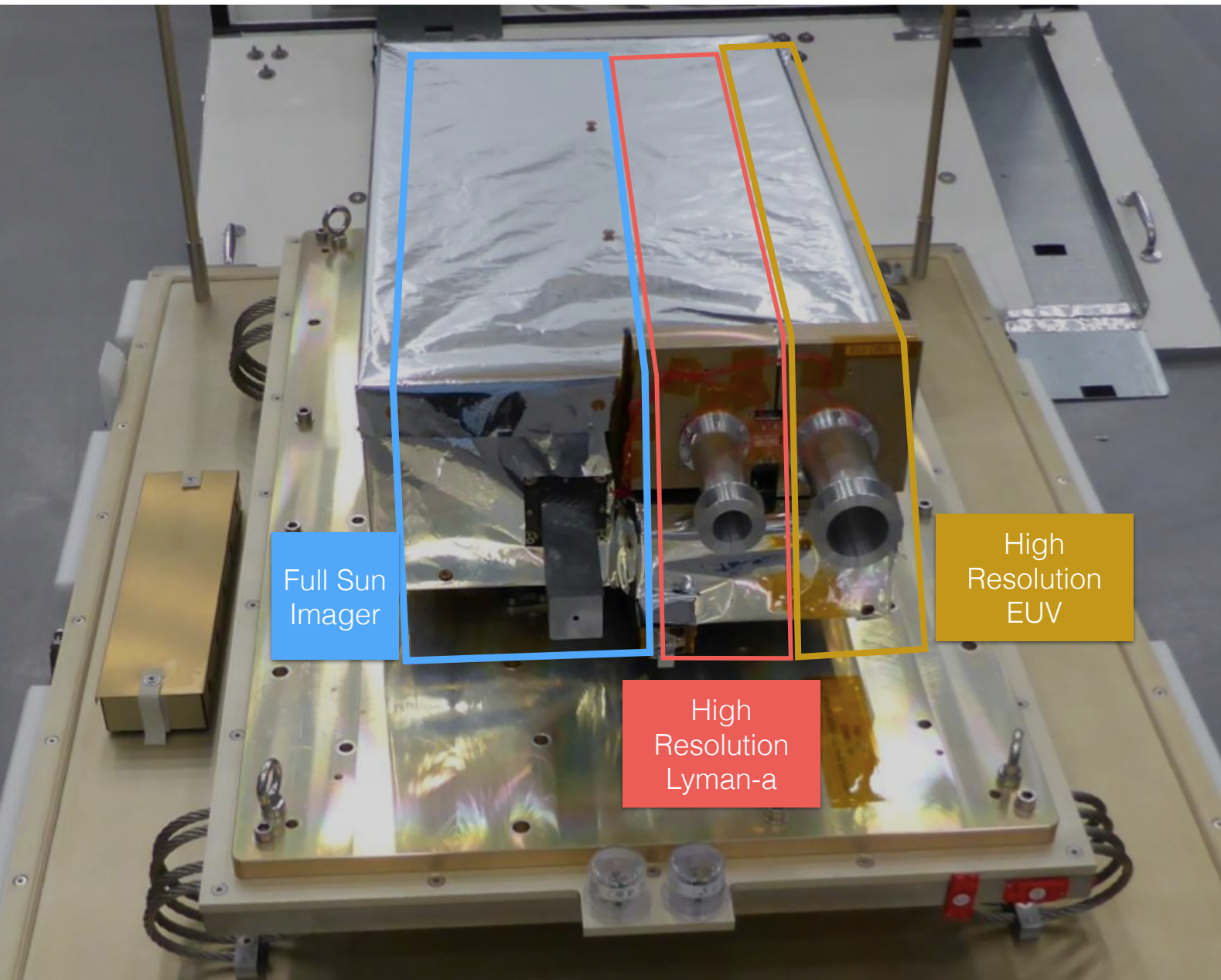


Royal Observatory of Belgium

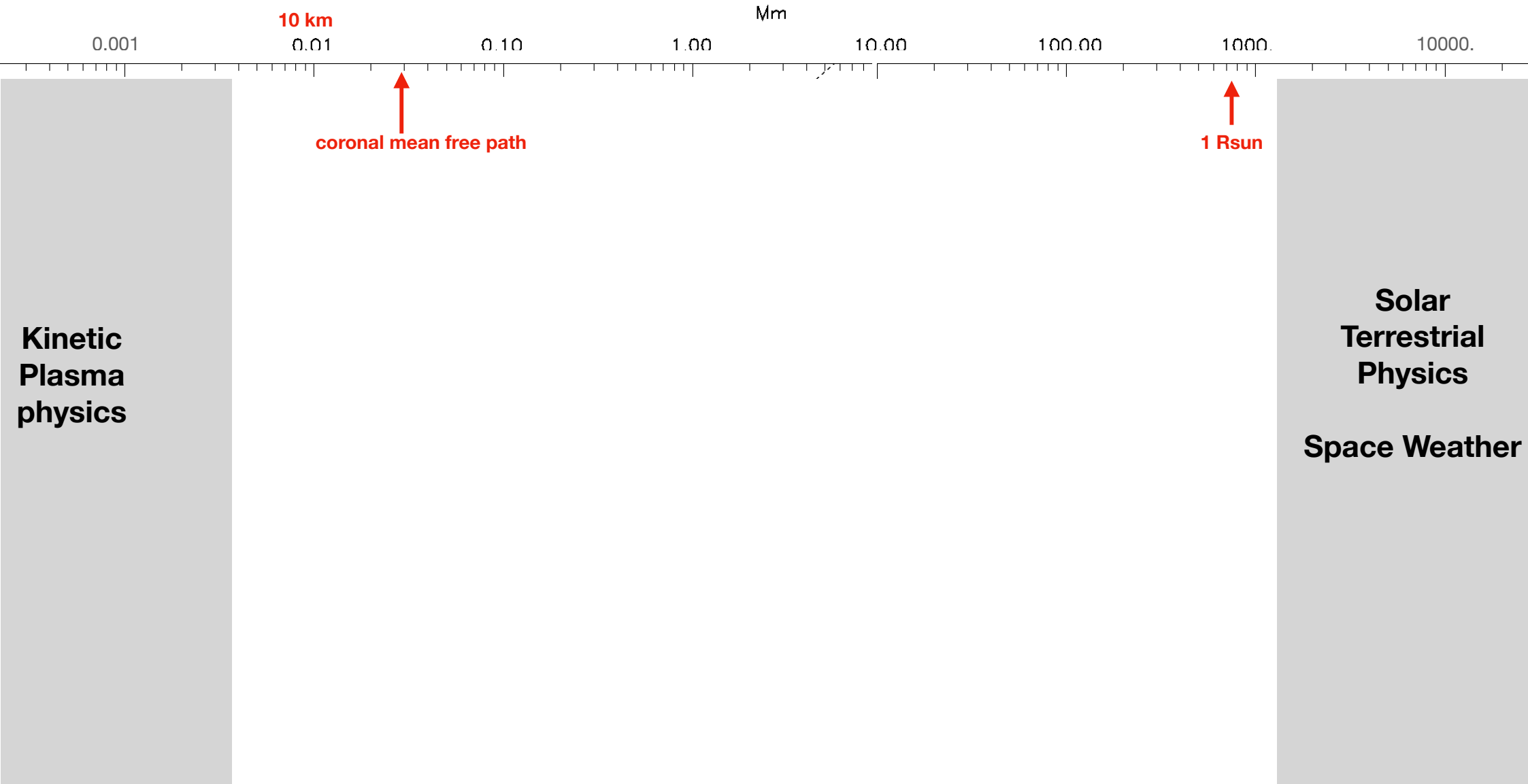


Full Sun Imager

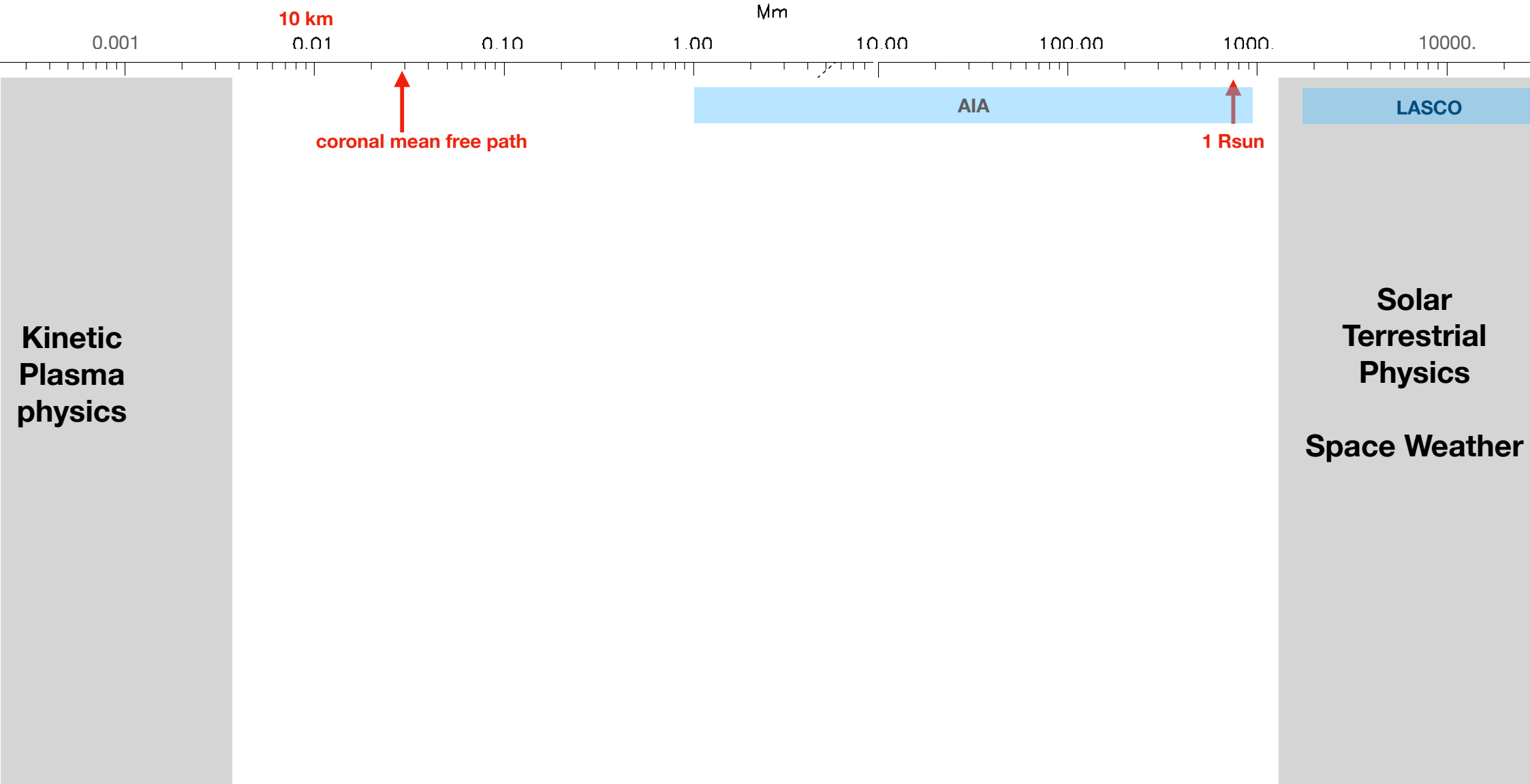




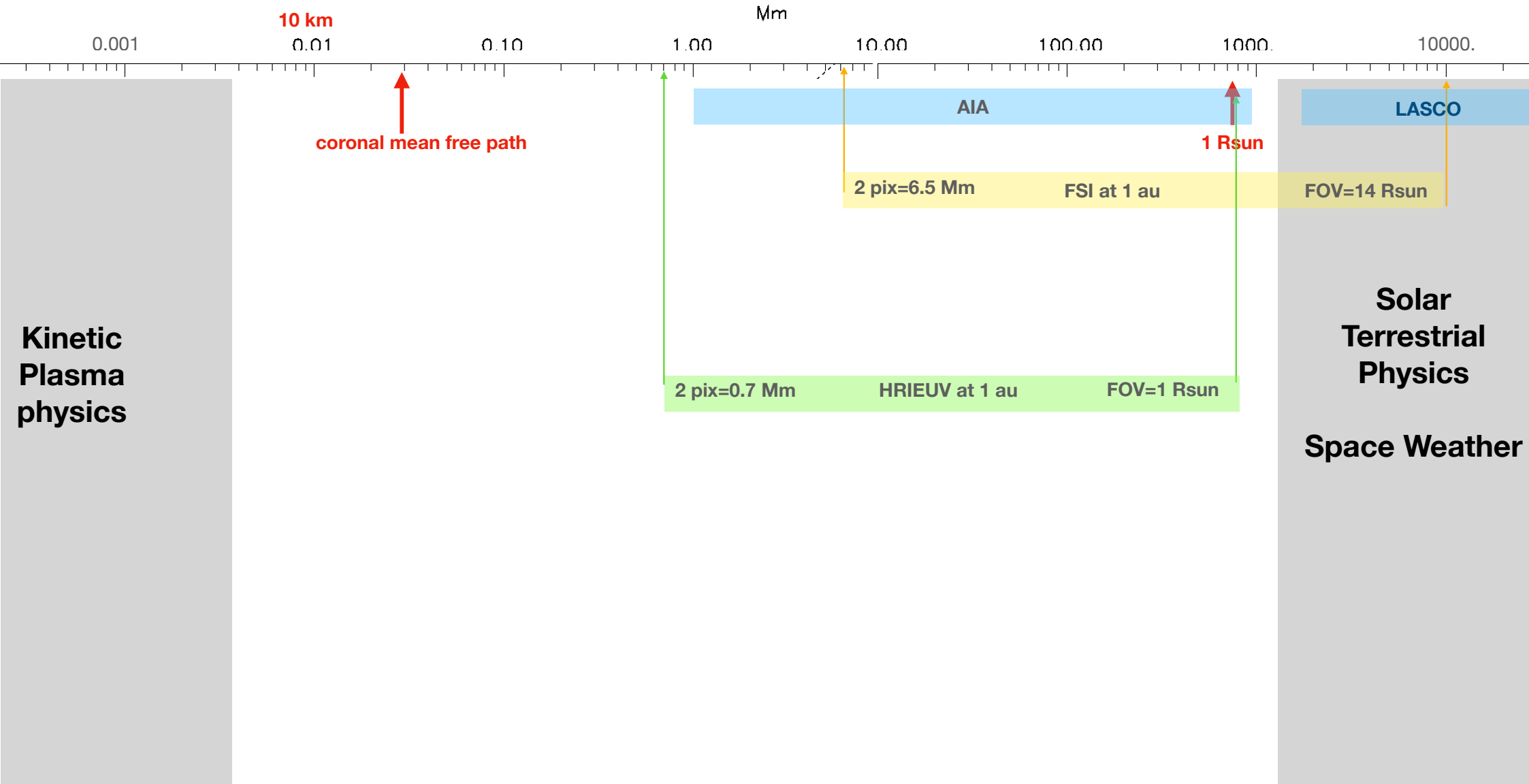
The Many Scales of the Magnetic Sun Corona



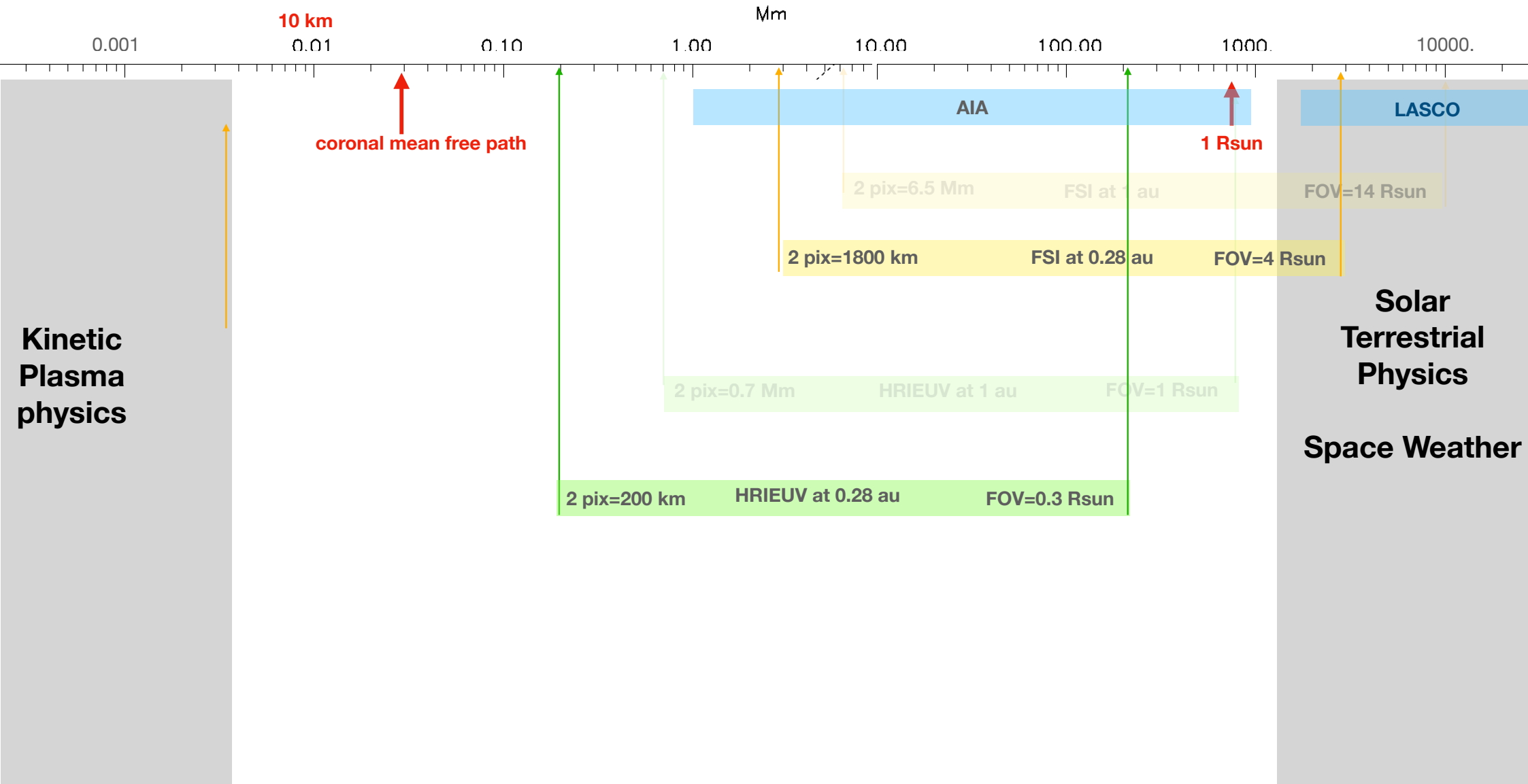
The Many Scales of the Magnetic Sun Corona



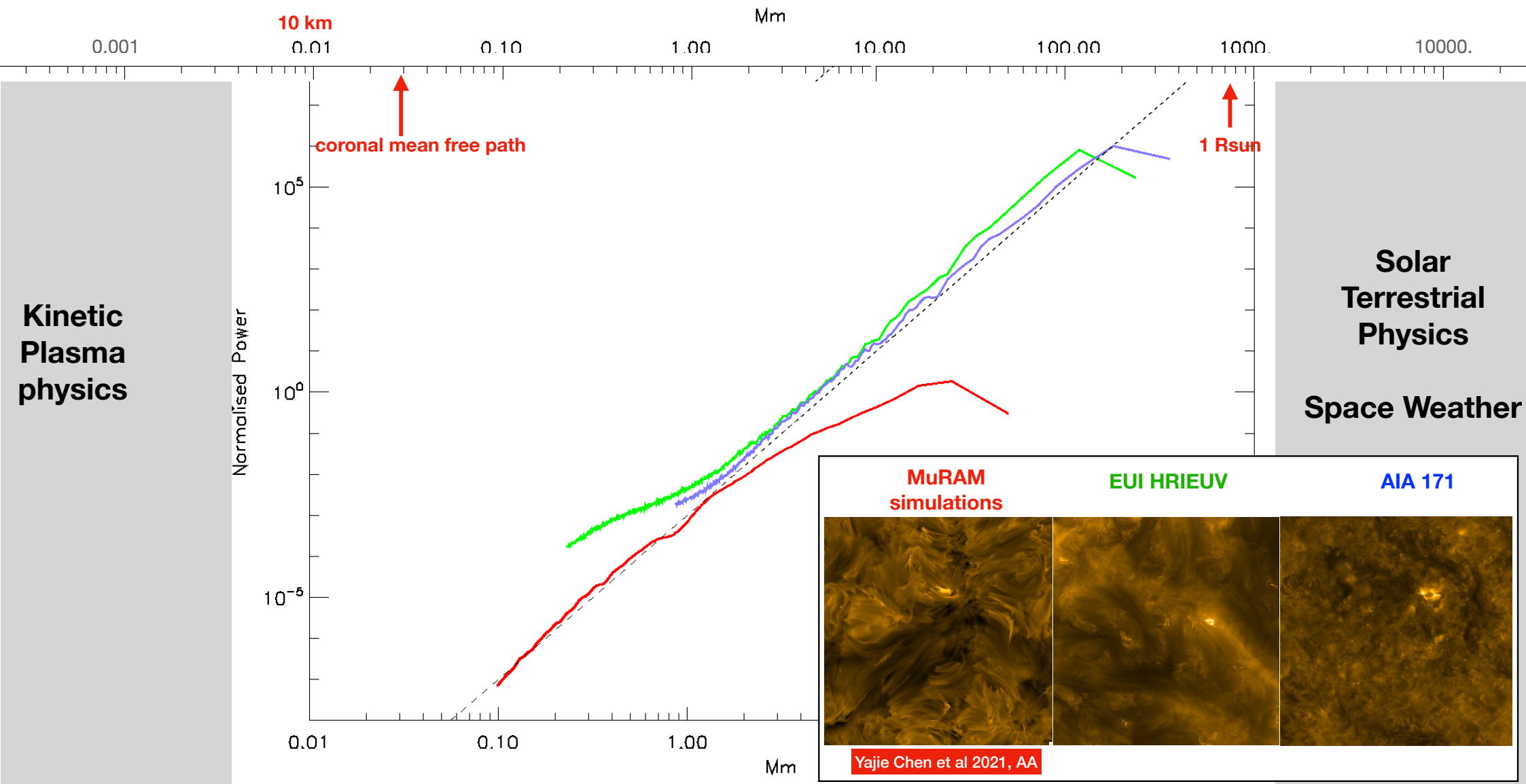
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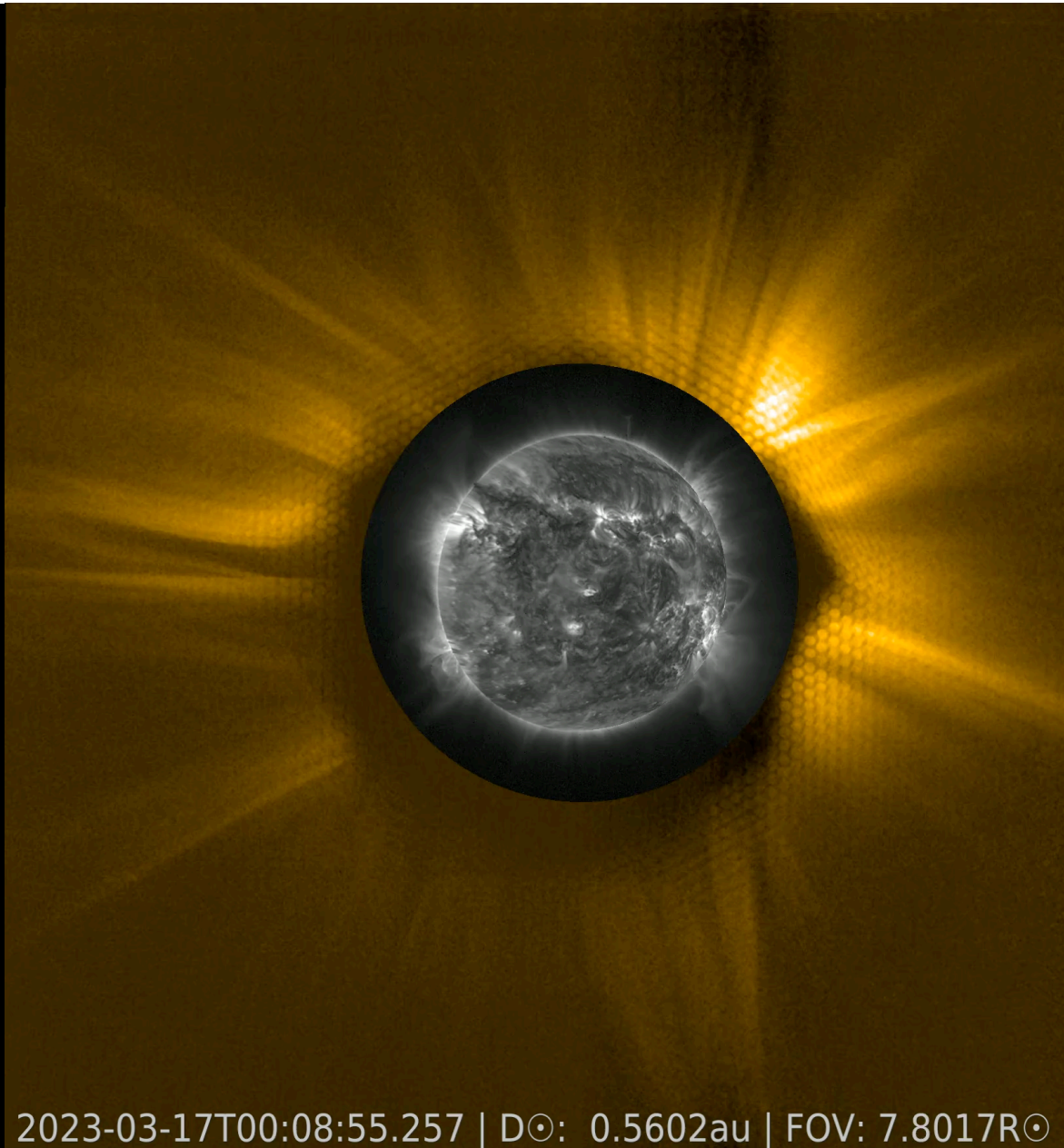
The Many Scales of the Magnetic Sun Corona



The Many Scales of the Magnetic Sun Corona



Frederic Auchère et al
2023 AA

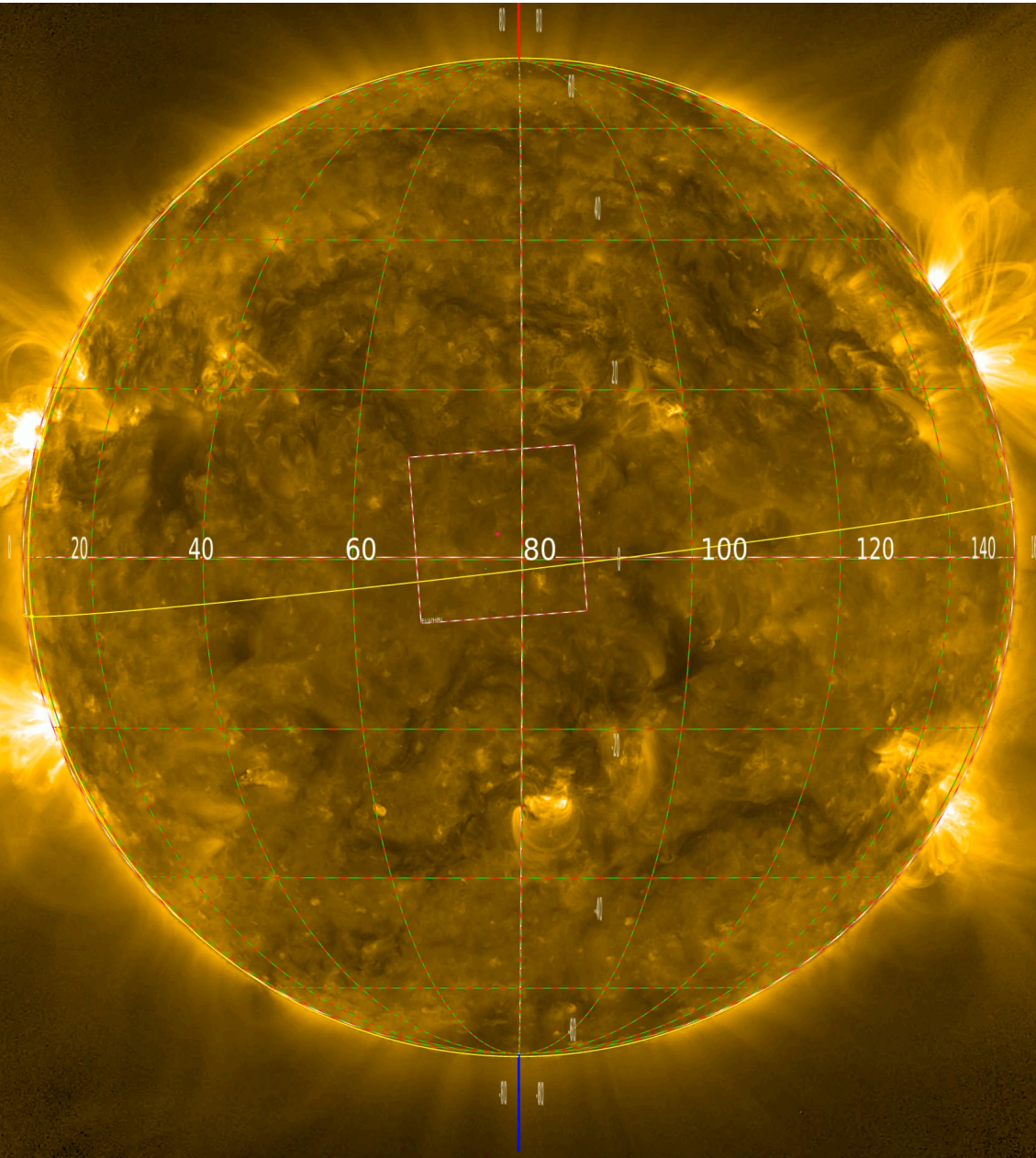


yellow: FSI 174 in occulter mode

grey: PROBA2/SWAP174

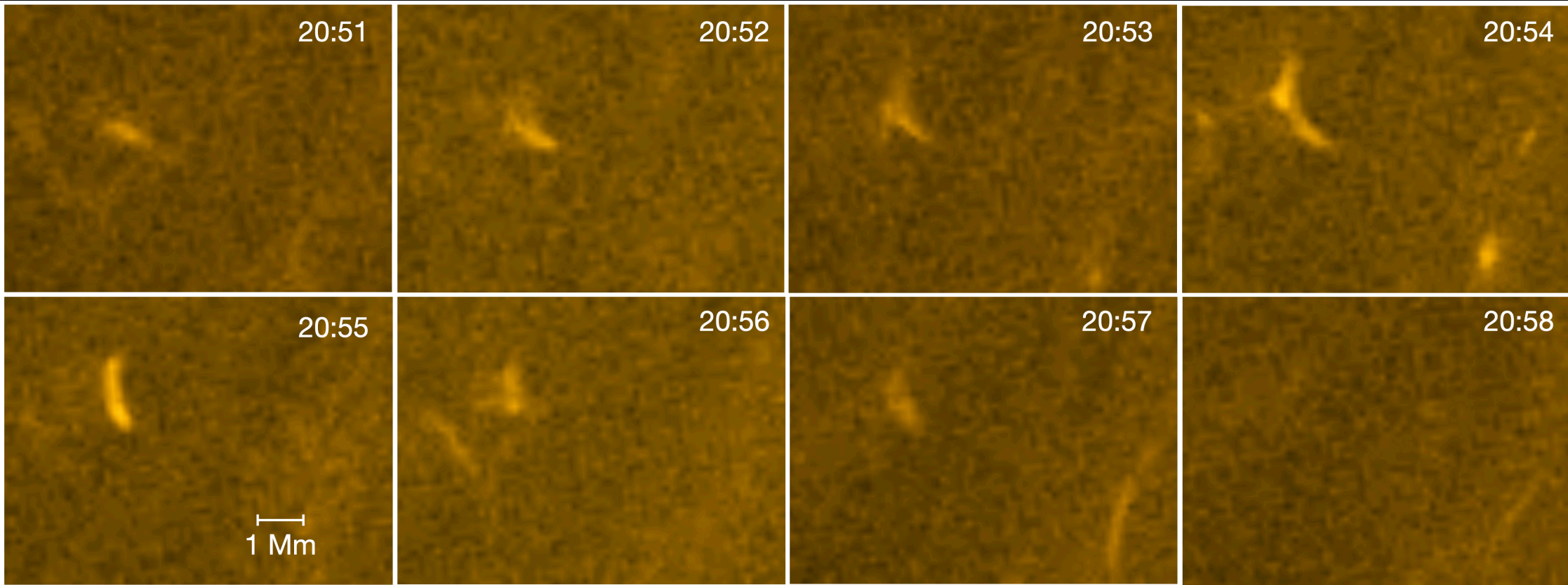
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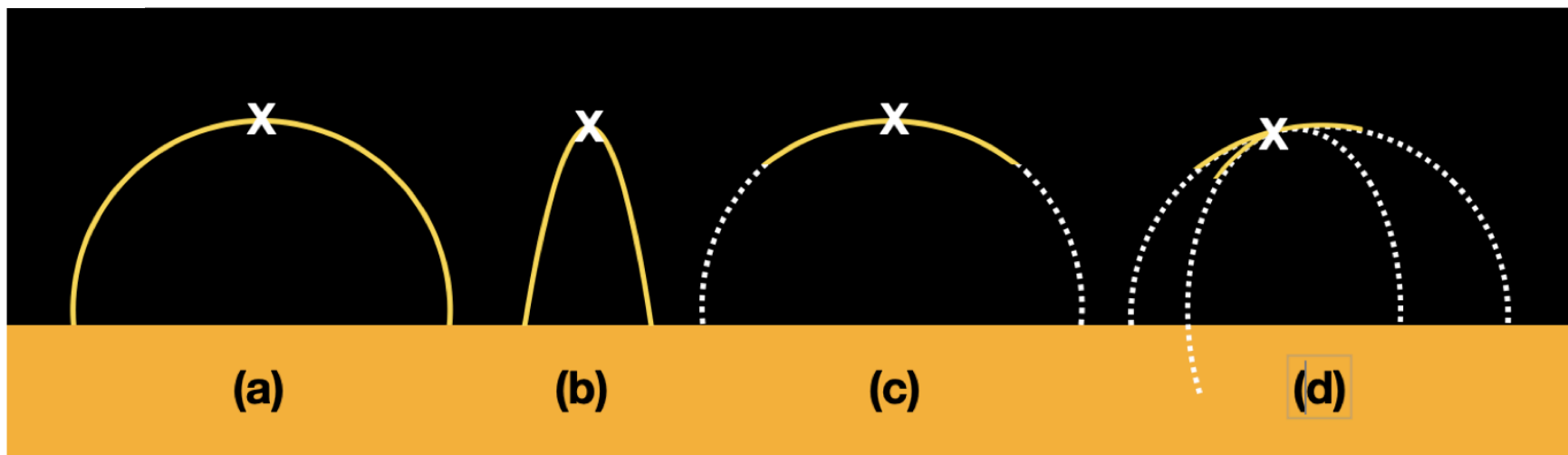
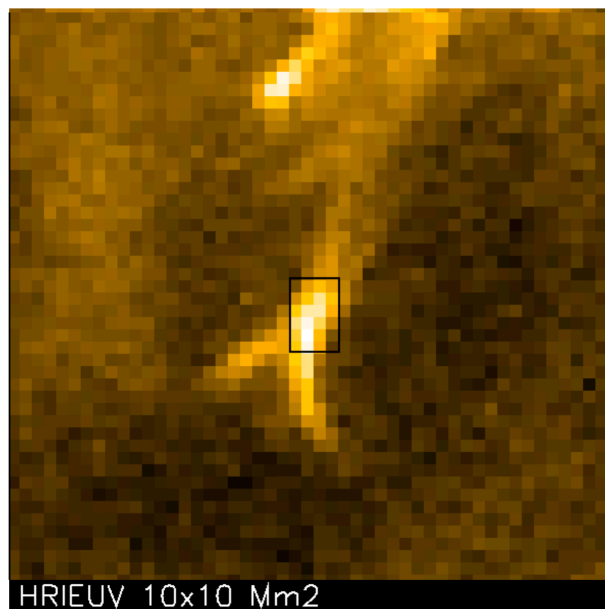
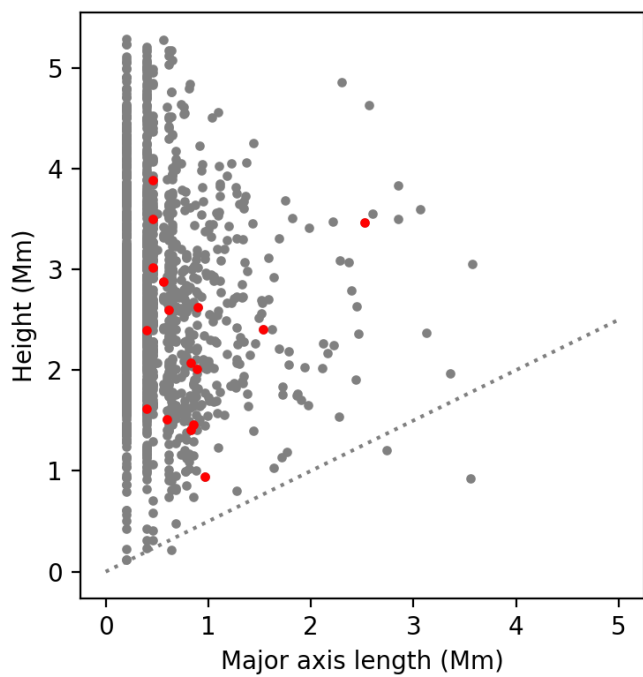
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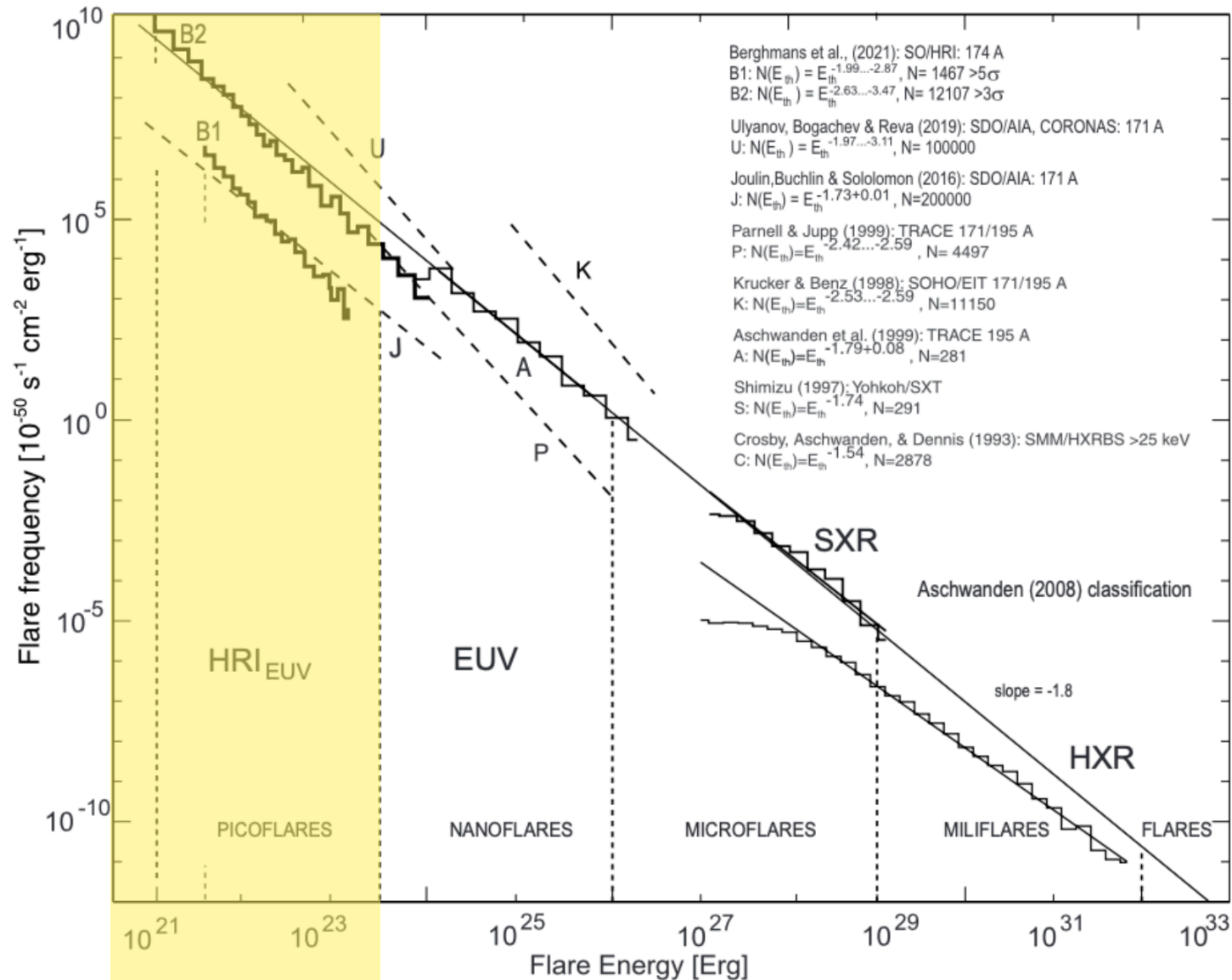


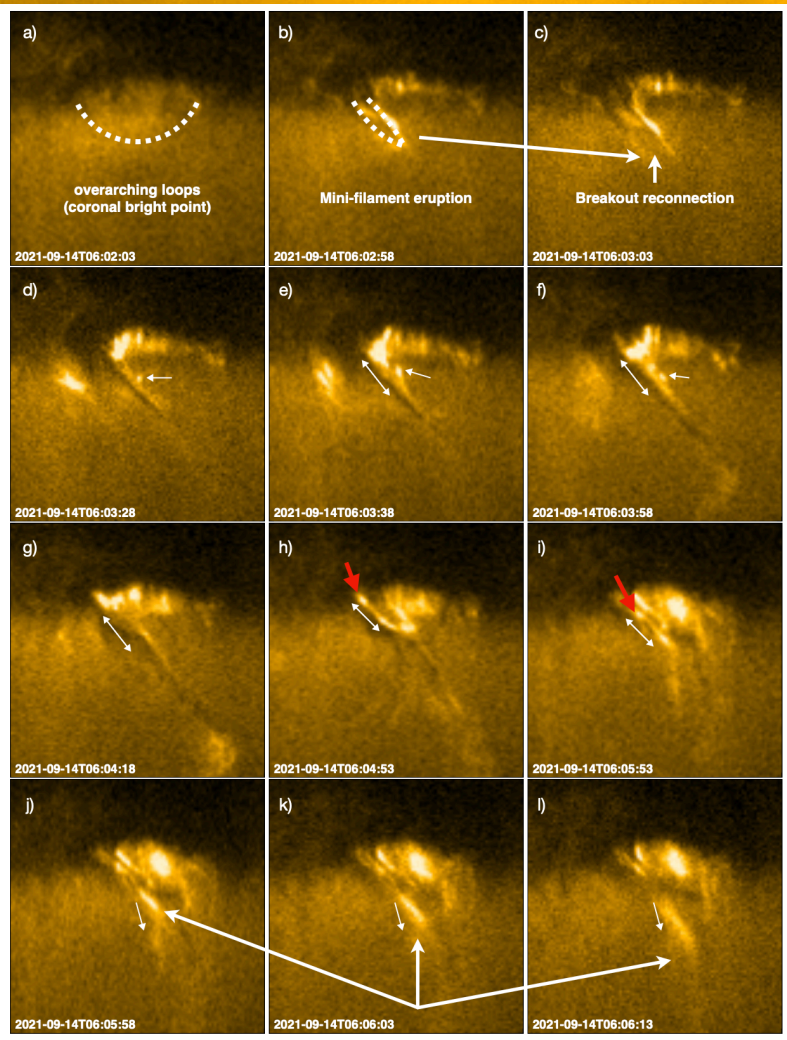
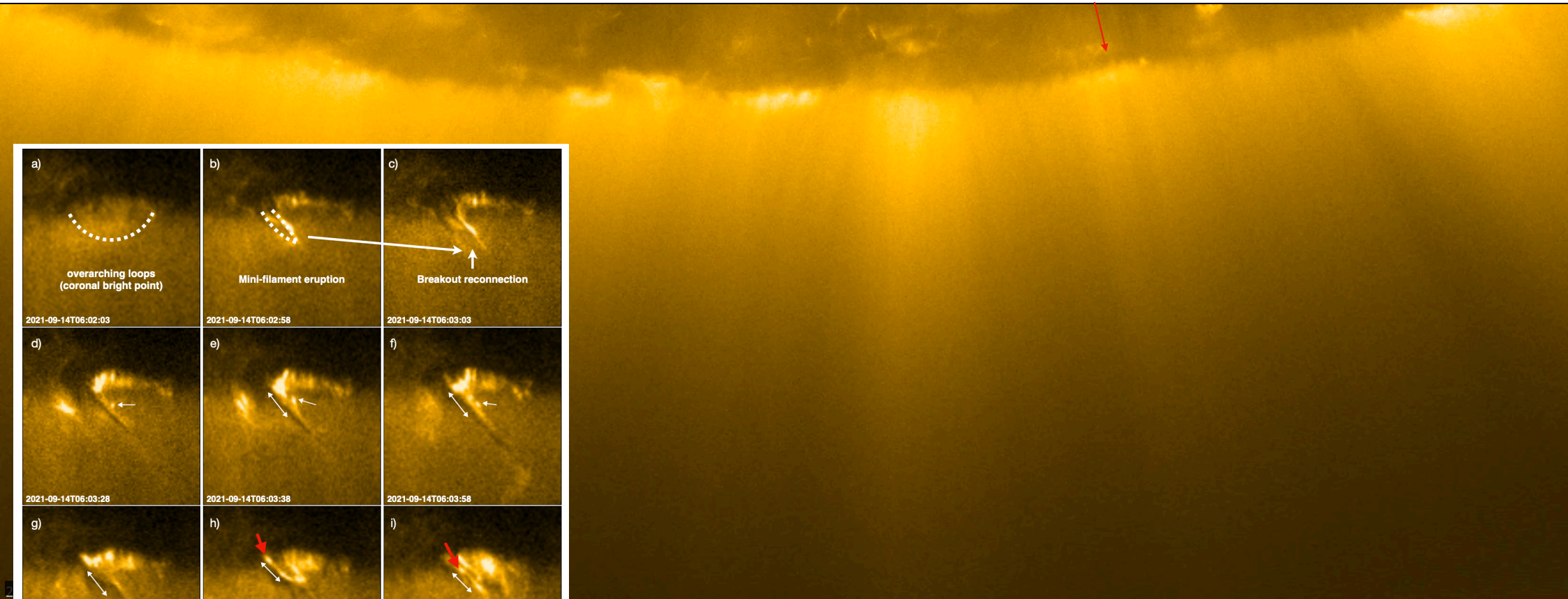
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2022 March 22 Small EUV brightenings a.k.a. "campfires"



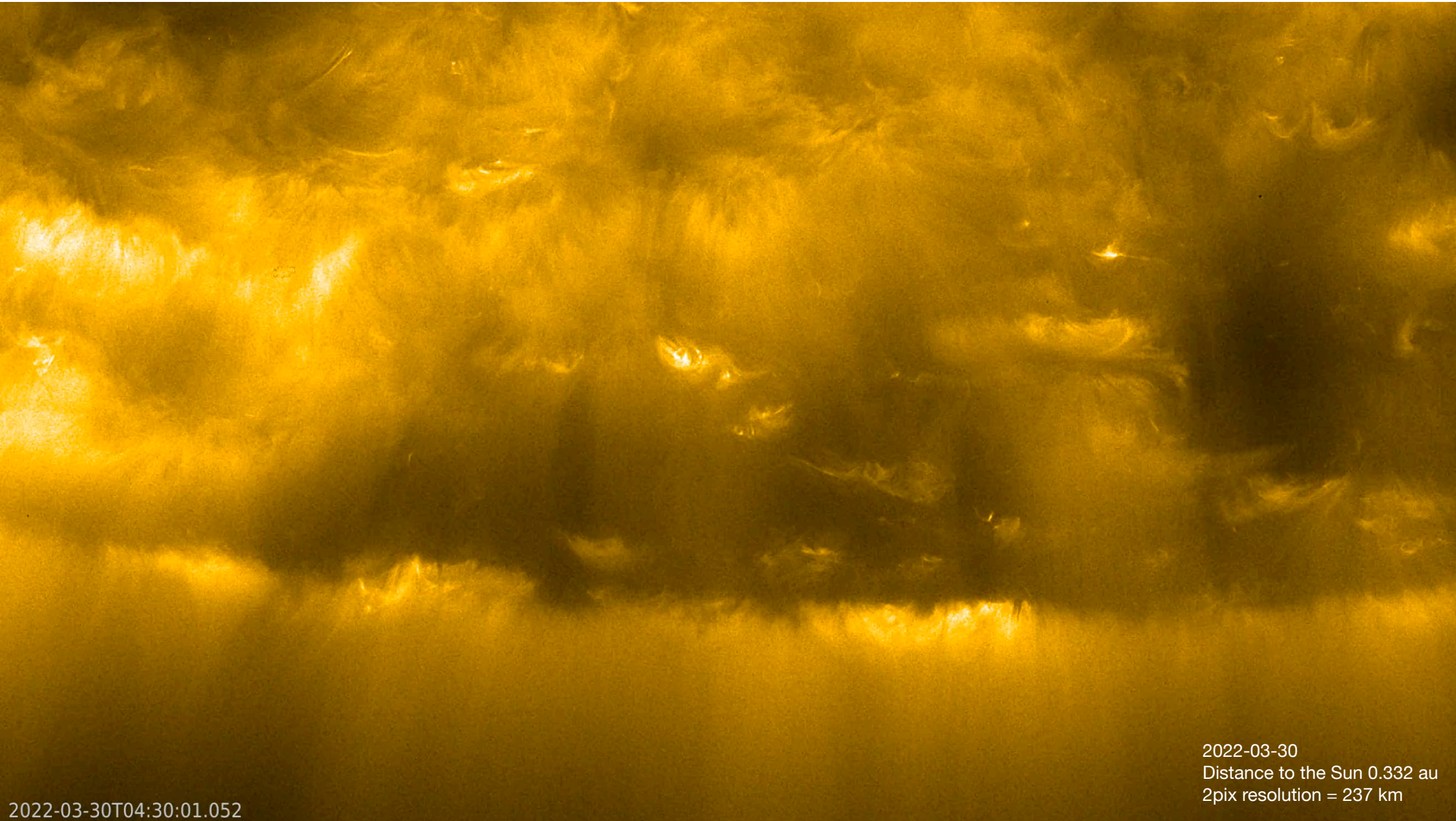






2021-09-14
Distance to the Sun 0.587 au
2-pix resolution = 417 km

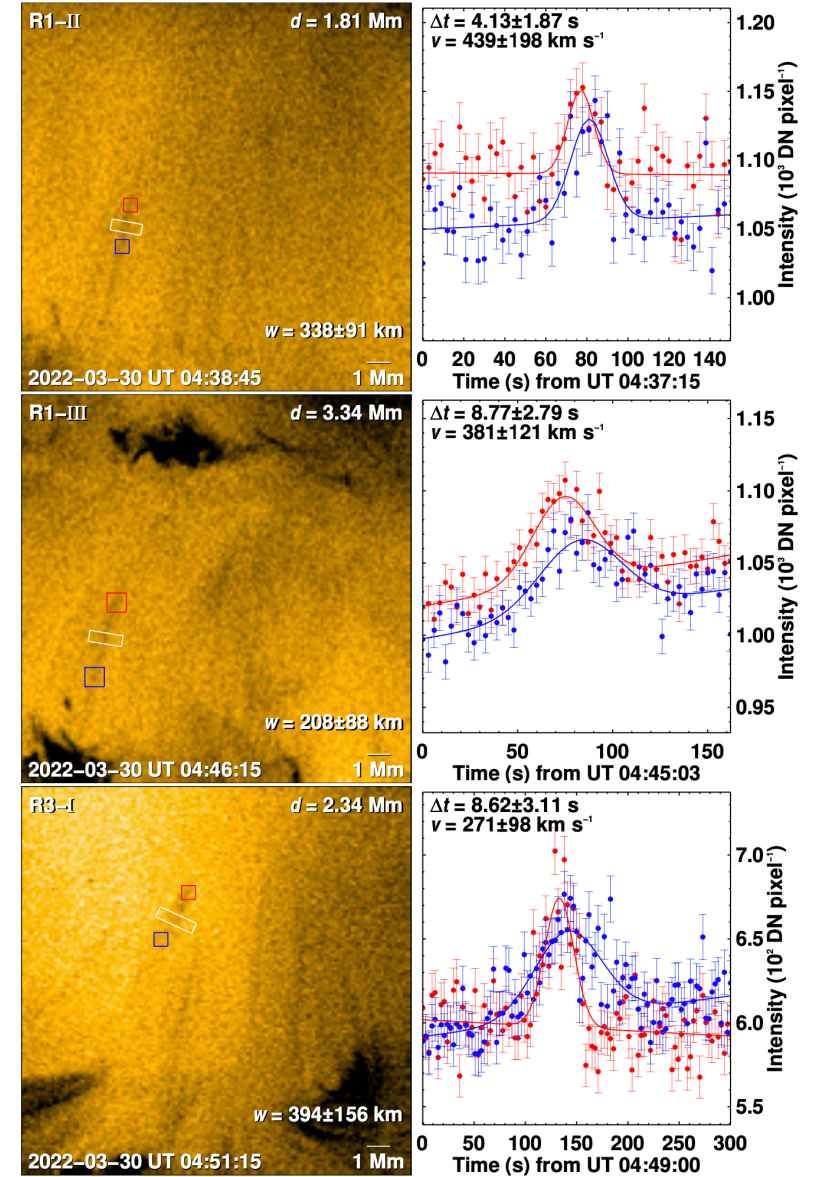
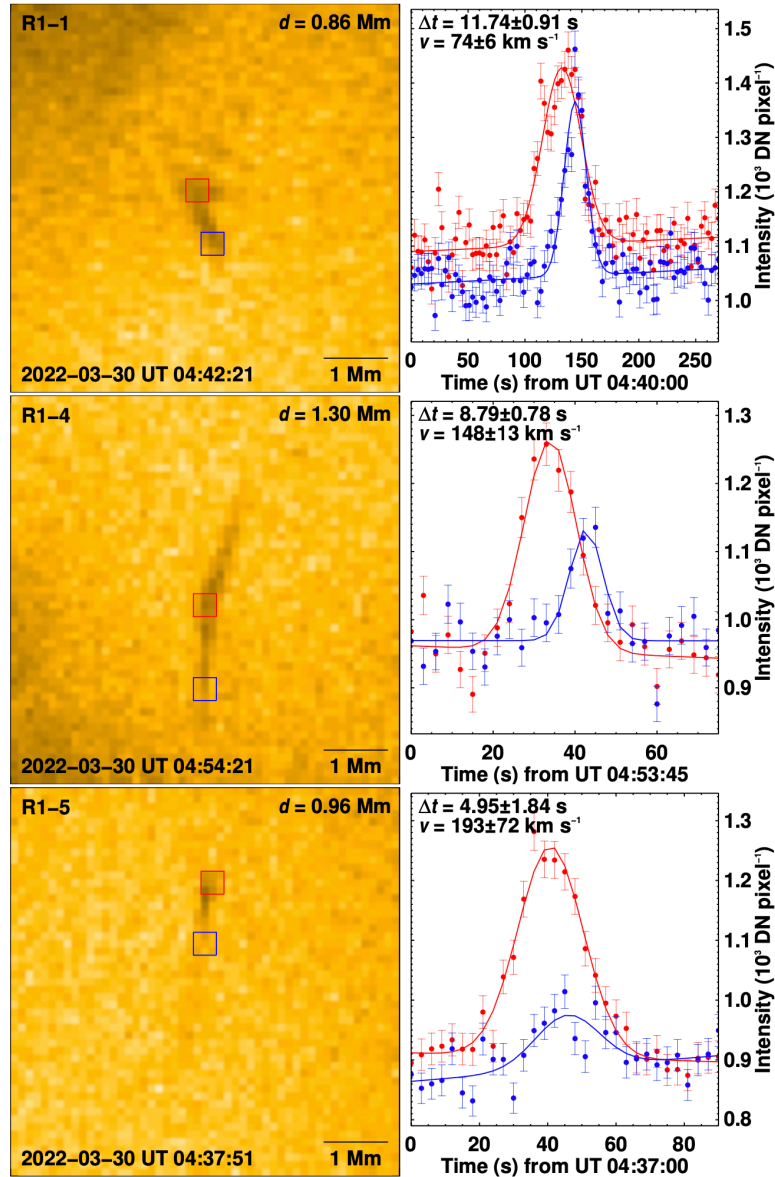
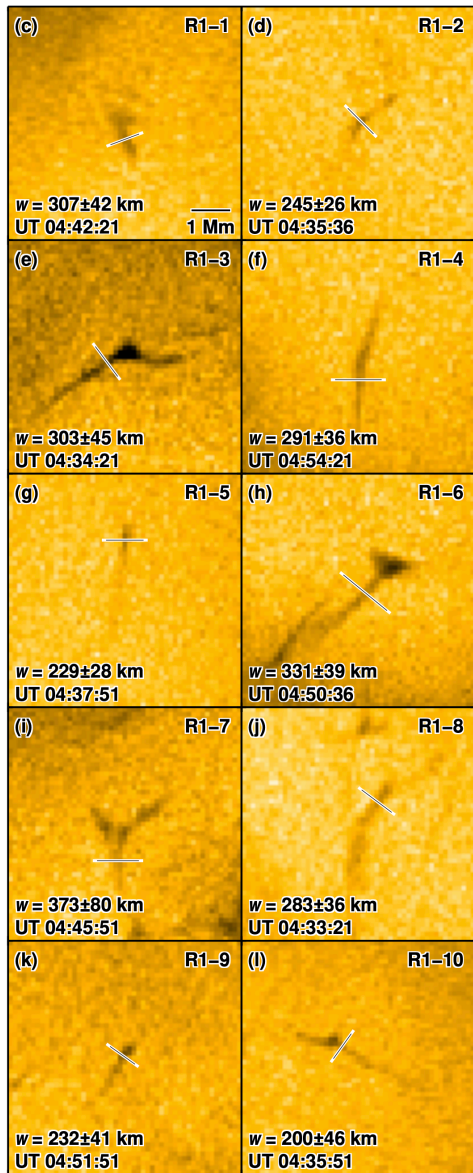
David Long et al 2023 ApJ

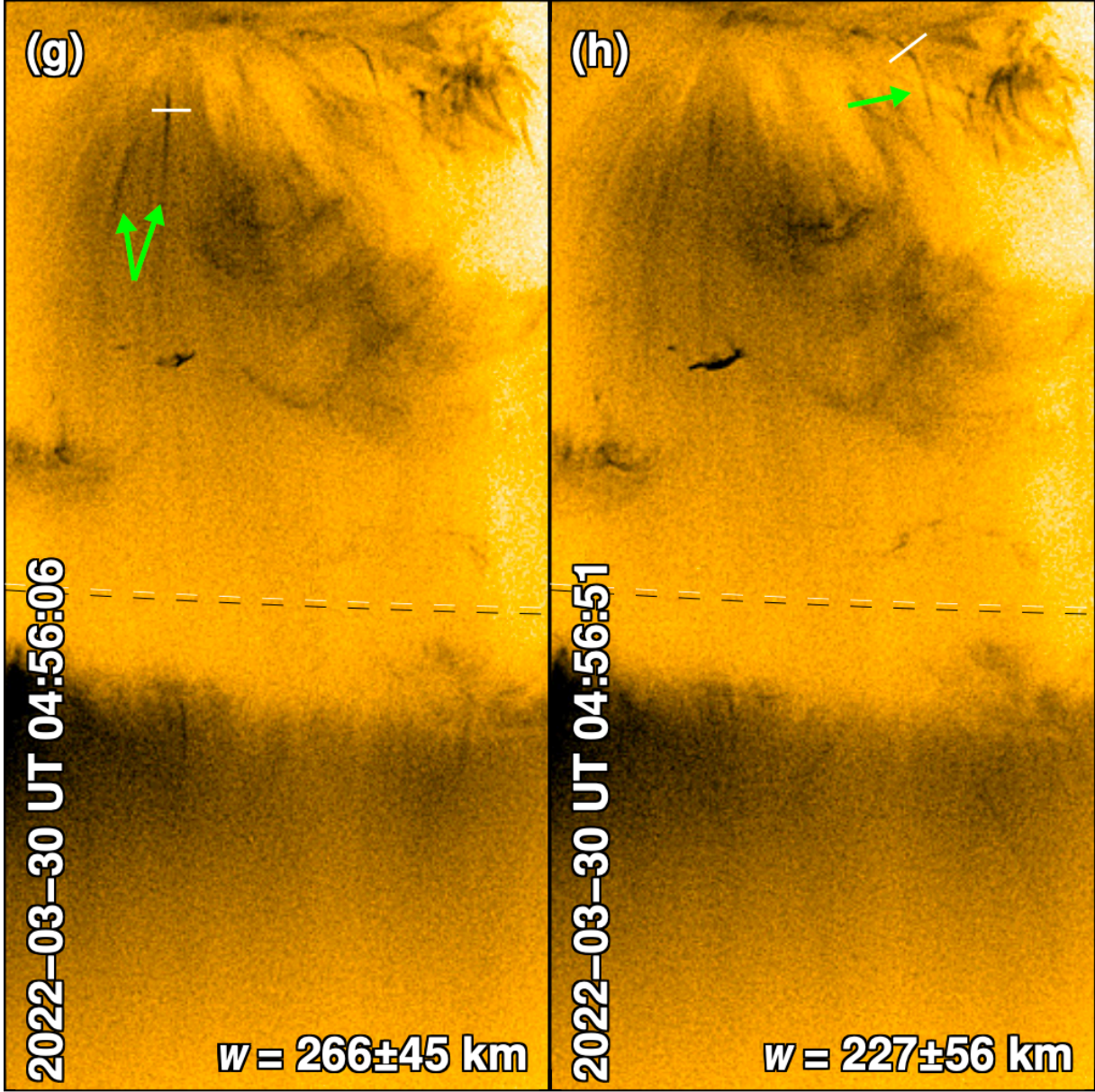


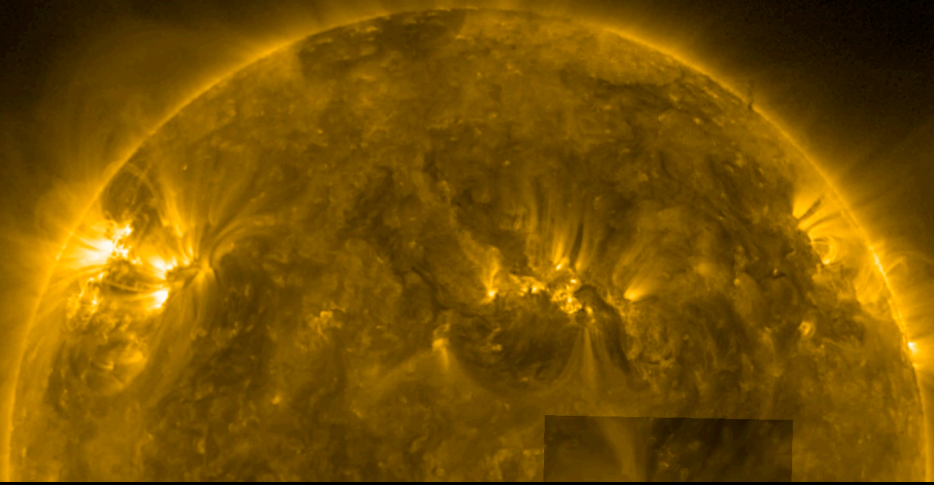
2022-03-30T04:30:01.052

2022-03-30
Distance to the Sun 0.332 au
2pix resolution = 237 km

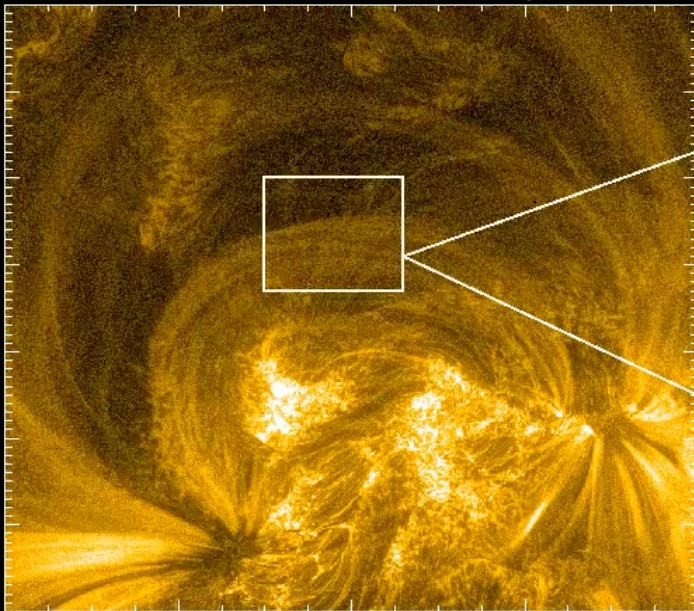
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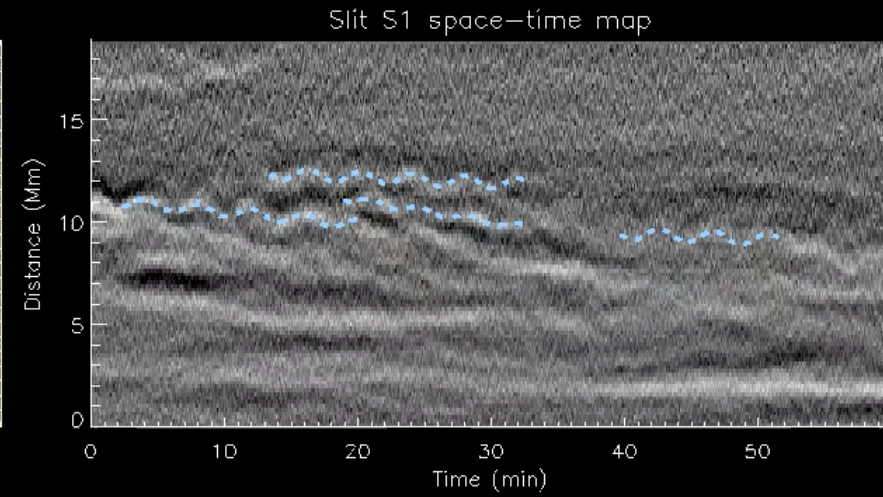
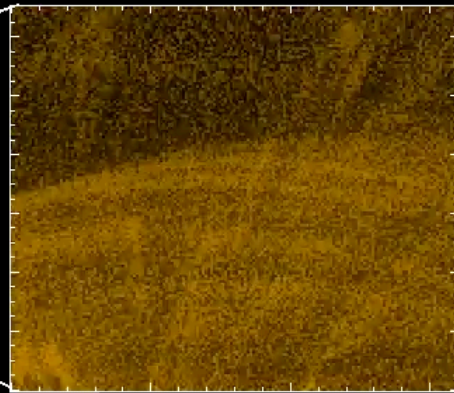


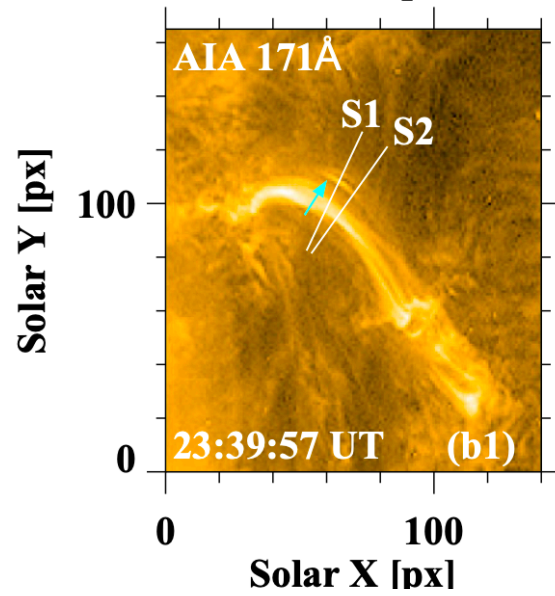
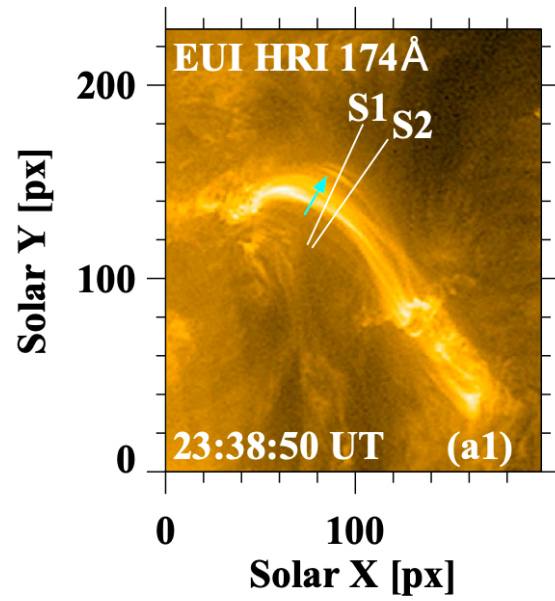


EUI : 2022-03-04 : Day-2

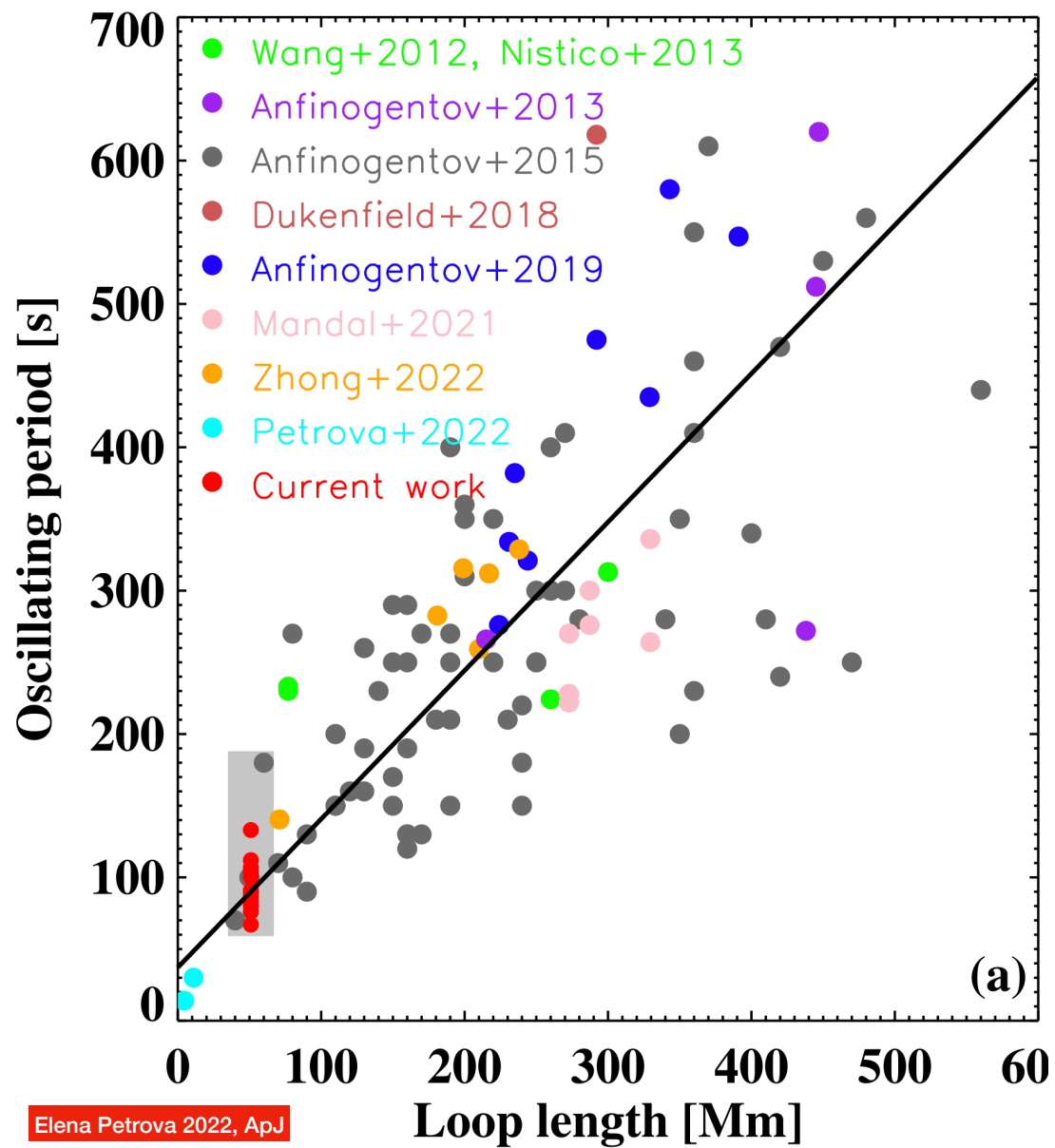
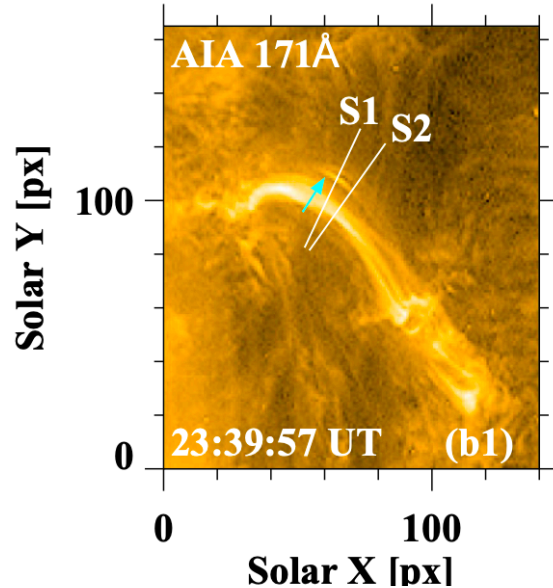
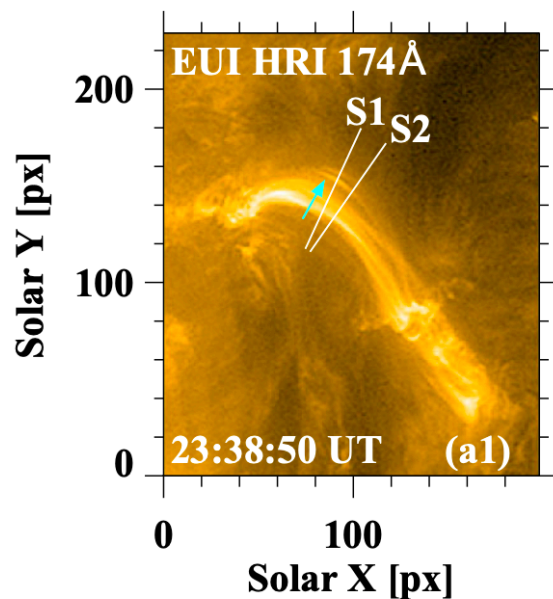


10:48:50UT + 0 s

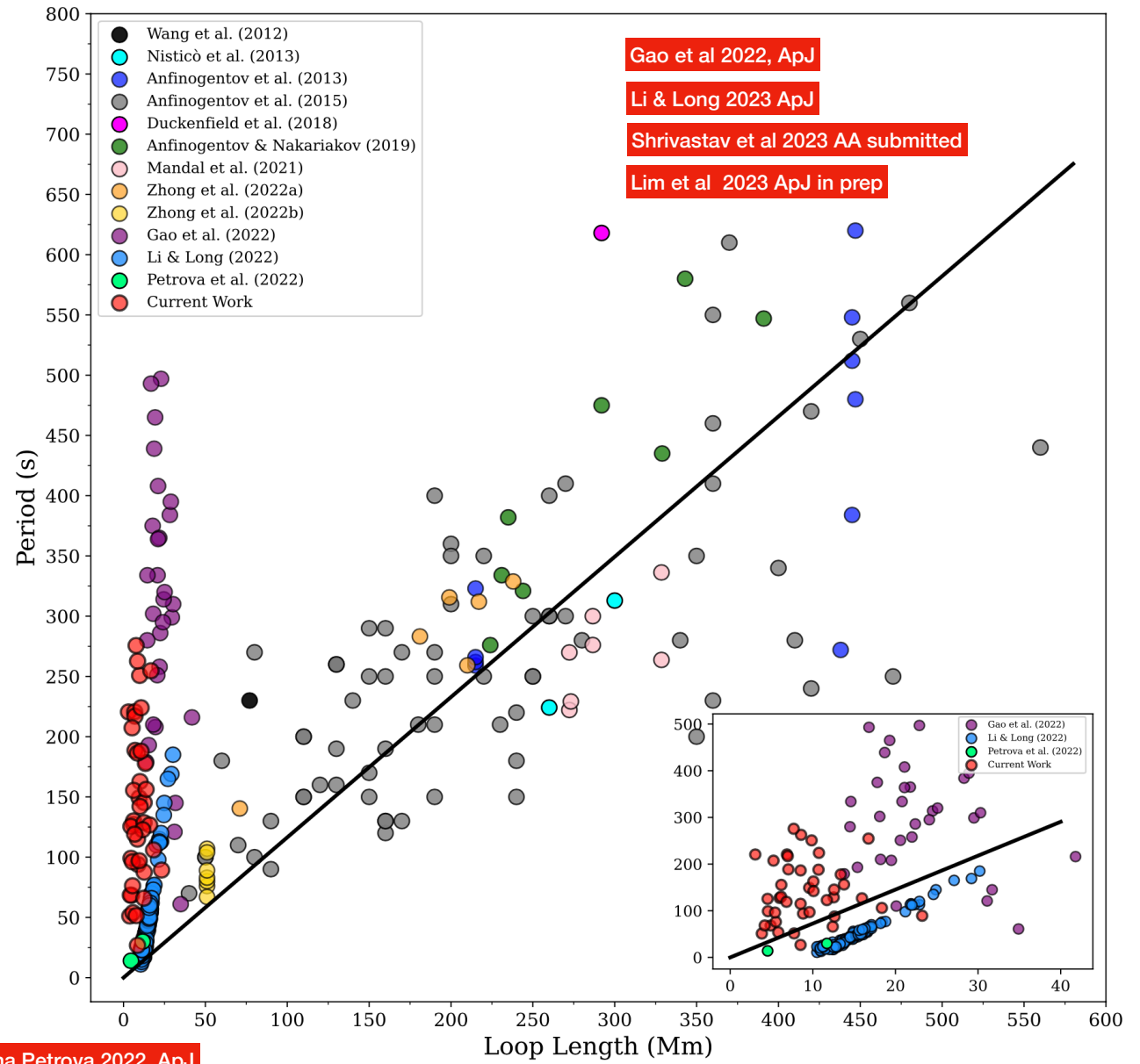
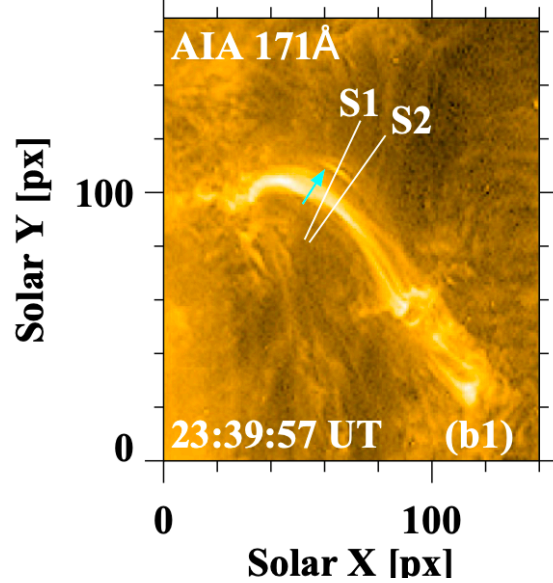
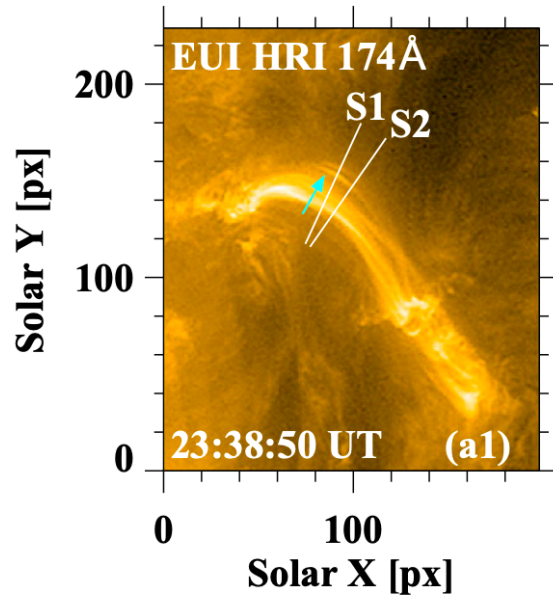




Sihui Zhong, 2022 (MNRAS)

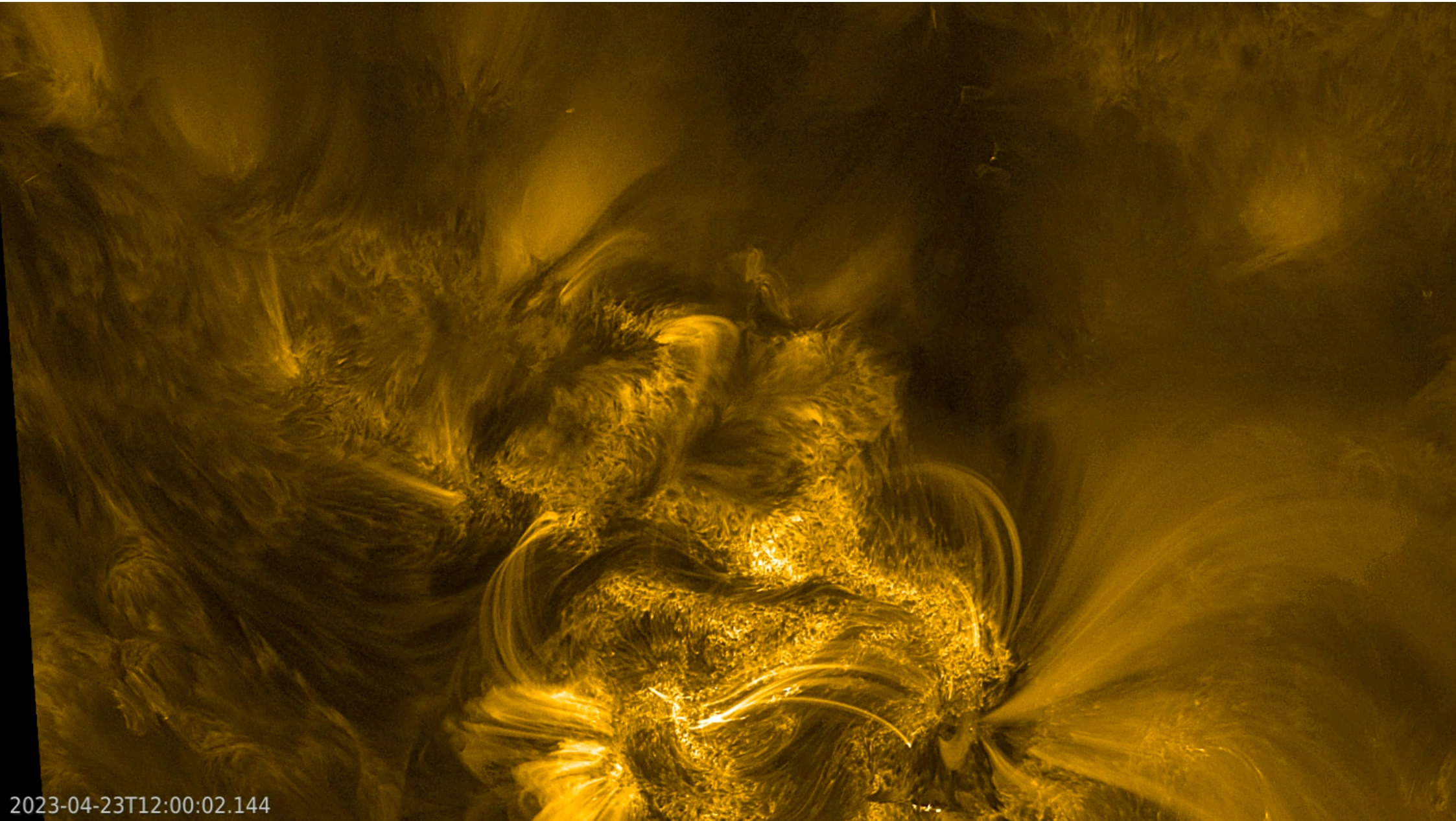


Sihui Zhong, 2022 (MNRAS)



Conclusions

1. EUI can image the EUV corona at bigger & smaller scales than ever before
2. The small scale background looks similar as the big scale background.
3. The smallest events (picoflares, picojets, waves) look similar as the bigger events.
4. The smallest events might energetically be more important than the bigger events.



2023-04-23T12:00:02.144