



October 2, 2024

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From Sunspots to Solar Storms: *CSL's 60-Year Journey in Space Weather Exploration*

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www.switchtospace.org

CSL in a nutshell

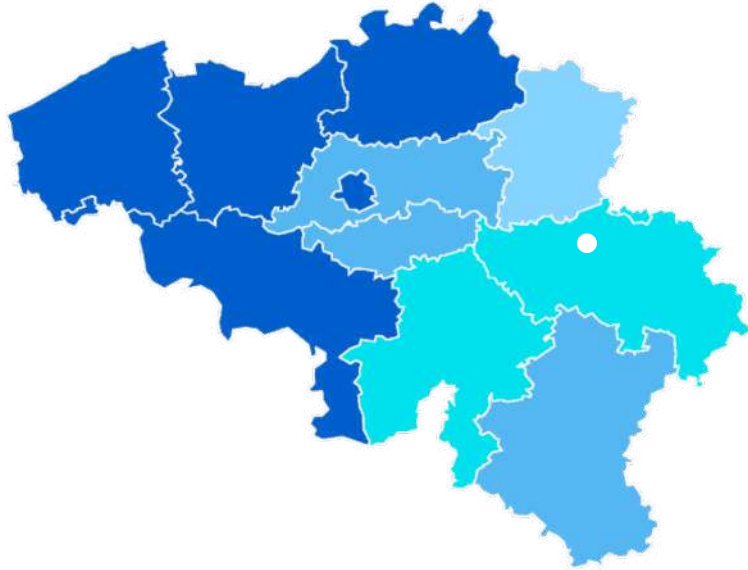
A research center from the University of Liège (ULiège)



Who's CSL ?



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- Created in 1959
- Centre of Excellence in **Optics**, specialized in **space environment** and **technology**



- Research center from the **University of Liège**
- Staff: ~**100**

What is Space Weather ?

Weather in space ?

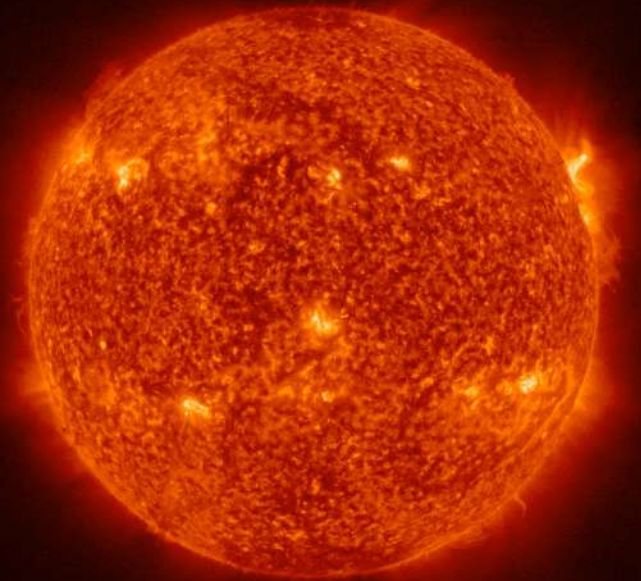


Space Weather ?

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Branch of heliophysics studying the changing conditions of the Sun, and its impact on Earth.

For example: Effect of Solar wind on Earth's magnetosphere

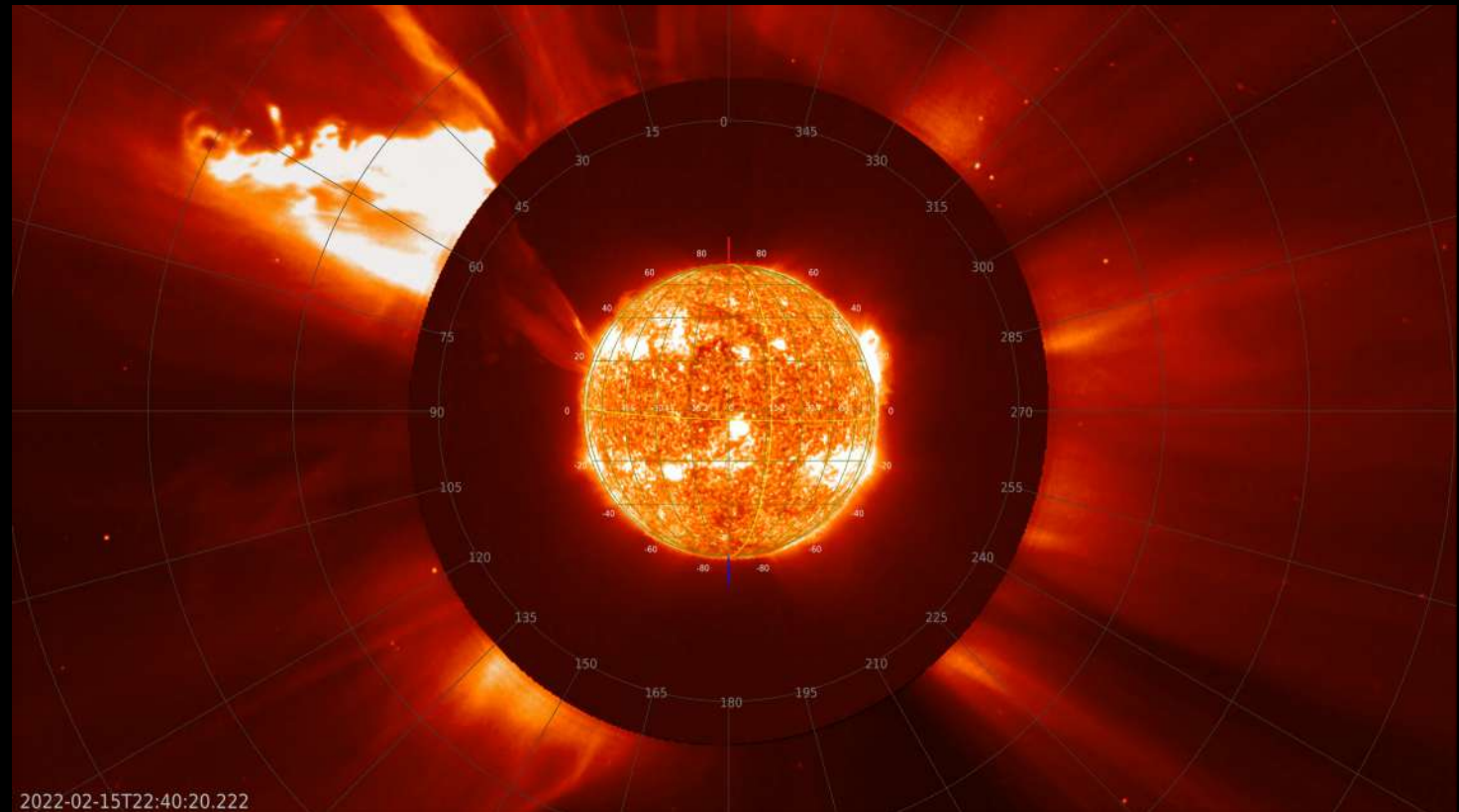


How does it
materialize ?

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- Key Elements of Space Weather:

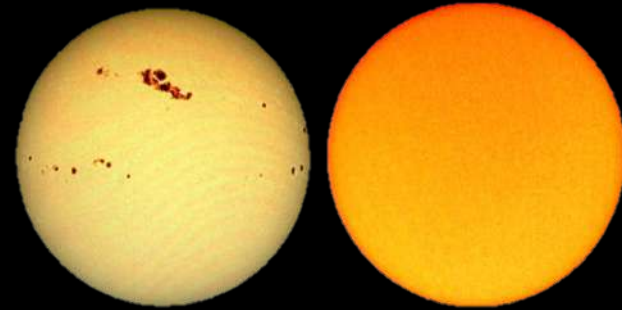
- Solar Wind: Streams of charged particles from the Sun.
- Solar Flares: Sudden bursts of radiation.
- Geomagnetic Storms: Disturbances in Earth's magnetic field caused by solar activity.



Why do we care ?

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- Sun today \neq Sun tomorrow



- March 1989
 - Blackout in Québec.

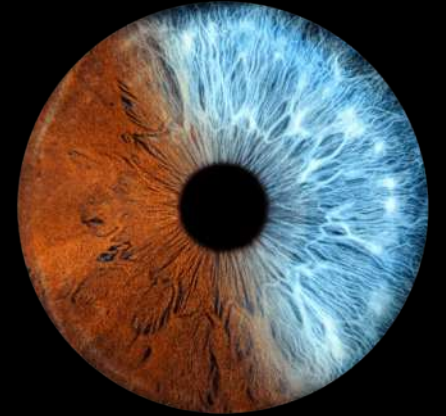


- Understand the stars? Look at the Sun.

How to monitor Space Weather ?

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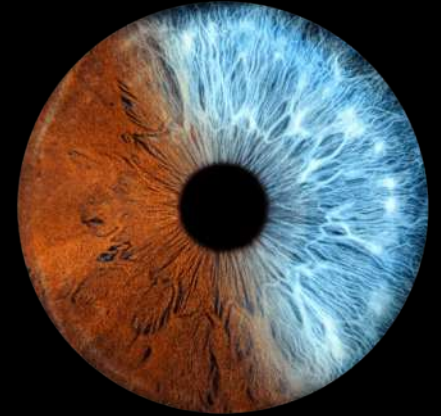
- Remote Sensing
 - EUV Imagers
 - Heliopsheric imager
 - Coronagraph
 - Magnetograph
- In situ
 - Magnetometer
 - X-ray flux monitor
 - Radiation monitor
 - Spectrometer



How to monitor Space Weather ?

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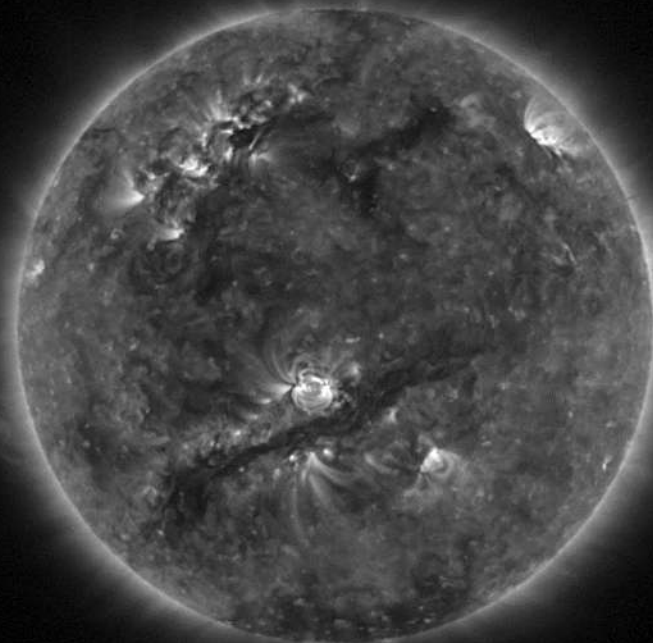
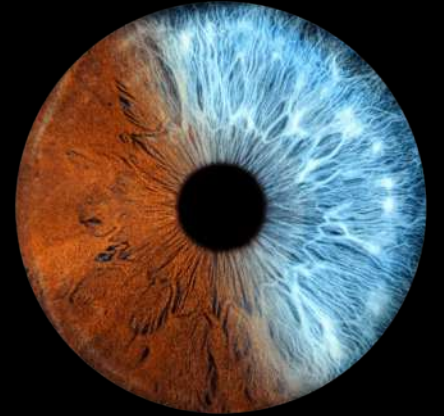
How to monitor Space Weather ?

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- Remote Sensing

- EUV Imagers

Target: the hot corona



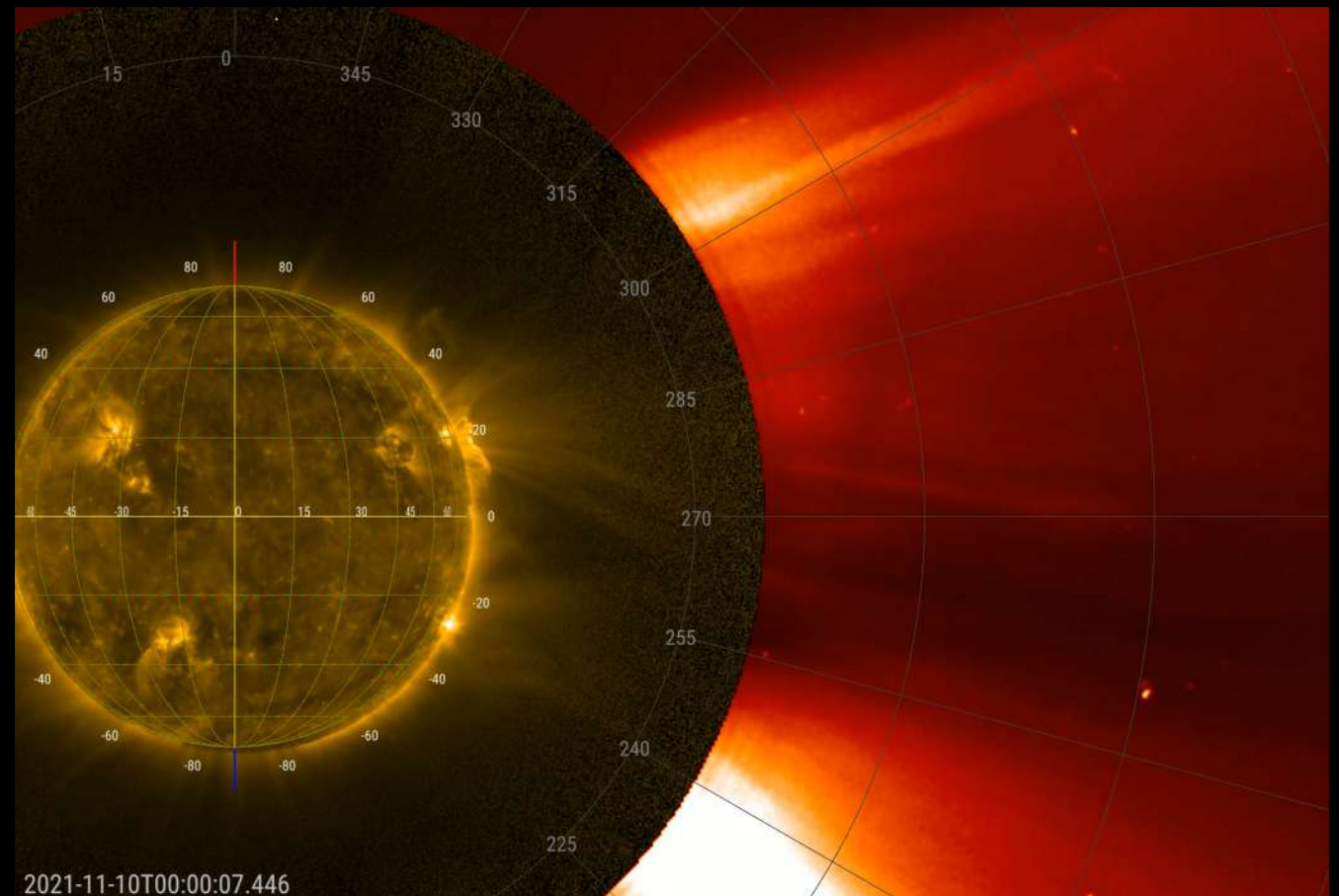
How to monitor Space Weather ?



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- Remote Sensing
 - Coronagraph

Target: the corona



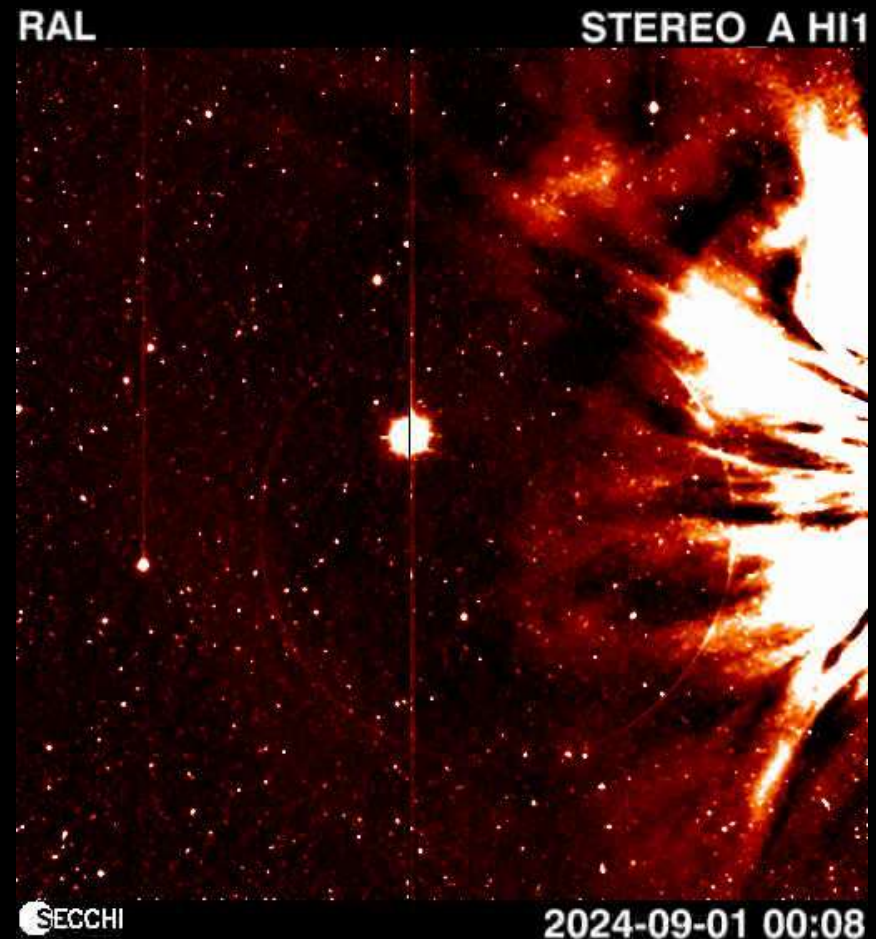
How to monitor Space Weather ?



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- Remote Sensing
 - Heliopsheric imager

Target: the solar wind



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CSL in Space Weather

The eye (sunglasses on)



A bit of history...

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- CSL... you mean IAL Space ?
July 6, 1964: first launch of a sounding rocket



A bit of history...

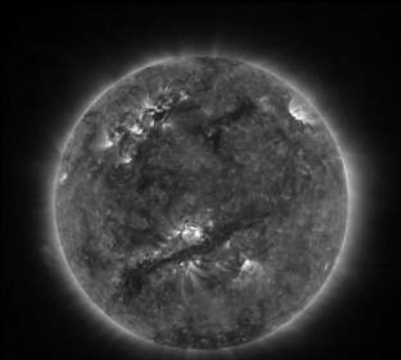
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- CSL... you mean IAL Space ?J
- Auroras were observed in the FUV domain

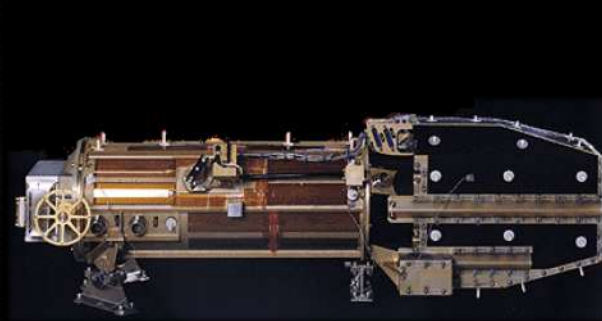
Recent (or not) involvements



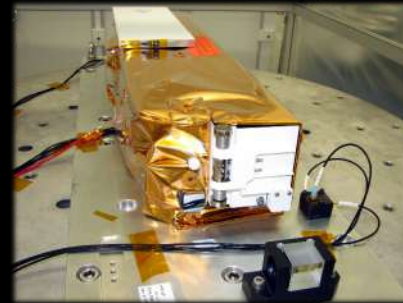
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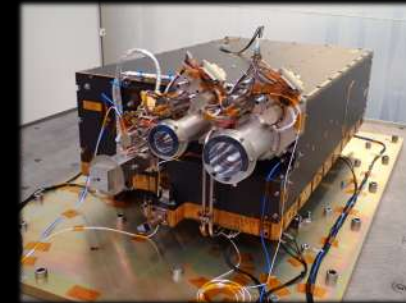
PROBA2/SWAP 174 2011-01-04T06:32:17.046



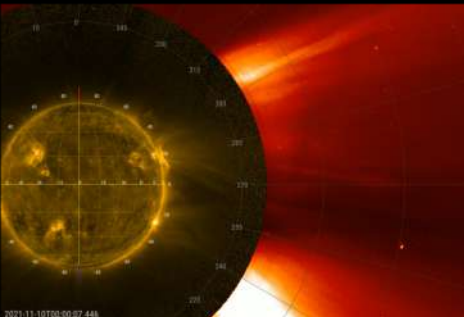
SOHO/EIT (1995)



Proba2/SWAP (2009)

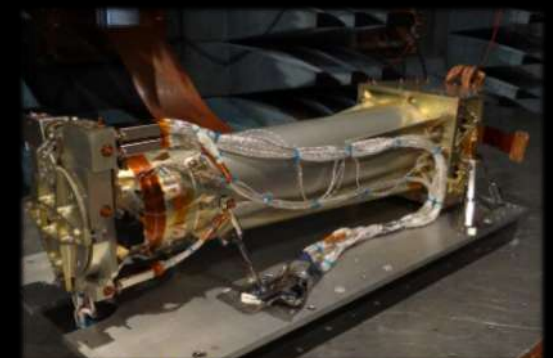


SoHO/EUI (2020)



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Proba3/ASPIICS (11/2024)



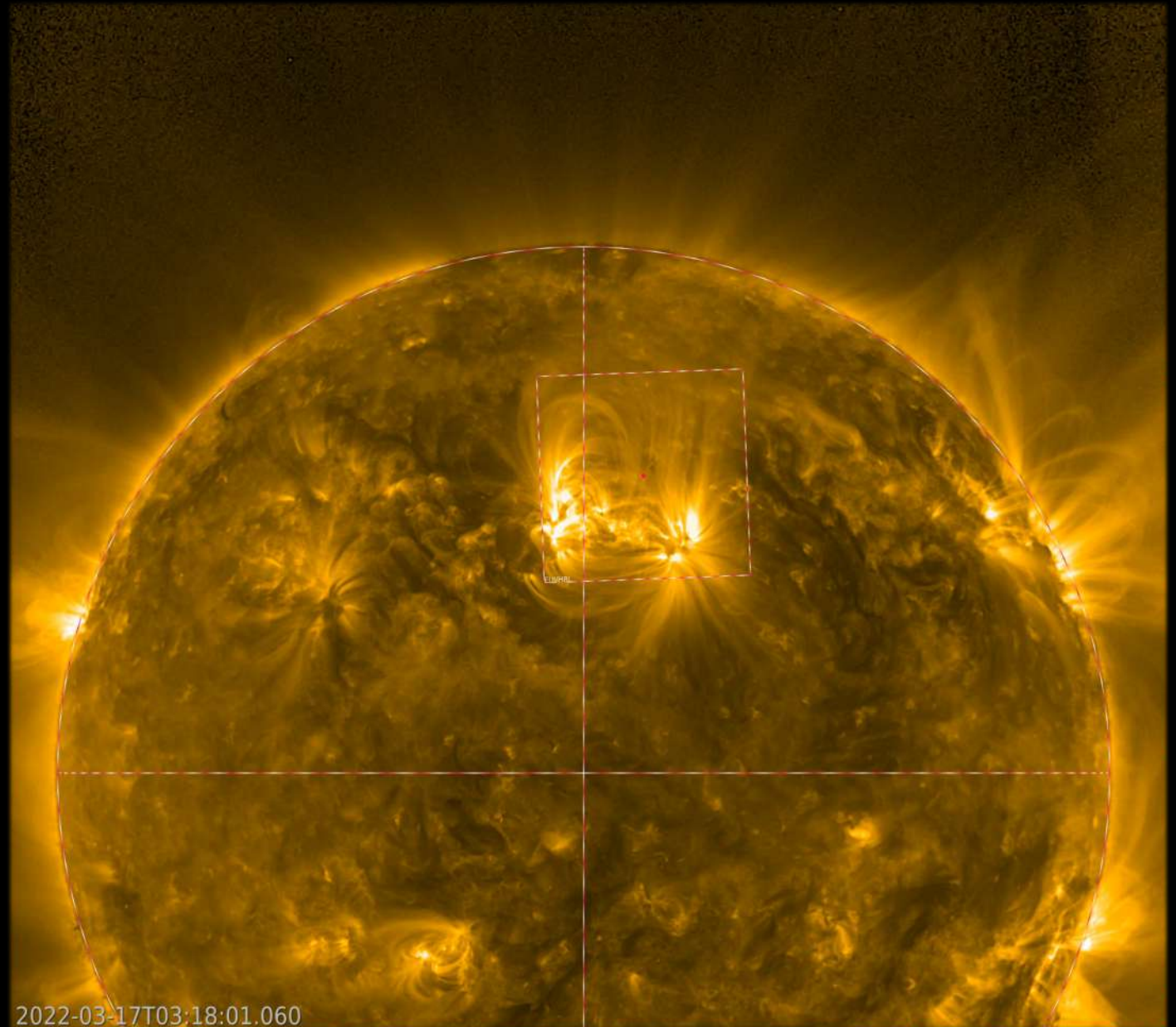
What's the future about ?

Mirror, Mirror, ...

The Future (of instrumentation)

- Higher resolution
- Compactness
- Lightness
- Sensitivity

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The Future (of missions)

Looking from other points of view:

- VIGIL



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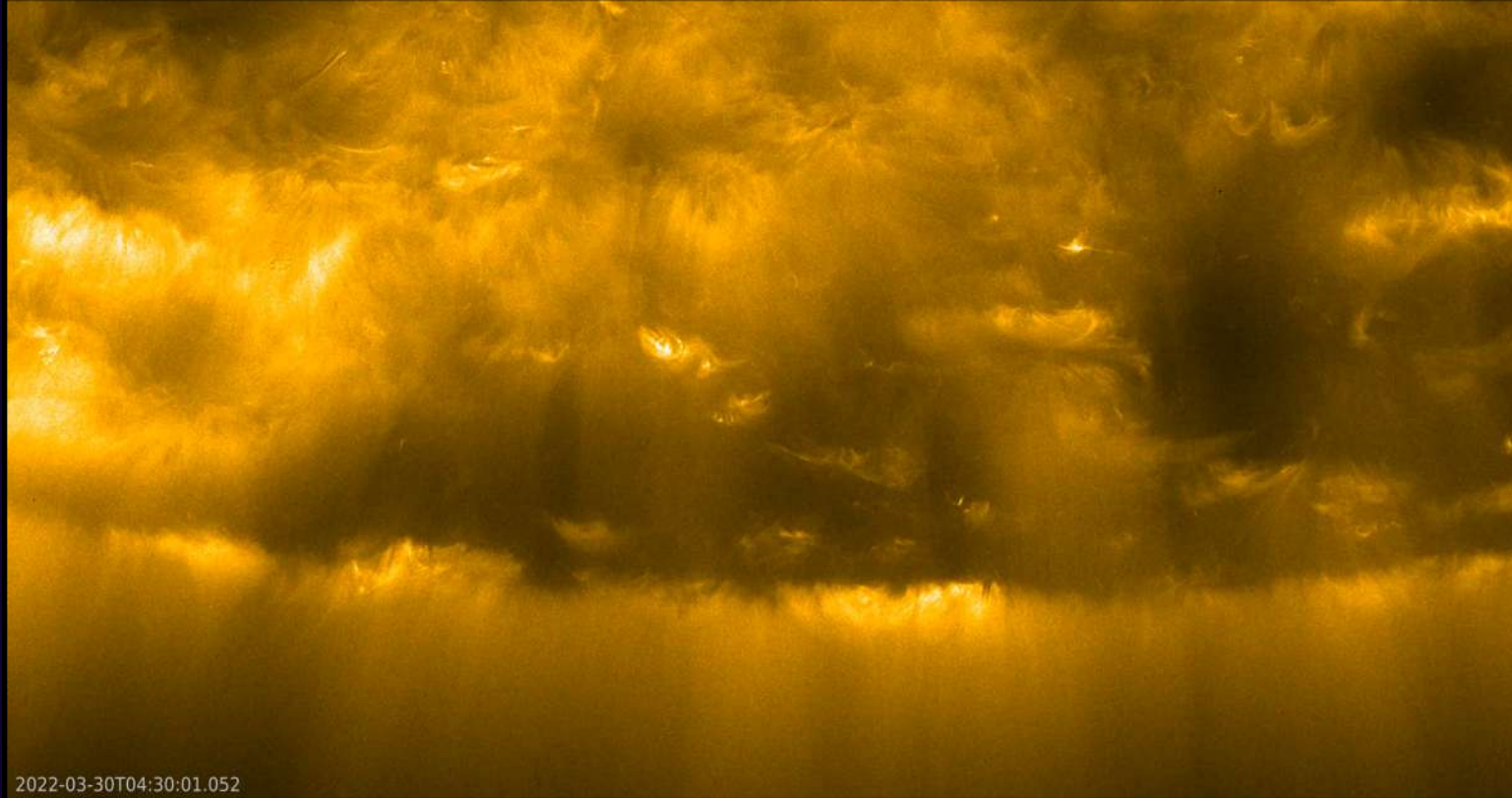


The Future (of missions)

Looking from other points of view:

- SOLARIS

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Thank you

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