EUI on Solar Orbiter

A different EUV corona

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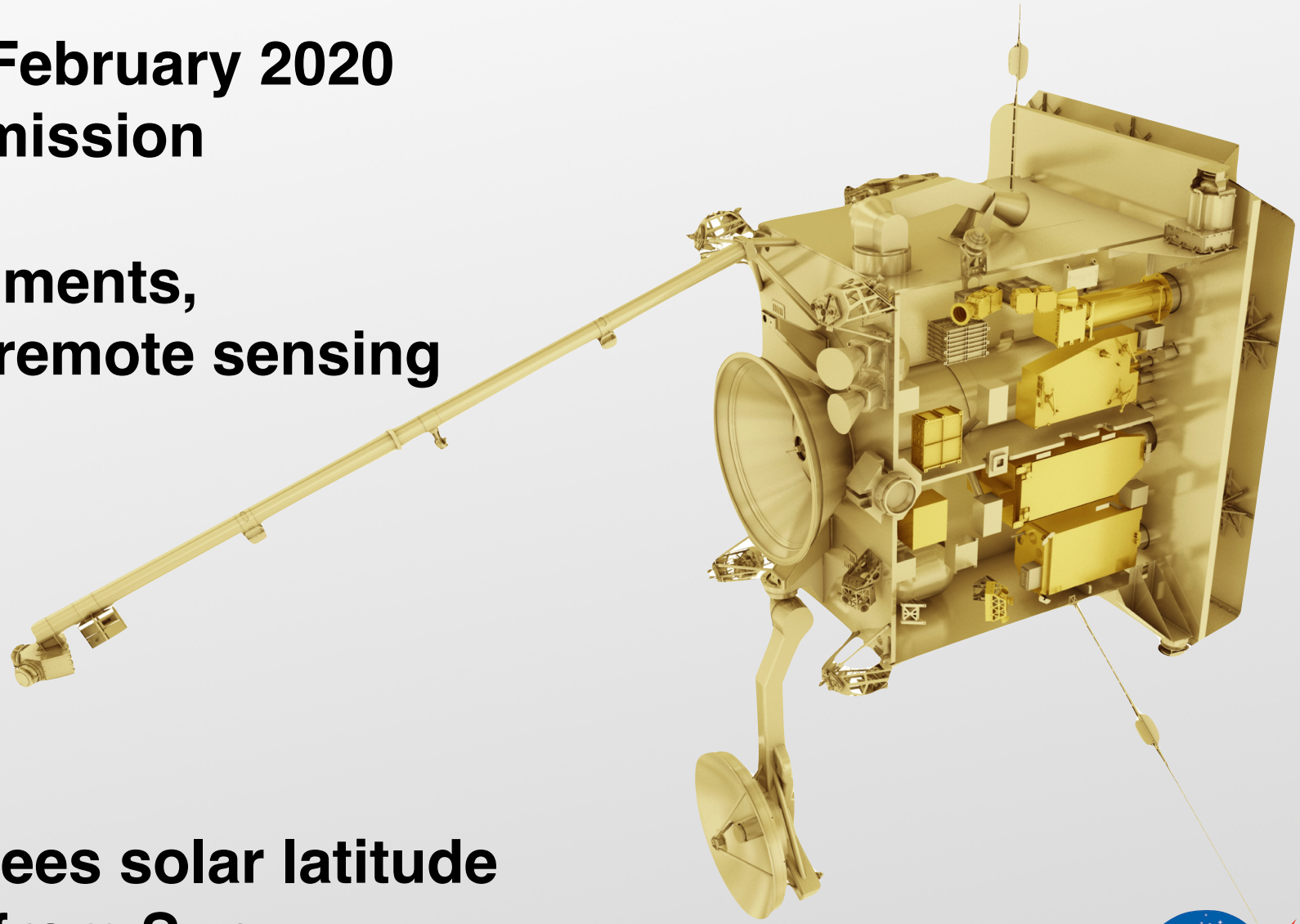
2018 SDO Science Workshop: Catalyzing Solar Connections, Gent (Belgium)
Session 5: Frontier: Solar Poles Exploration and New Prospects
2018 Oct 31, Wed 13:45

Solar Orbiter

- **Launch February 2020**
- **10 year mission**

- **10 instruments,**
  in-situ &remote sensing



- **>30 degrees solar latitude**
- **<0.3 AU from Sun**

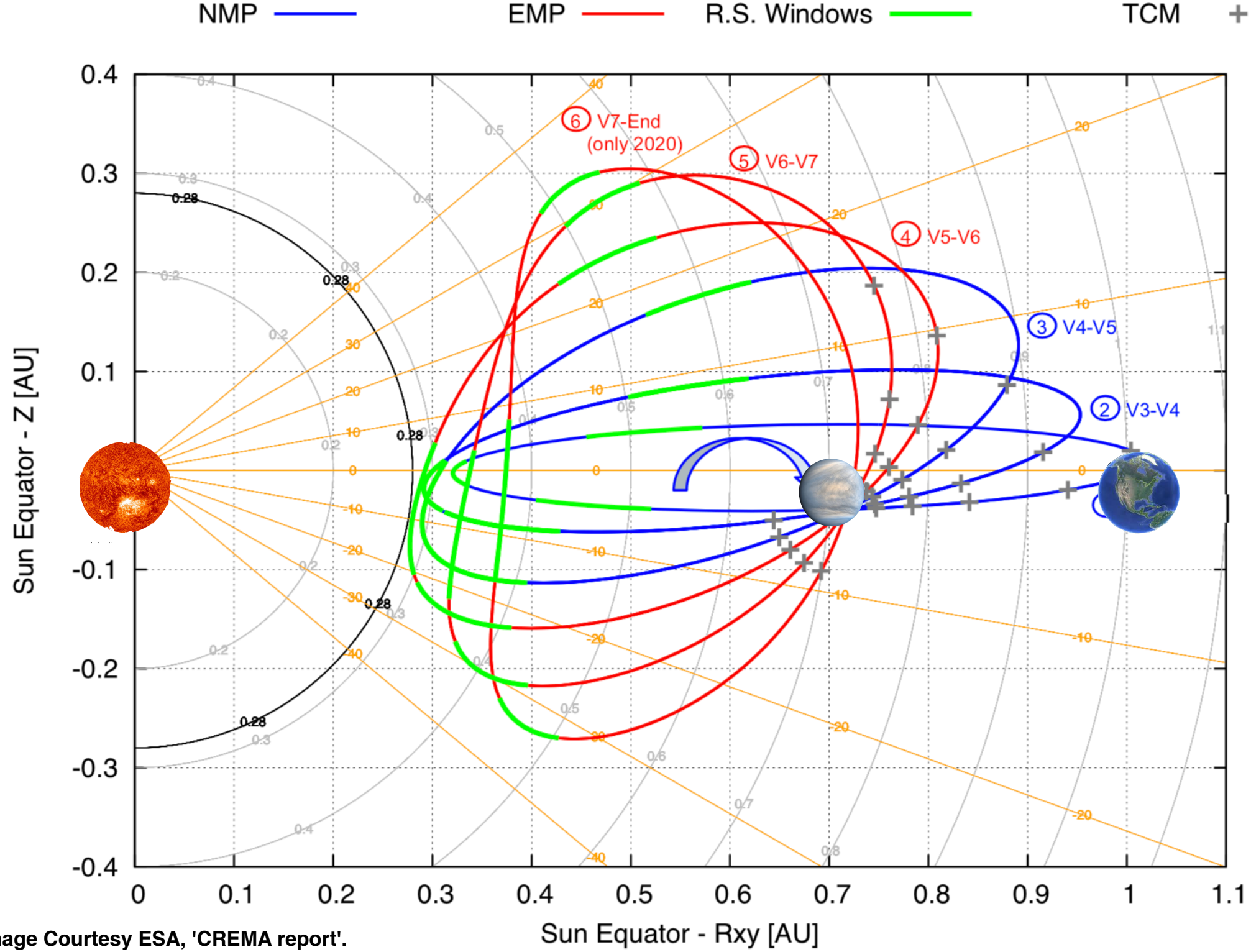


Image Courtesy ESA, 'CREMA report'.

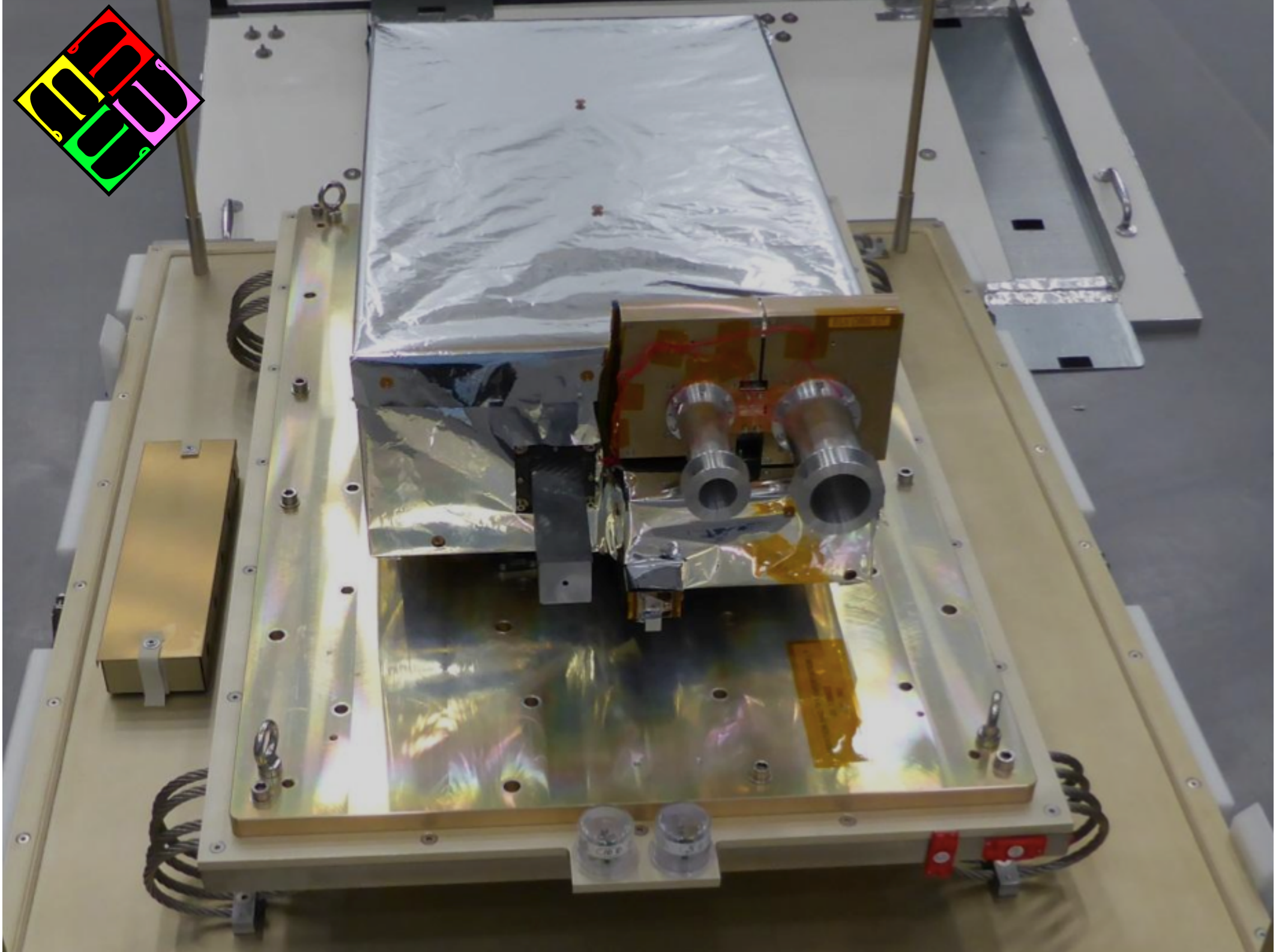
Airbus UK

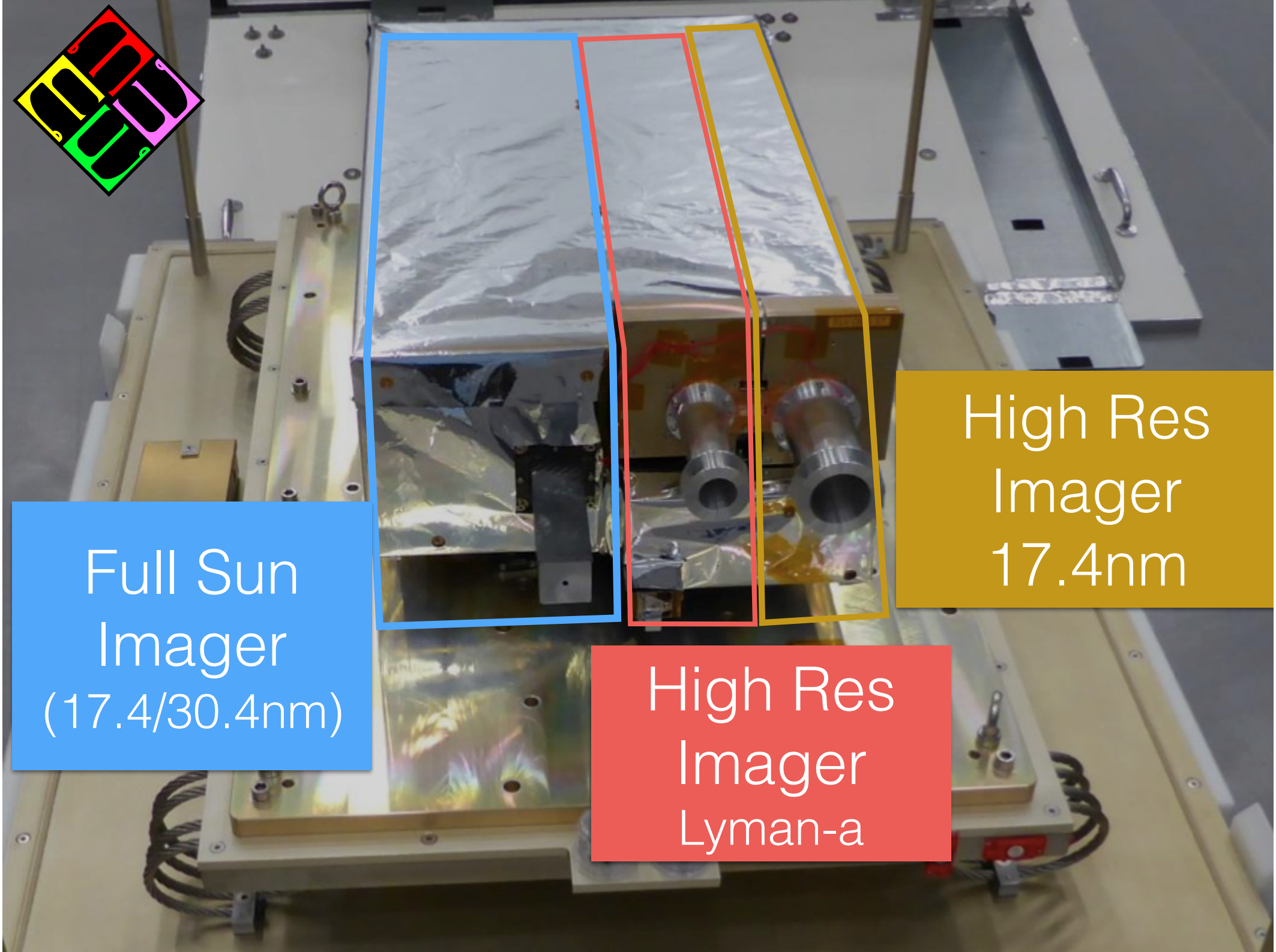
SPICE Spectrometer
STIX: X-ray Telescope
EUI: Extreme Ultraviolet Imagers
METIS Coronagraph
PHI: Polarimetric and Helioseismic Imager
Airbus UK
AIRBUS
AIRBUS DEFENCE & SPACE

Airbus UK

Airbus UK

SPICE
STIX
EUI
METIS
PHI

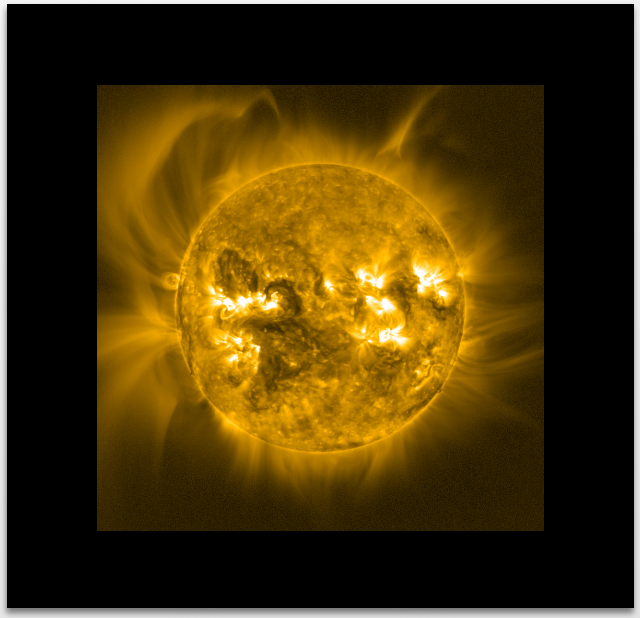


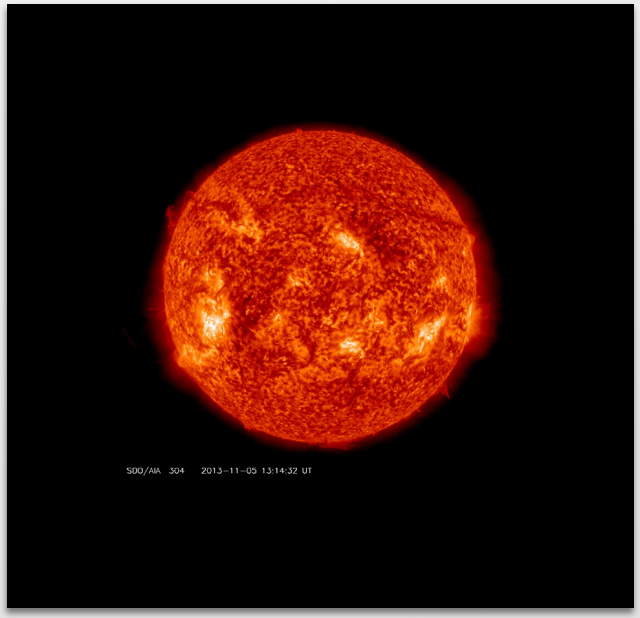

Full Sun
Imager
(17.4/30.4nm)
High Res
Imager
Lyman-a
High Res
Imager
17.4nm

FSI: Full Sun Imager

FOV: 3.8°x3.8°, @ 0.28 AU: 4 Rsun x 4 Rsun

17nm





30.4nm

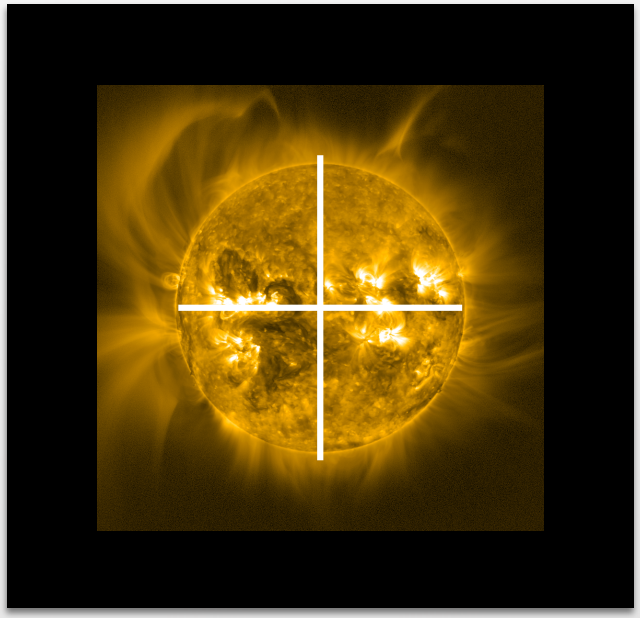
resolution: 9 arcsec on 2 pixels

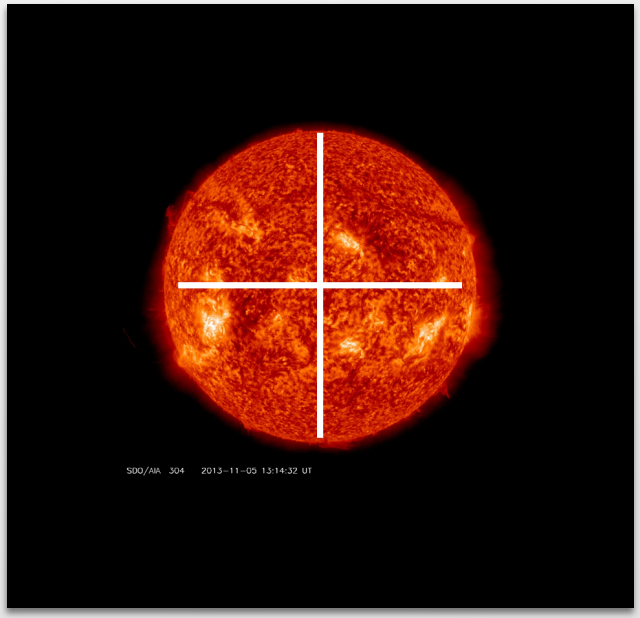
@ 0.28 AU =1830 km on 2 pixels

FSI: Full Sun Imager

FOV: 3.8°x3.8°, @ 0.28 AU: 4 Rsun x 4 Rsun

17nm





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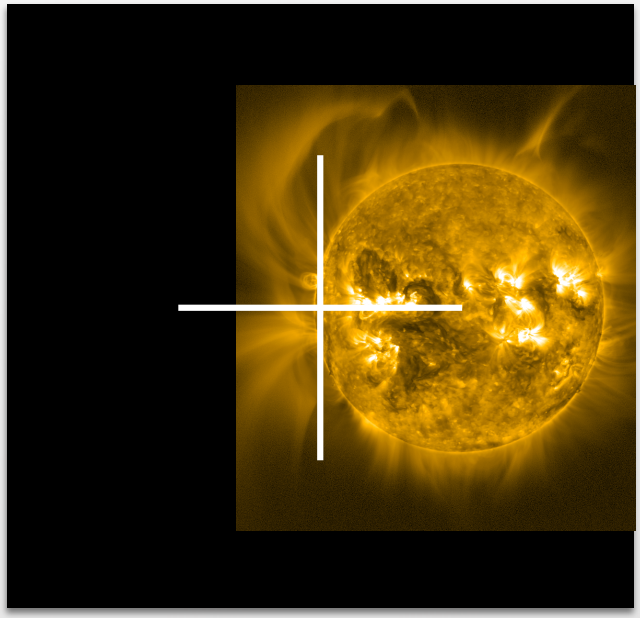
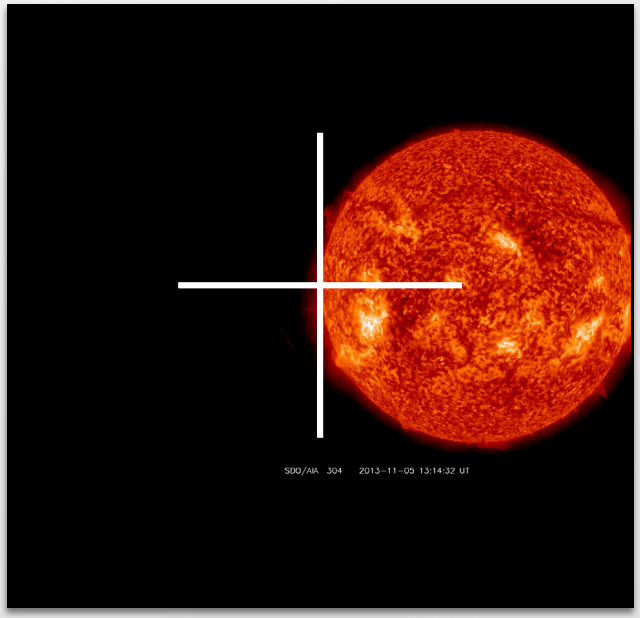


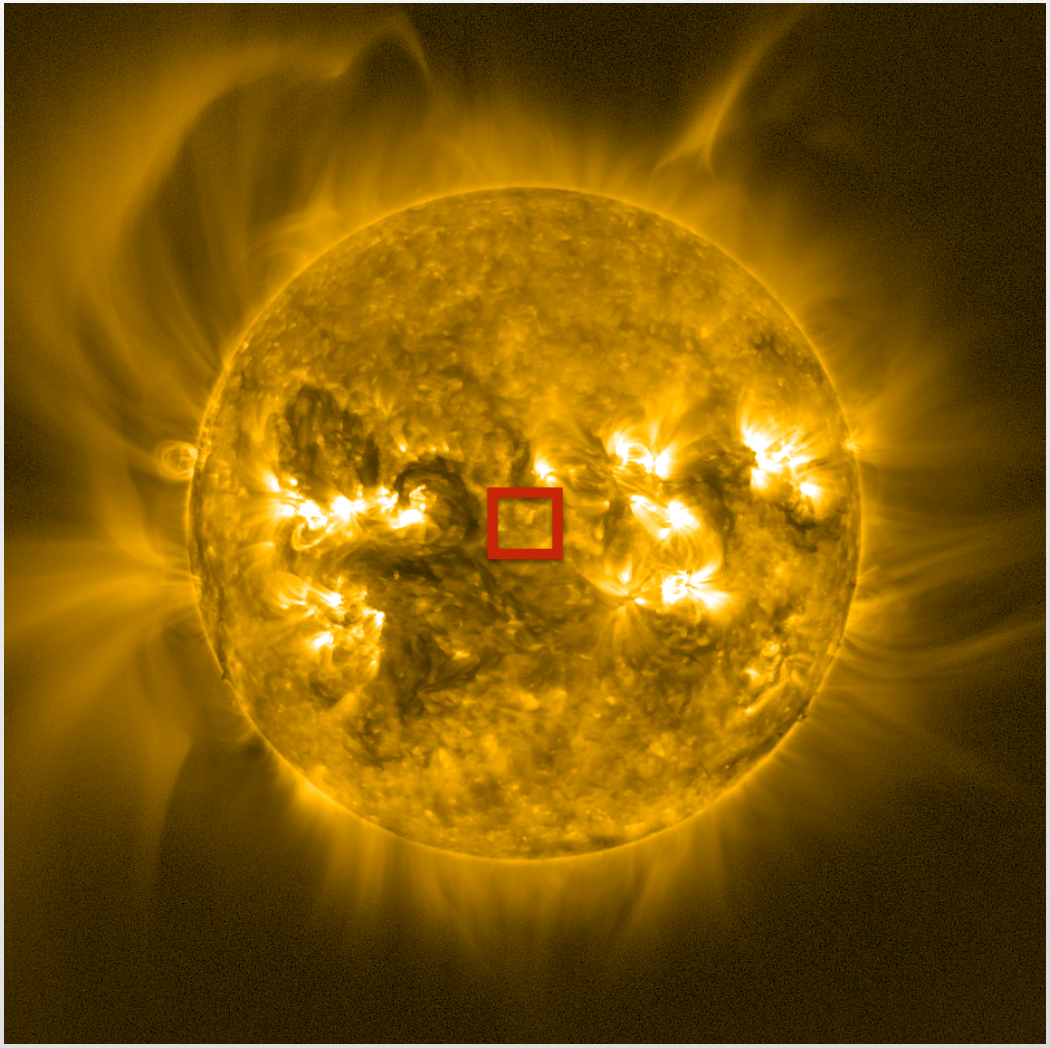


30.4nm

resolution: 9 arcsec on 2 pixels

@ 0.28 AU =1830 km on 2 pixels

HRI:High Resolution Imagers



FOV:

17’x17’

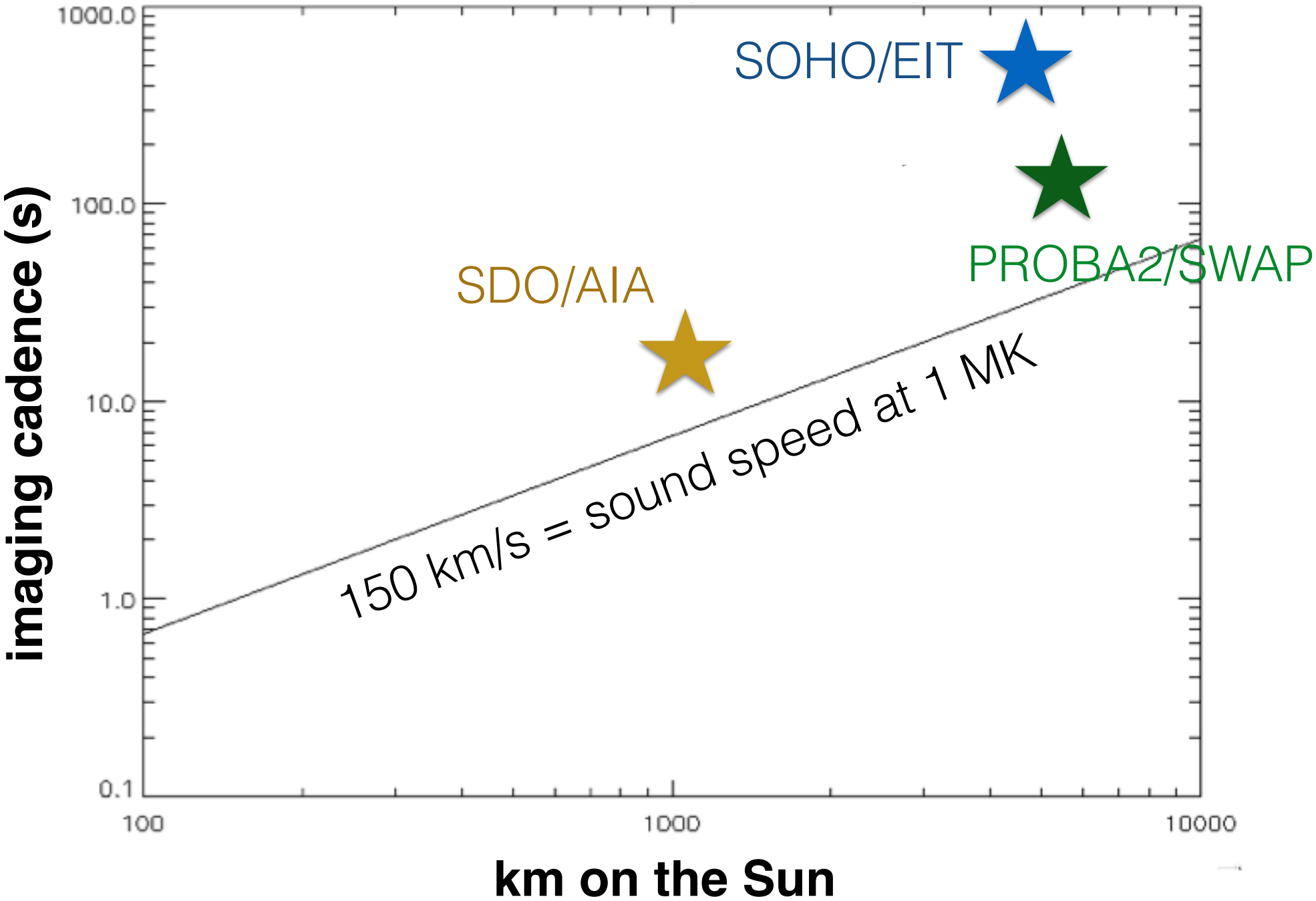
@ 0.28 AU = (0.16 R)^2

resolution:

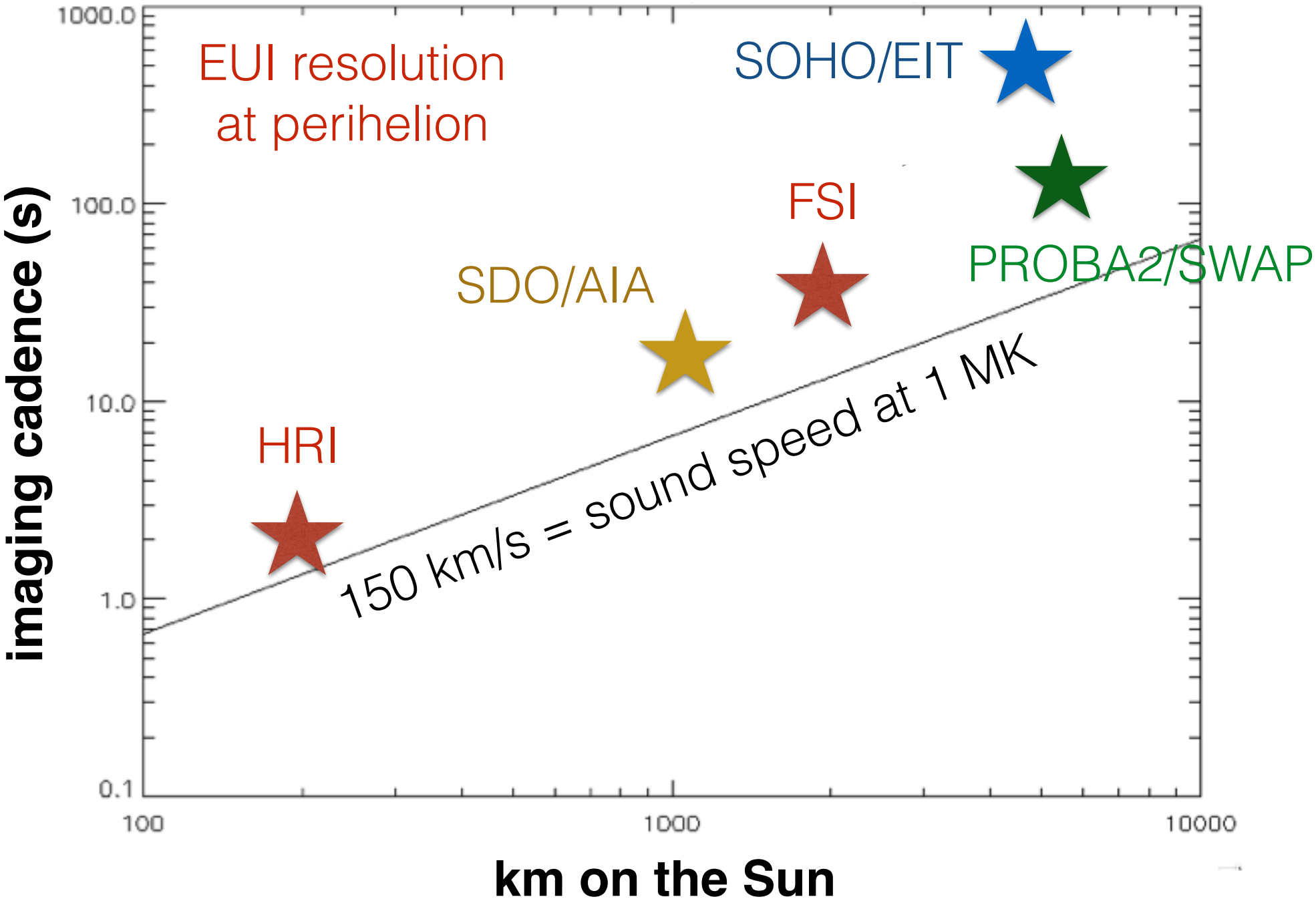
1 arcsec on 2 pixels

@ 0.28 AU = 200km

High spatial resolution requires high temporal resolution



High spatial resolution requires high temporal resolution

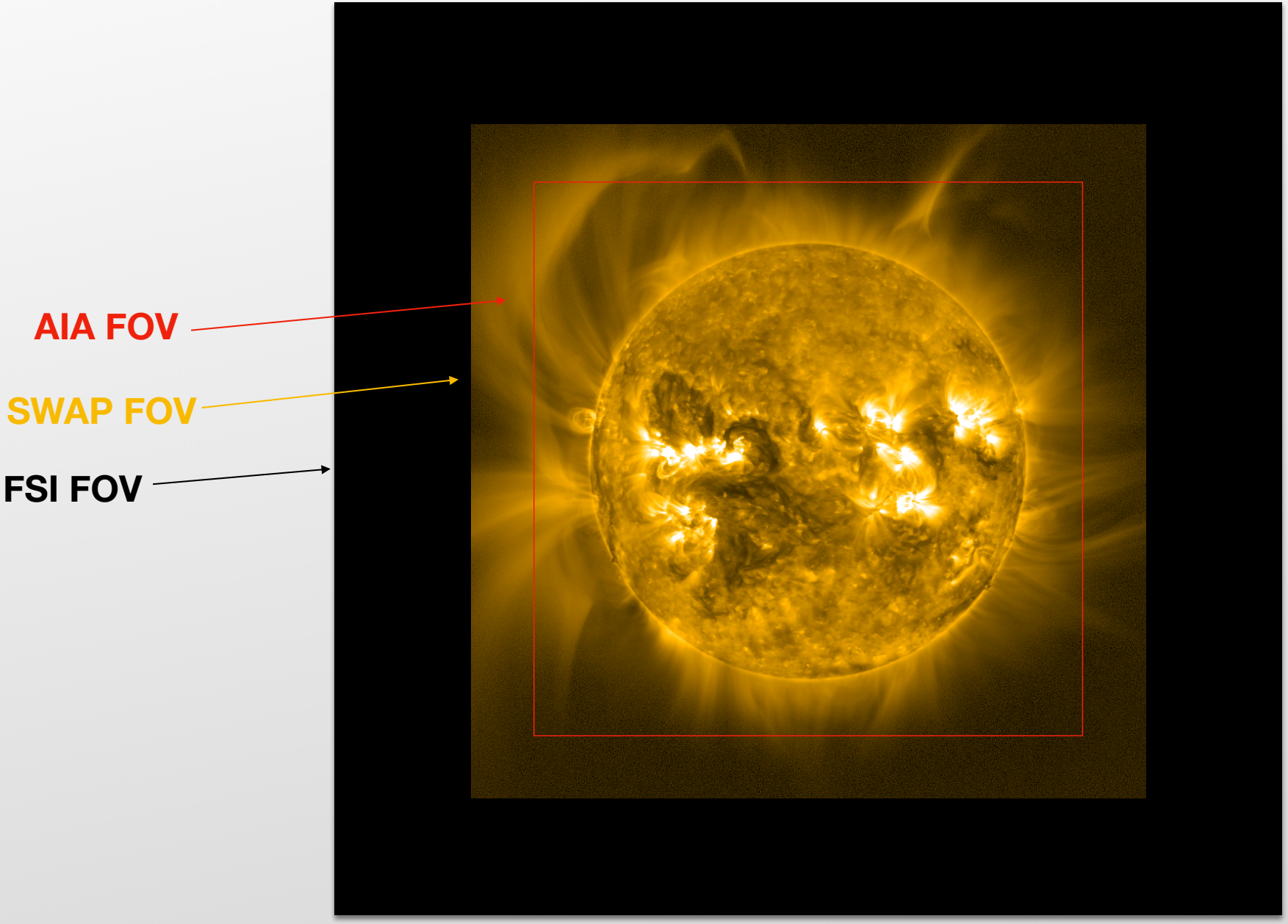


SolO connection science

- What drives the solar wind and where does the coronal magnetic field originate from?
- How do solar transients drive heliospheric variability?
- How do solar eruptions produce energetic particle radiation that fills the heliosphere?
- How does the solar dynamo work and drive connections between the Sun and the heliosphere?

→ **Solar Orbiter Activity Plan (SAP)**

The extended corona



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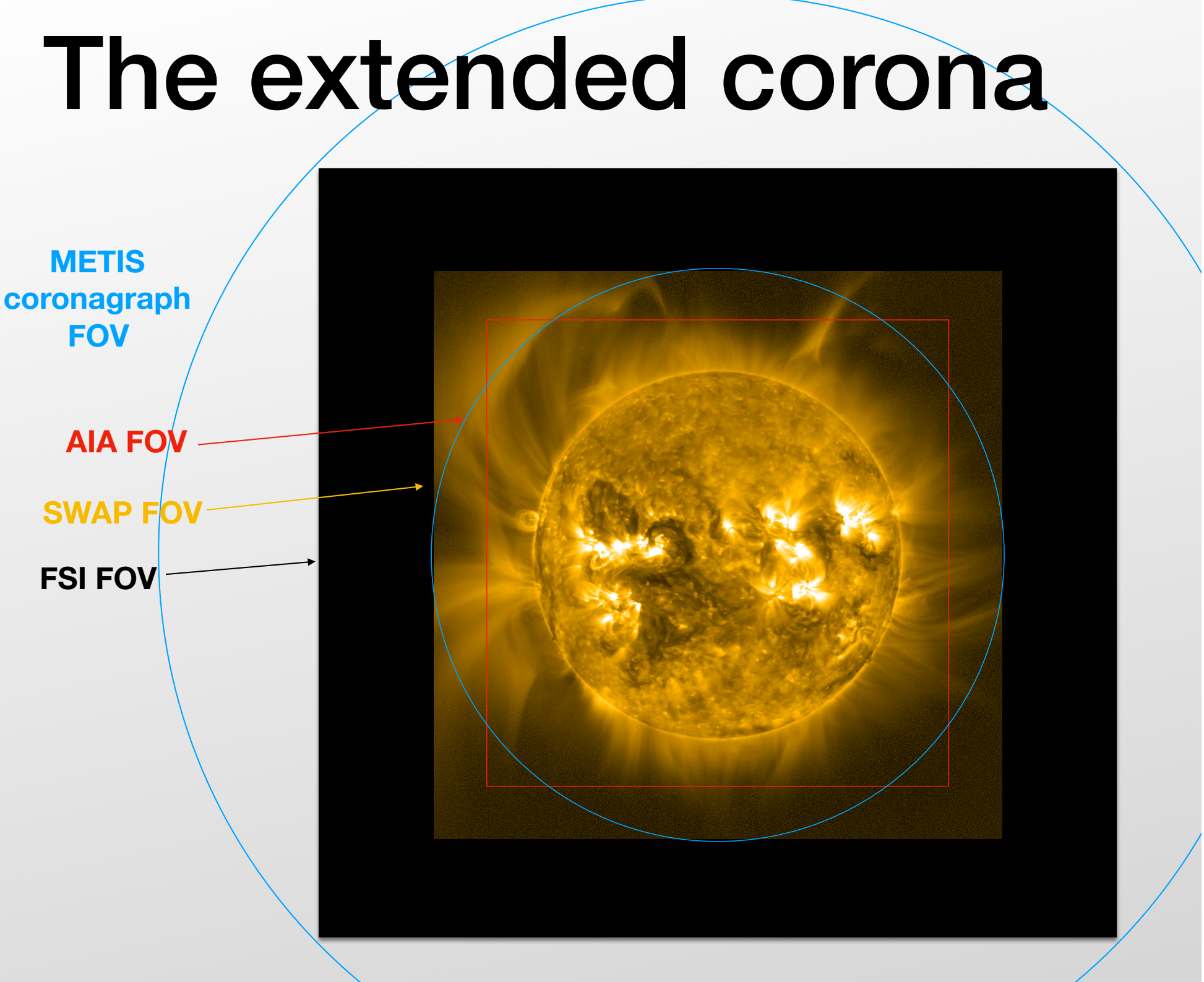
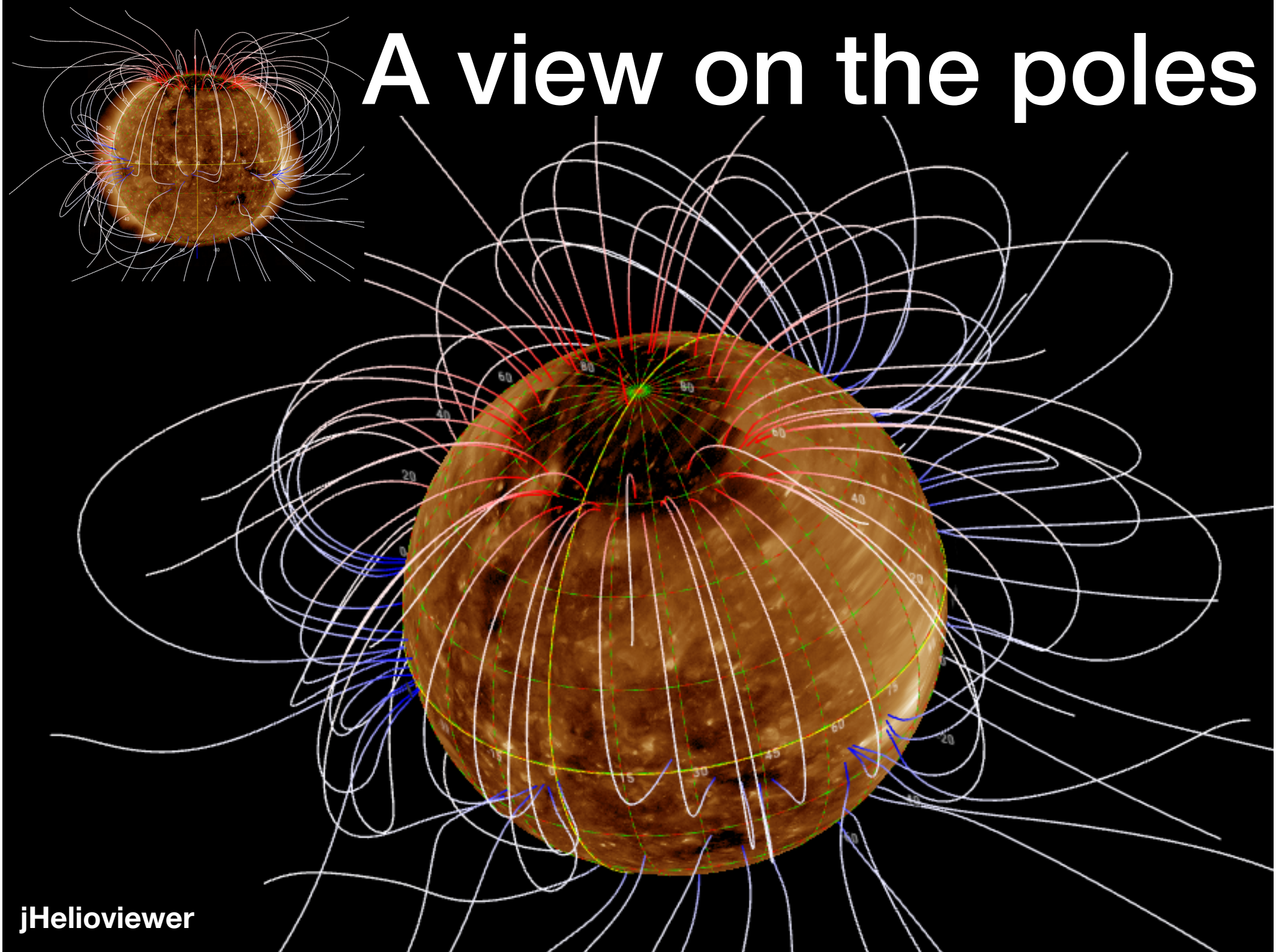
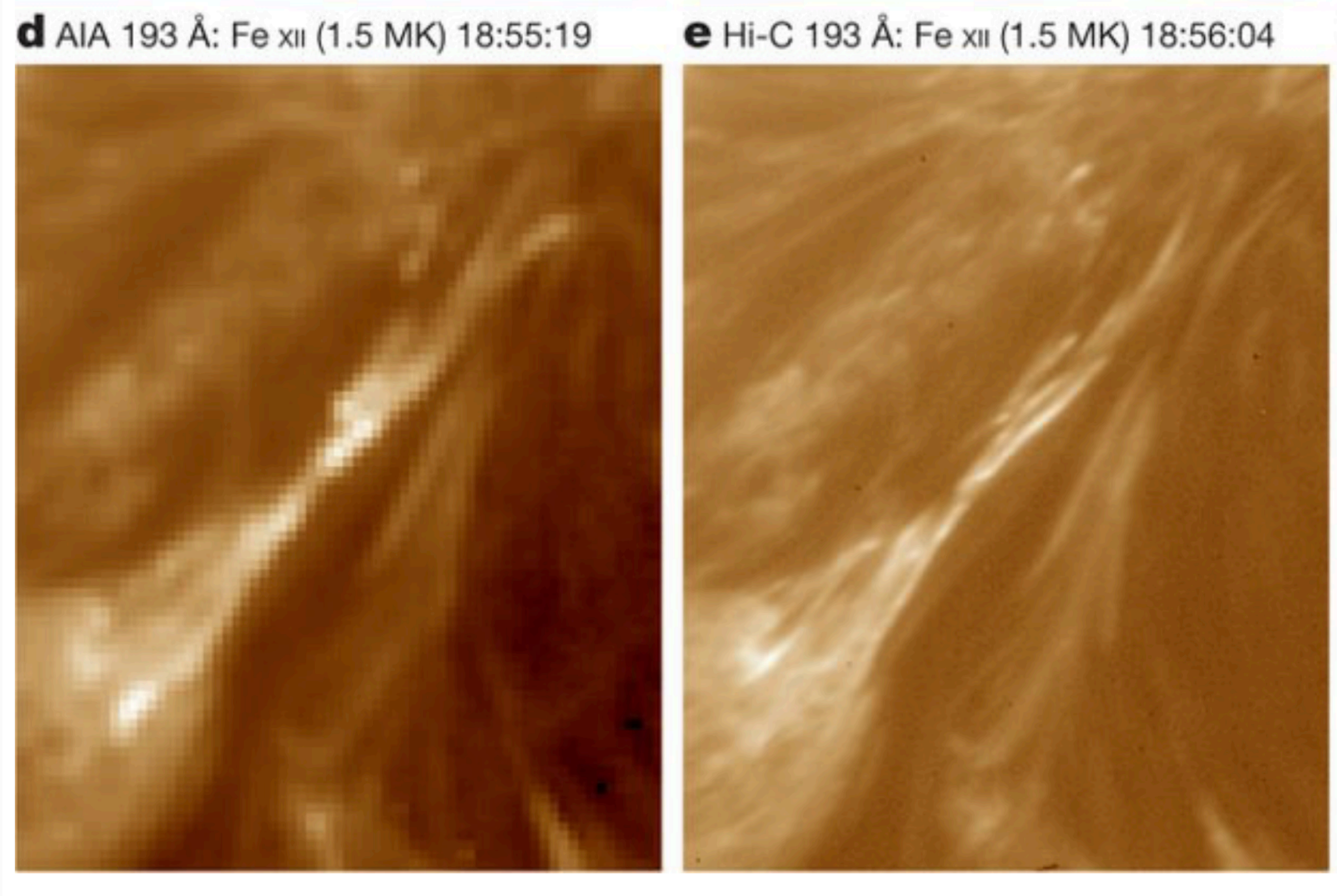


A view on the poles



jHelioviewer

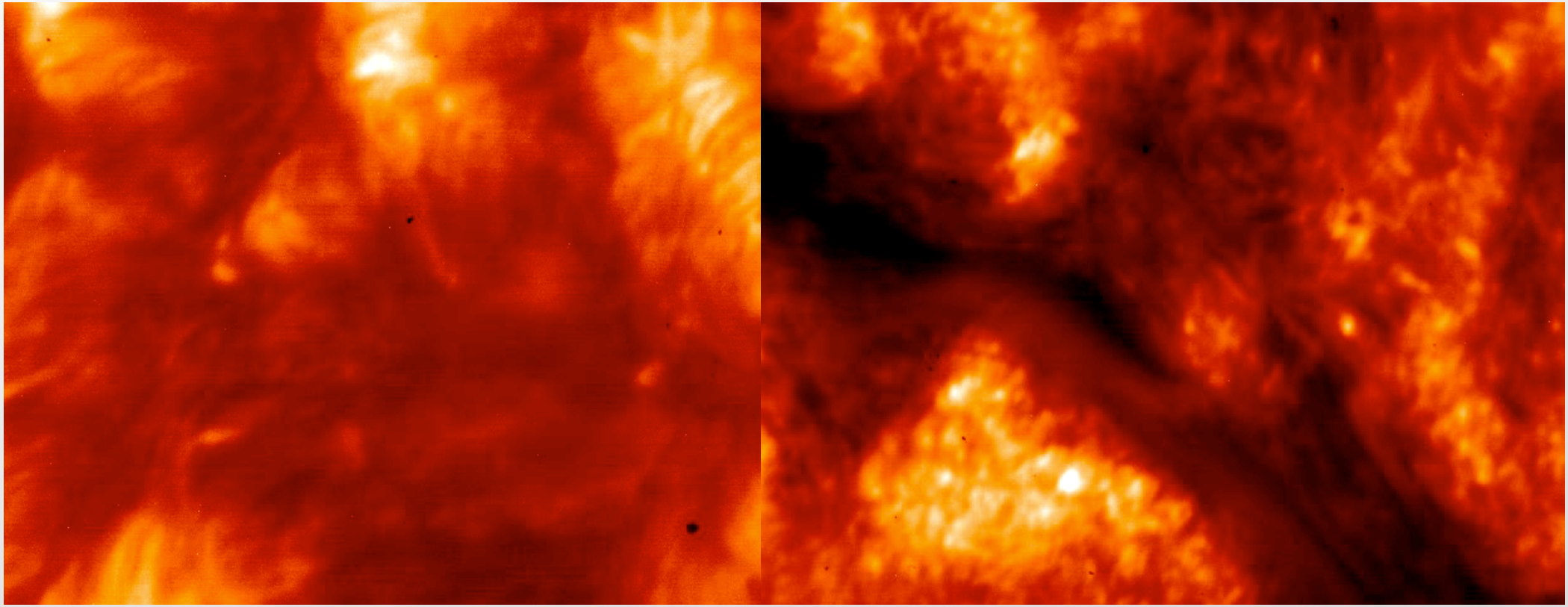
High Resolution dynamics



Hi-C sounding rocket

Cirtain et al 2013 Nature

High Resolution



VAULT sounding rocket

Vourlidas et al 2010 SolPhys

Summary

- Solar Orbiter launch February 2020
- >30deg solar latitude, <0.3 Rsun
- EUI is a package of 3 EUV imagers onboard
- Full Sun Imager: large FOV in 17nm & 30.4nm for connection science with heliosphere
- High Resolution Imagers: 17nm and Lyman-alpha for dynamics & structuring of solar atmosphere

EUI is brought to you by

- Centre Spatial de Liège (B)
- Institut d'Astrophysique Spatiale (F)
- Royal Observatory of Belgium (B)
- UCL-Mullard Space Science Laboratory (UK)
- Physikalisch-Meteorologisches Observatorium Davos, WRC (S)
- Max Planck Institute for Solar System Research (G)