

The CoMP-S instrument at the Lomnický Peak Observatory

Synergy with the space-born observatories

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SLOVAK RESEARCH
AND DEVELOPMENT
AGENCY

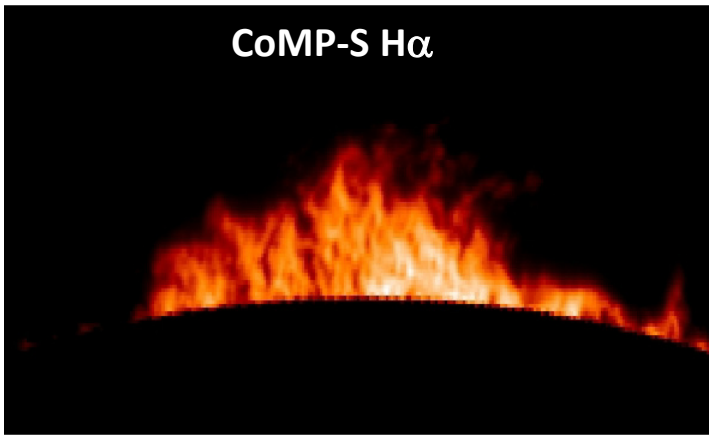


Example of observation and results

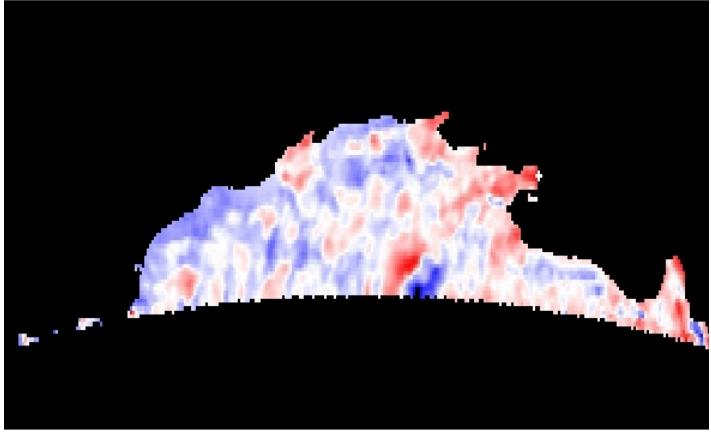
- taken during HOP 186
„Mass loading of quiescent prominences from multi-wavelength observations“
PI: P. Schwartz
- a quiescent prominence on 20 October 2012 at 07:09 UT
- H α profile scanned in 11 wavelength settings, only Stokes I
- total scan time: 20.75 s
- wavelength steps
core: $\pm 0.1 \text{ \AA}$, wings: $\pm 0.2 \text{ \AA}$
- FWHM of filter: 0.45 \AA
- post-facto 4×4 pixel binning, final sampling: 1.3 arcsec/px
- Gaussian fitting of 11 samples of H α profiles through formula:

$$f(\lambda) = A \exp\left\{-\frac{(\lambda - \lambda_c)^2}{2w^2}\right\}$$

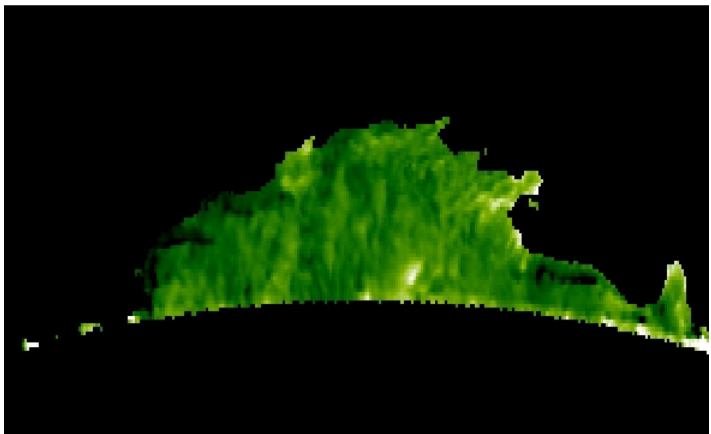
- derived parameters:
 - Gaussian amplitude A
 - Dopplershift of λ_c
 - Gaussian halfwidth w



Gaussian amplitude



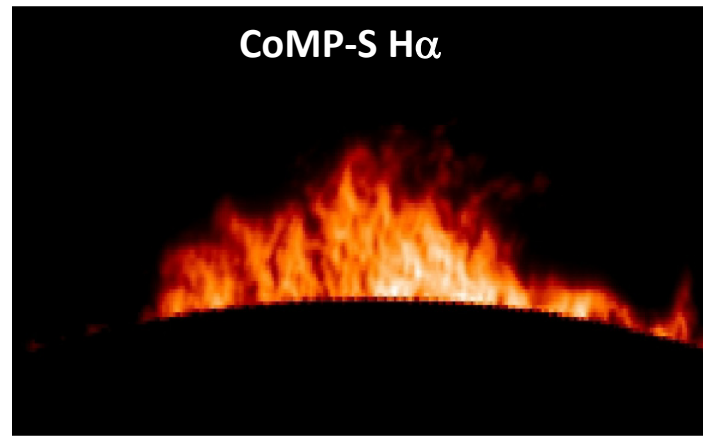
Dopplershifts: $\pm 12 \text{ km s}^{-1}$



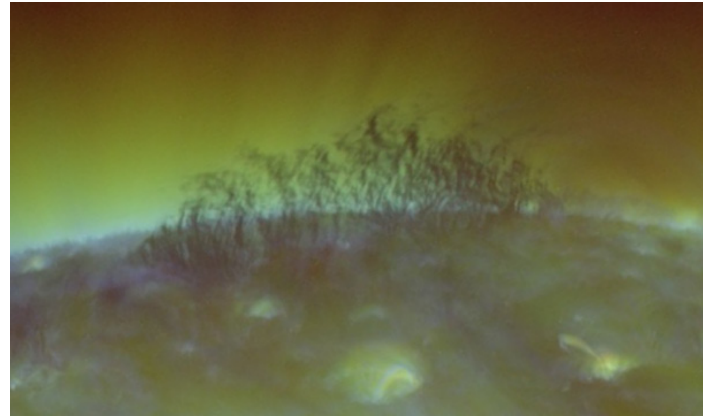
Gaussian halfwidths: $0.2 - 0.45 \text{ \AA}$

Example of observation and synergy

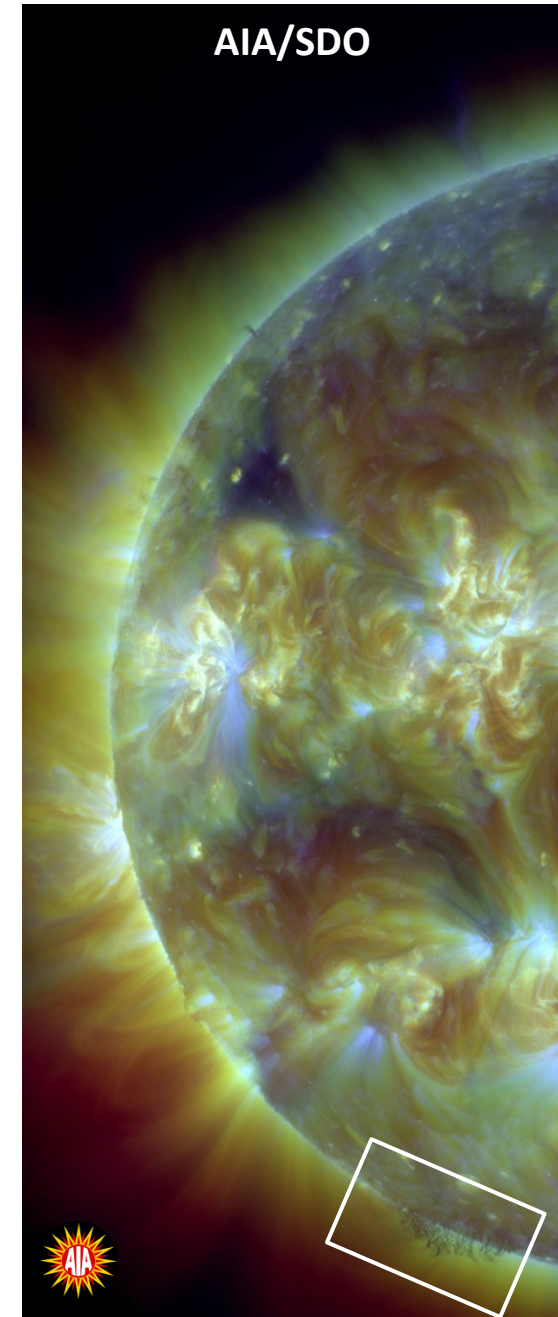
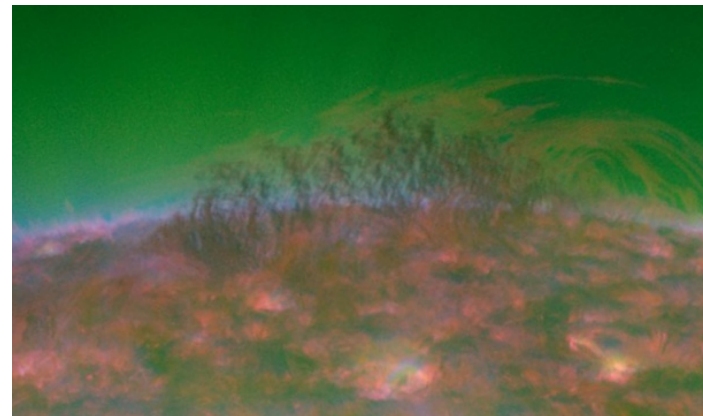
- a quiescent prominence on 20 October 2012 at 07:09 UT
- at position angle: 170°



AIA/SDO 07:11 UT
211 Å + 193 Å + 171 Å

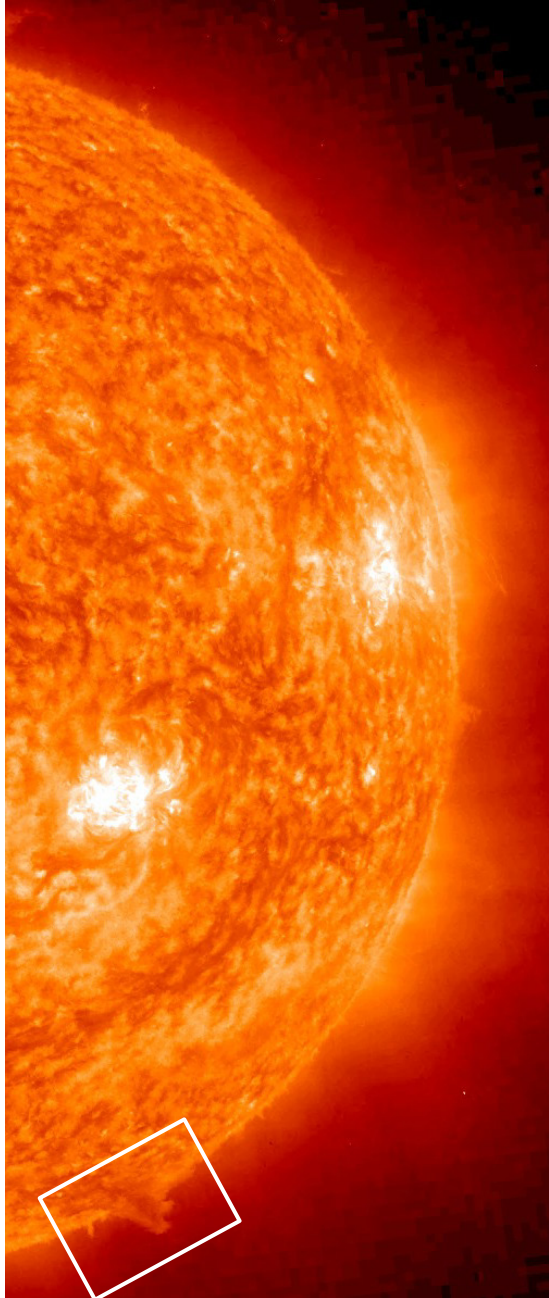


AIA/SDO 07:11 UT
304 Å + 211 Å + 171 Å



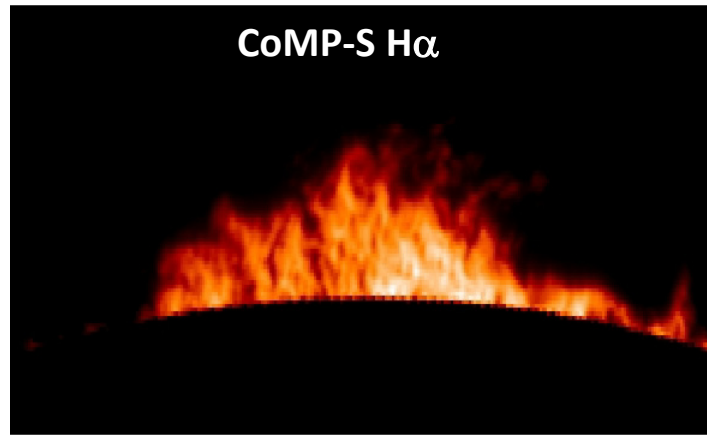
07:11 UT, 211 Å + 193 Å + 171 Å

STEREO Behind EUVI 304 Å



07:07 UT

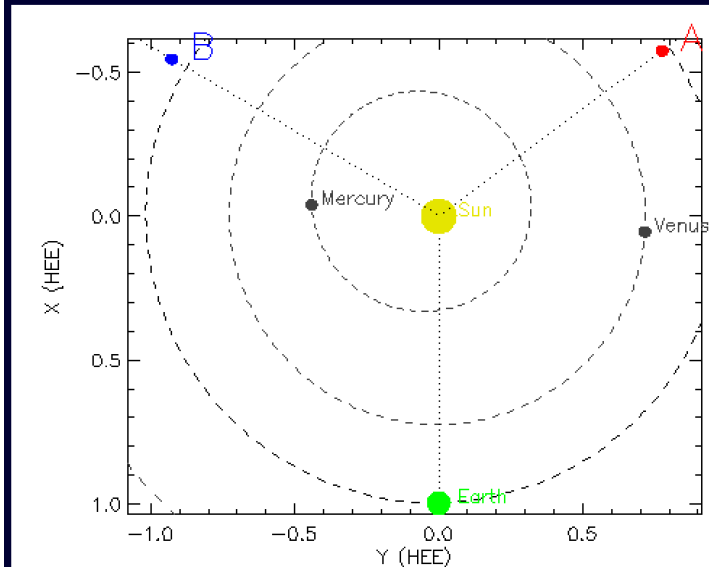
CoMP-S H α



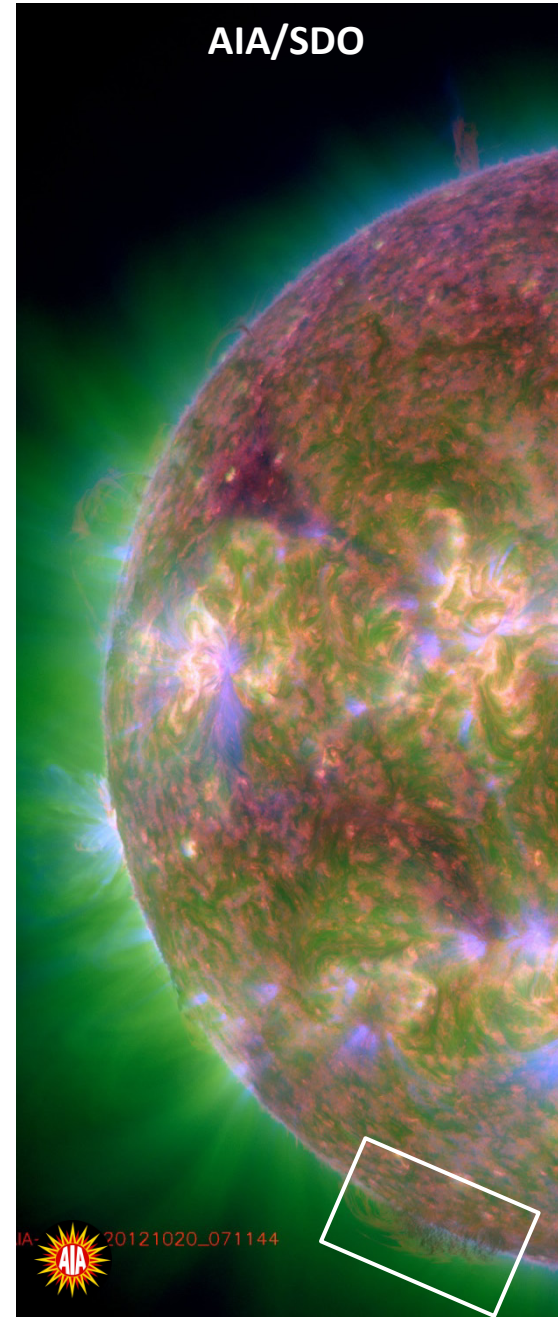
07:09 UT

Example of observation and synergy

Positions of STEREO A and B for 2012-10-20 08:00 UT



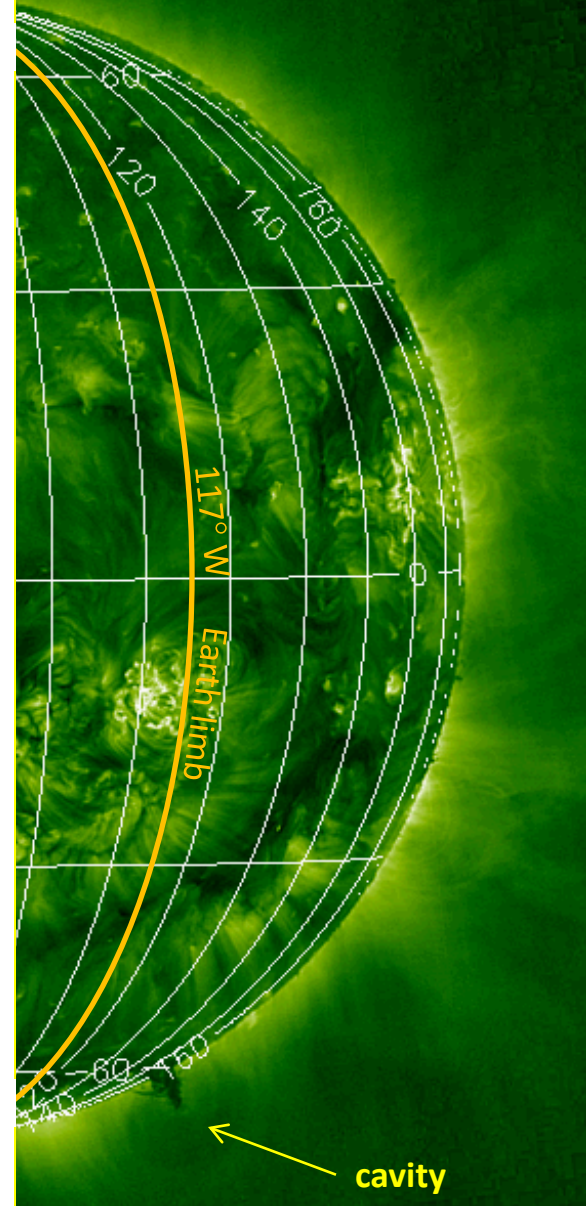
AIA/SDO



AIA 20121020_071144

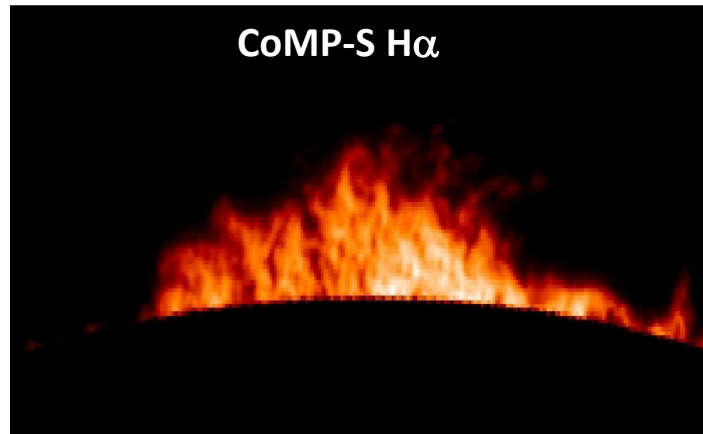
07:11 UT, 304 Å + 211 Å + 171 Å

STEREO Behind EUVI 195 Å



10:00:30 UT

CoMP-S H α



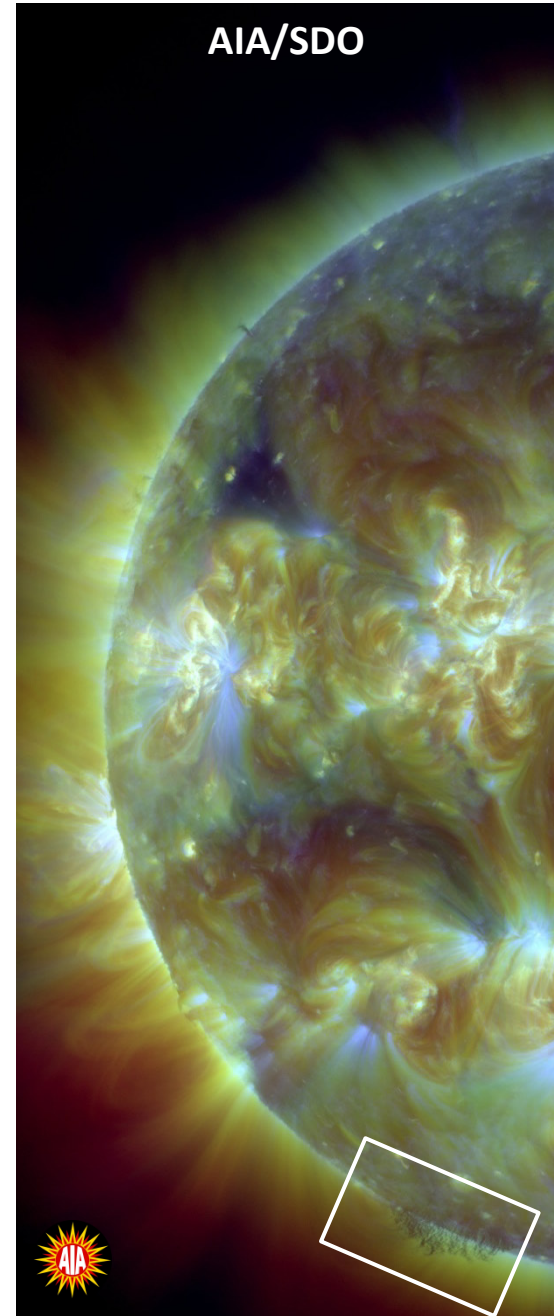
07:09 UT

Example of observation and synergy

- Carrington grid superimposed
- the Earth-facing limb at 117° West
- the prominence is well towards the Earth
- EUVI-B sees probably the line of sight integration of the hedge-row structures seen in CoMP-S and AIA

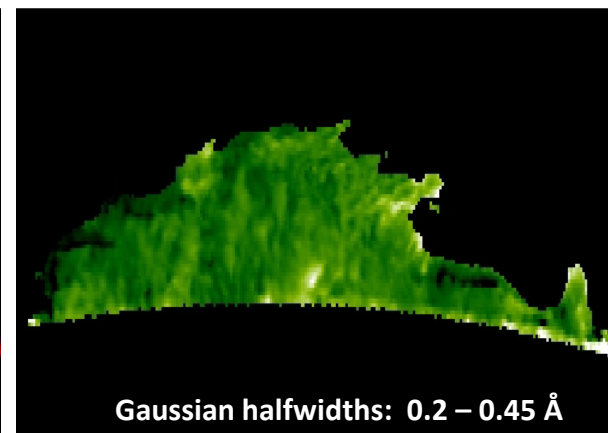
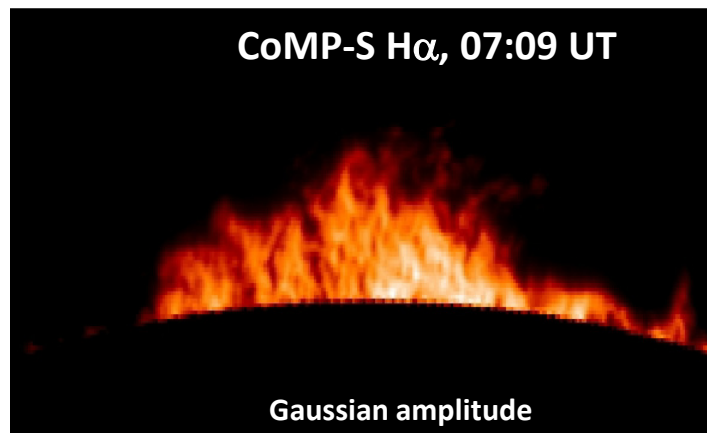
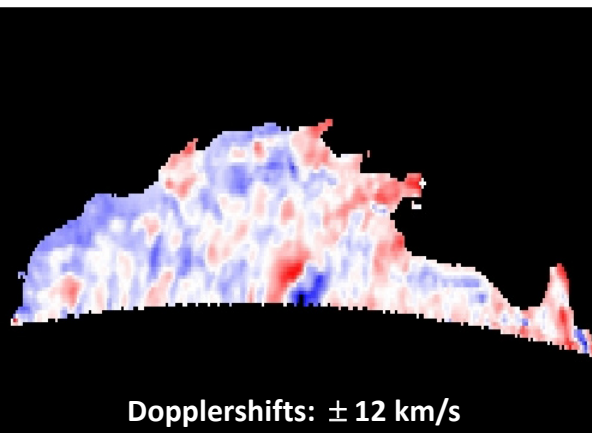
courtesy: Angelos Vourlidas, Naval Research Laboratory

AIA/SDO



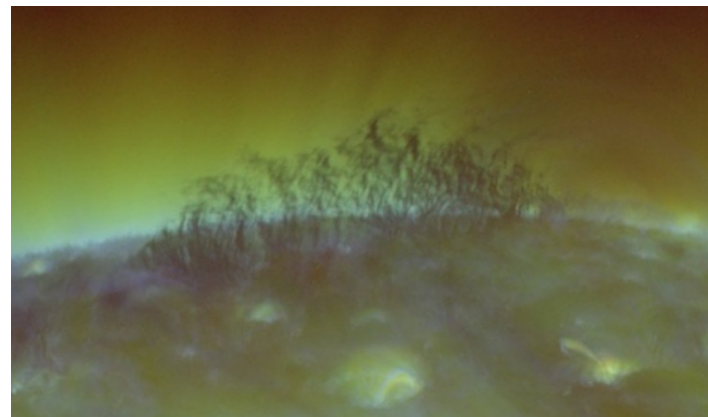
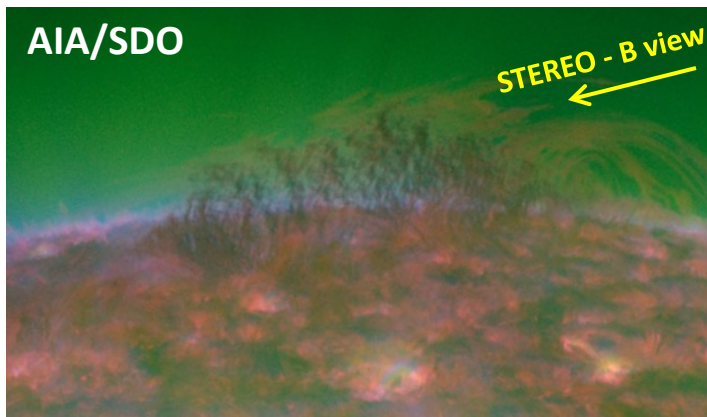
07:11 UT, 211 Å + 193 Å + 171 Å





07:11 UT

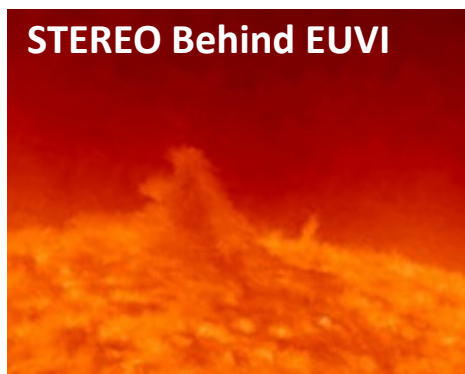
304 Å
+
211 Å
+
171 Å



07:11 UT

211 Å
+
193 Å
+
171 Å

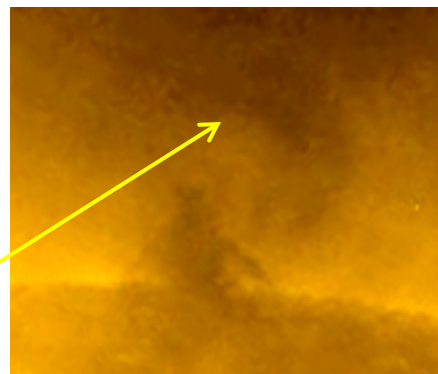
STEREO Behind EUVI



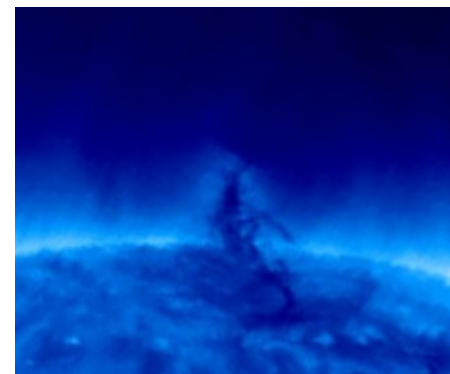
304 Å, 07:07 UT



195 Å, 07:06 UT



284 Å, 06:17 UT



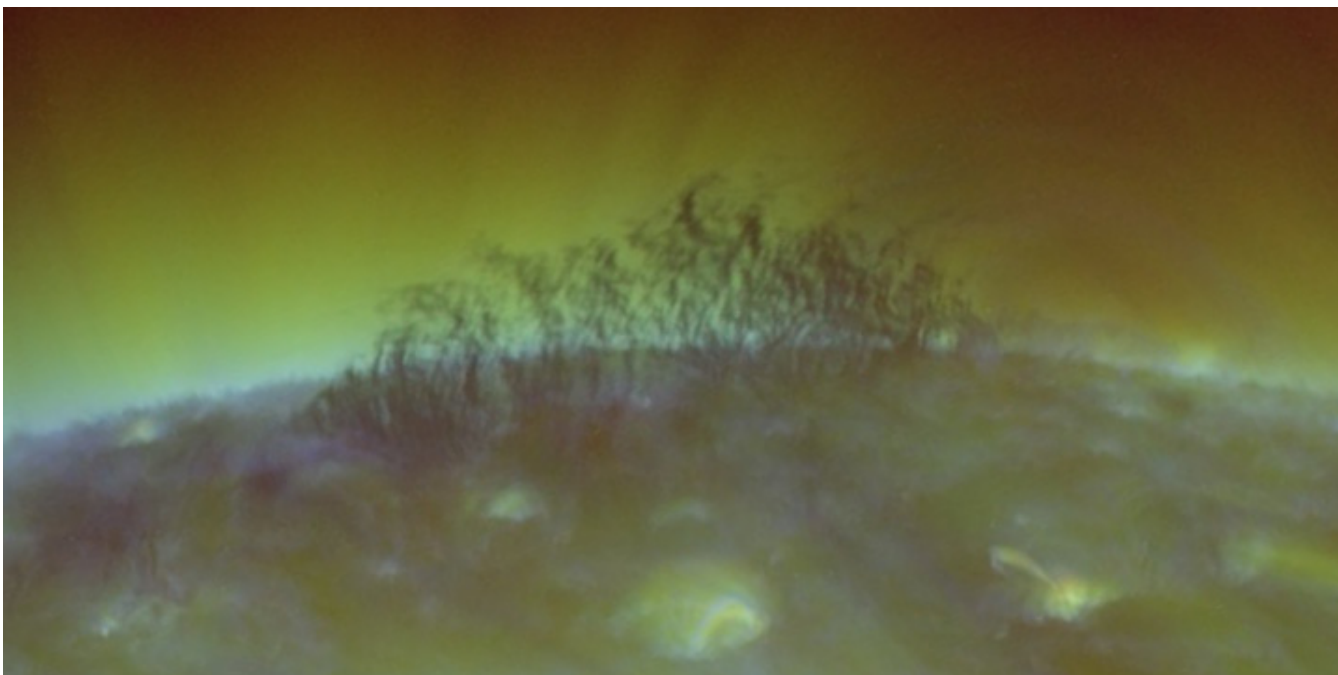
171 Å, 06:14 UT

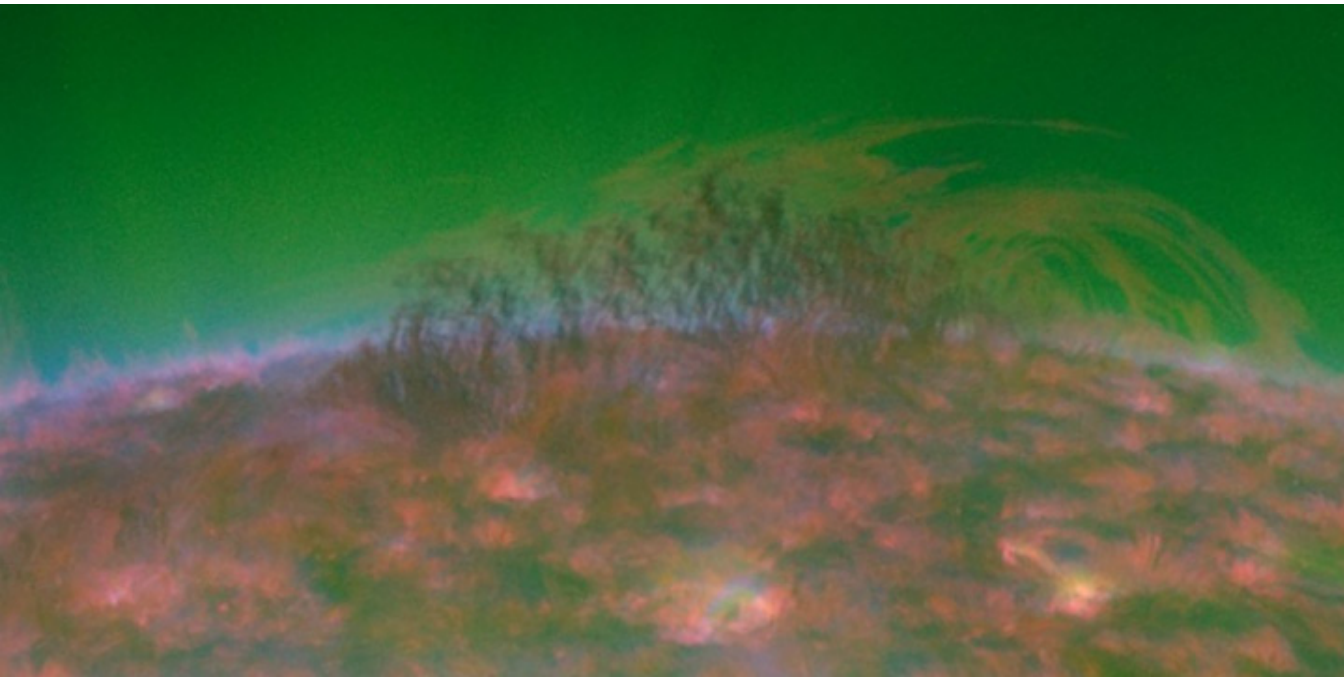
Summary

- 2D wide-field polarimeter CoMP-S at 200-mm Zeiss coronagraph became operational
- sequential measurements of several VIS and near-IR emission lines in prominences and corona in the spectral range from 530 nm to 1100 nm (since spring 2014)
- strictly simultaneous acquisition of data and the scattered light in the Earth atmosphere
- expected synergy with the space-born observatories SDO and STEREO by providing behind imagery also Dopplershifts , spectral widths, and full Stokes vector
- reduction of plarimetric data still in progress, therefore not presented here
- ready to join coordinated campaigns, please contact: J. Rybak - rybak@astro.sk

<http://www.astro.sk/LSO/COMP-S/>

CoMP-S publications: [Kučera et al. 2010: Contrib. Astron. Obs. Skalnaté Pleso, 40, 135](#)
[Schwartz et al. 2012: Contrib. Astron. Obs. Skalnaté Pleso, 42, 135](#)





VAULT II observation from
14 June 2002

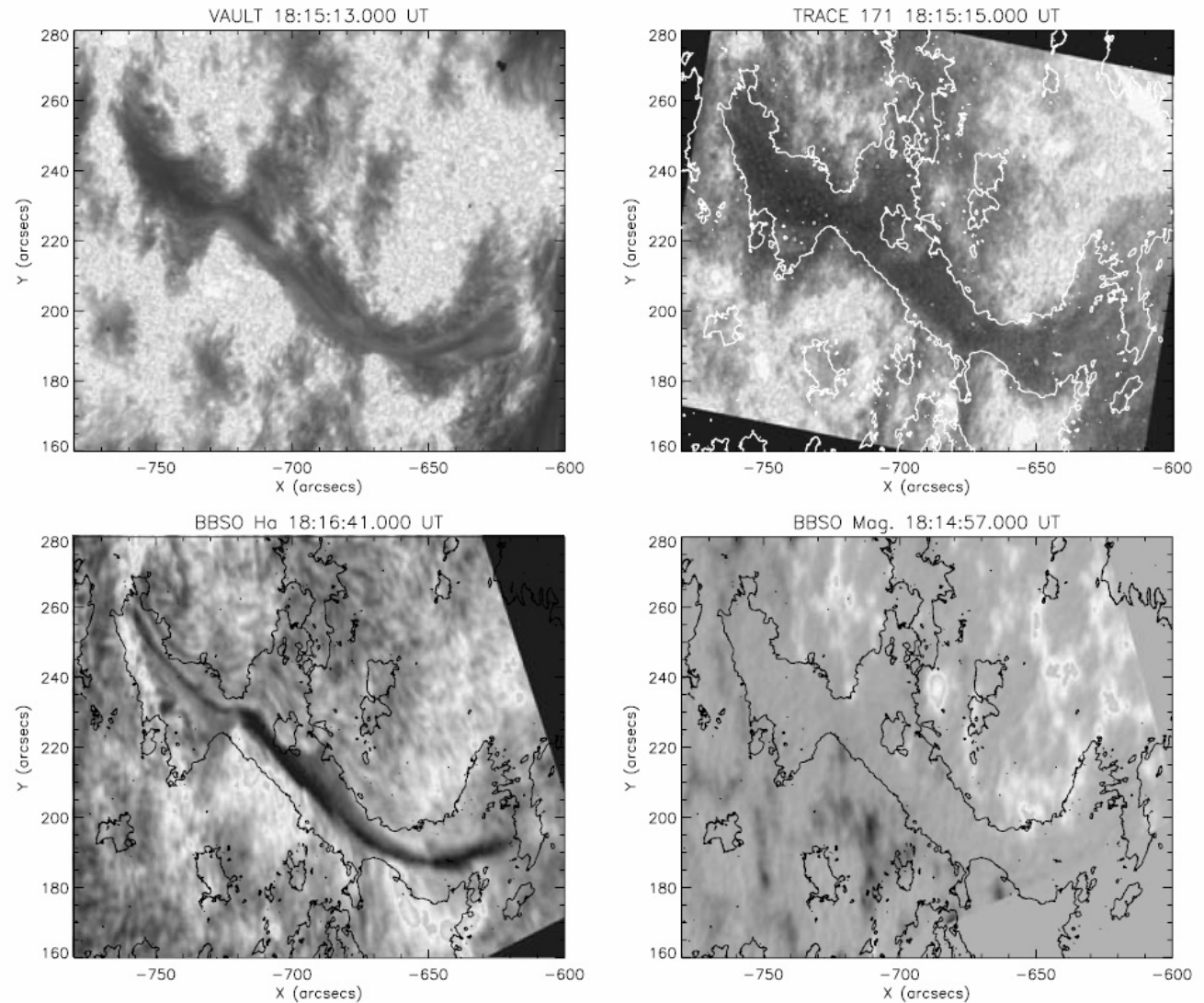
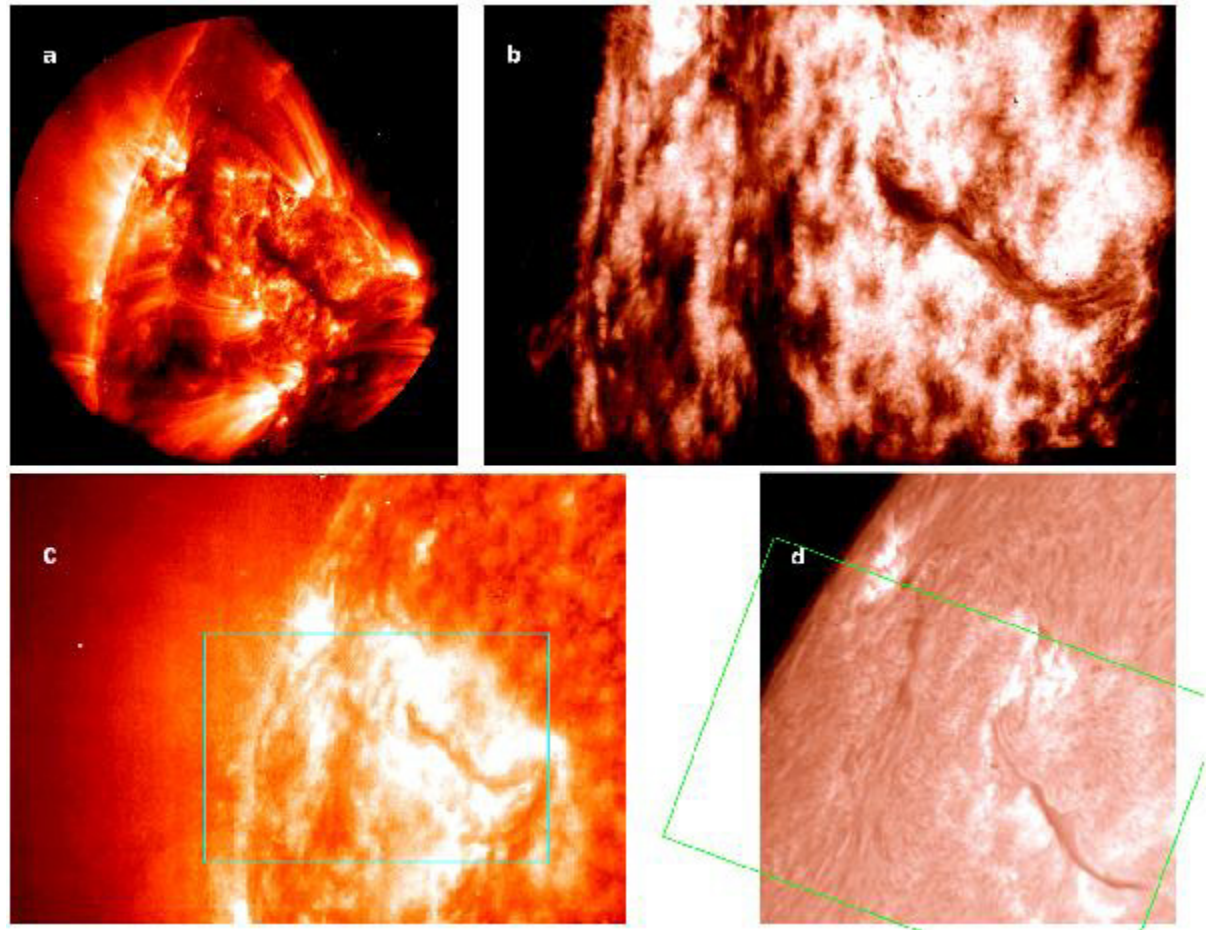
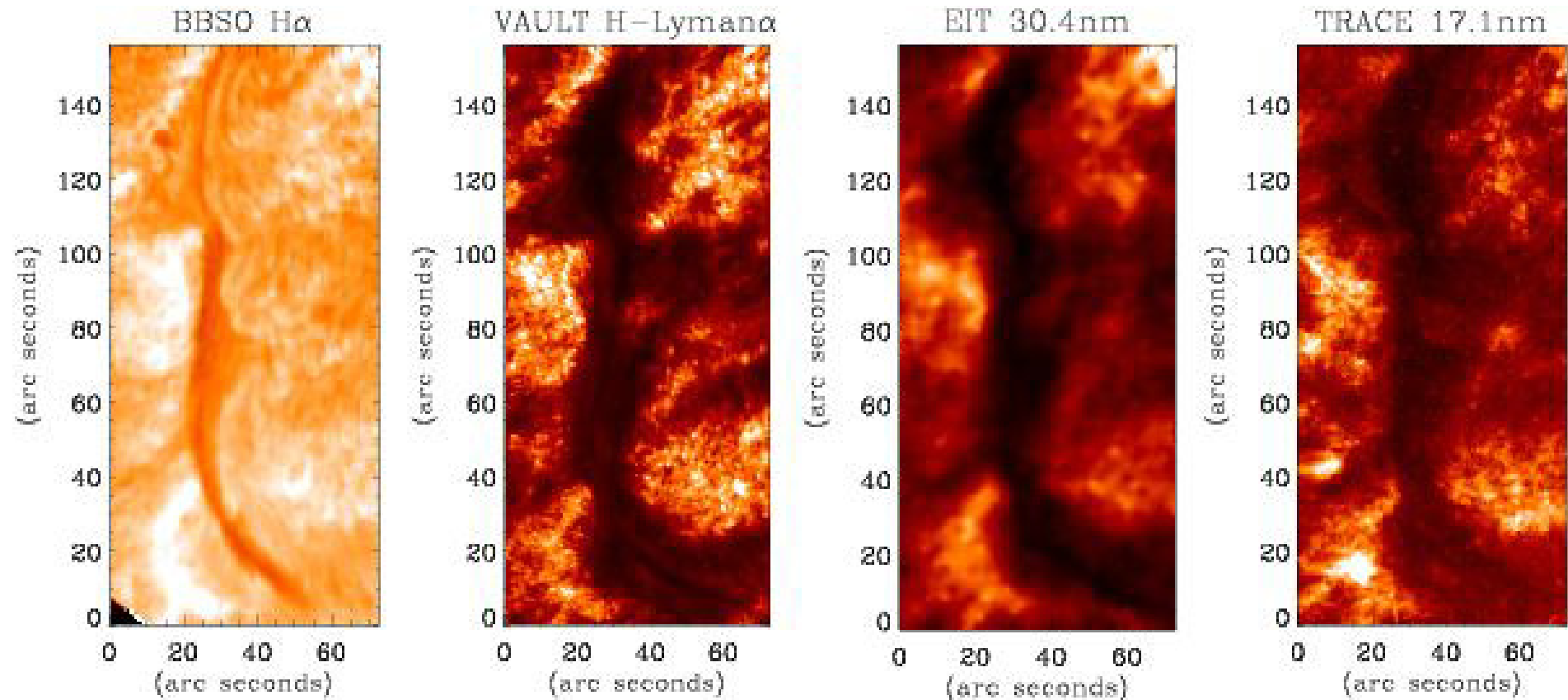


Figure 5 Prominence as seen in almost simultaneous observations with various instruments. The contours mark the outer envelope of the Ly α prominence. The field-of-view is the same. Top left: VAULT Ly α . Top right: TRACE 171 Å. Bottom right: BBSO photospheric magnetogram. Bottom left: BBSO H α center.

VAULT II observation from
14 June 2002



[High spatial resolution VAULT H-Ly \$\alpha\$ observations and multiwavelength analysis of an active region filament](#)
[Vial et al. 2012, Astronomy and Astrophysics, 541, 108](#)



[High spatial resolution VAULT H-Ly \$\alpha\$ observations and multiwavelength analysis of an active region filament](#)
Vial et al. 2012, *Astronomy and Astrophysics*, 541, 108