

First Results from Coordinated Observing with IRIS, Hinode and SST

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IRIS Coordinated Observing

- IRIS 60-day initial observing plan started ~August 27 and has been declared complete now
 - Consisted of large-area rasters & fast time series on targets of QS, CH, AR, sunspots, prominences and filaments (?)
 - Coincided with HOP 236, SST (La Palma) / IRIS / Hinode coordination: Aug 26 – Oct 3, with Oslo & LMSAL observers
- IRIS chose the target & type of observing every day for SST prime time 8 - 11 UT; SST & Hinode observers tried to follow IRIS lead almost every day
 - SST observations used CRISP for H-alpha & Ca II 8542 profile scans and occasionally Fe I 6302 magnetograms
 - Hinode observers used SP & NFI for high-cadence magnetic observations & Ca images for alignment & dynamics

HOP 236 was not easy

- IRIS planners were still learning how to operate it, with buggy software and frequent network problems
- Difference in time zones & planning schedules required IRIS planners to announce targets in advance: sometimes they changed their minds too late for Hinode to follow
- Hinode CO's had limited guidance in choosing observing programs, and many IRIS planners had little knowledge of Hinode operations or capabilities
- IRIS & SST pointing inaccuracy and tricky SOT pointing offsets sometimes reduced overlap
- Despite the difficulties, HOP 236 produced some excellent datasets and showed how us to do better next time

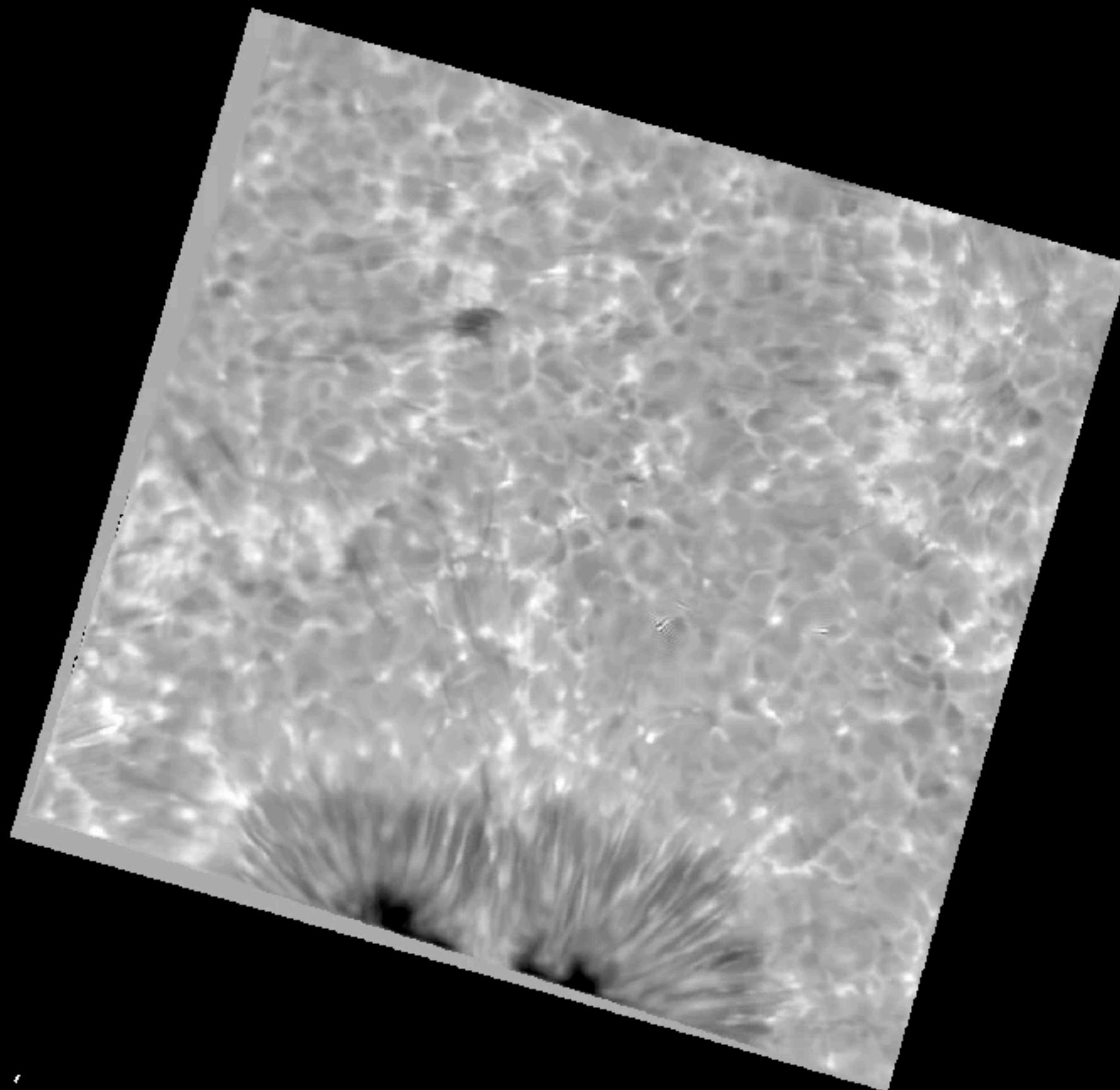
SST / IRIS / Hinode Aug-Oct 2013

date	target	program	seeing	IRIS overlap	Hinode
29-Aug	plage	Ca+Ha+Fe	+++	++	
01-Sep	plage	Ca only	++	+++	***
04-Sep	sunspot	Ha only	+	++	**
06-Sep	sunspot	Ha only	++(?)	++	***
10-Sep	pore	Ha only	+	++	
18-Sep	quiet Sun	Ca+Ha+Fe	++	?	*
22-Sep	coronal hole	Ca+Ha+Fe	++	++	***
23-Sep	quiet Sun	Ca+Ha+Fe	++	-	***
25-Sep	flux emerge	Ca+Ha+Fe	++	+	*
30-Sep	limb	Ha only	?	-	***
01-Oct	limb	Ha only/Ca only	?	+	

Days with good seeing at SST and some IRIS or Hinode overlap

Courtesy Luc Rouppe van der Voort (with my edits)

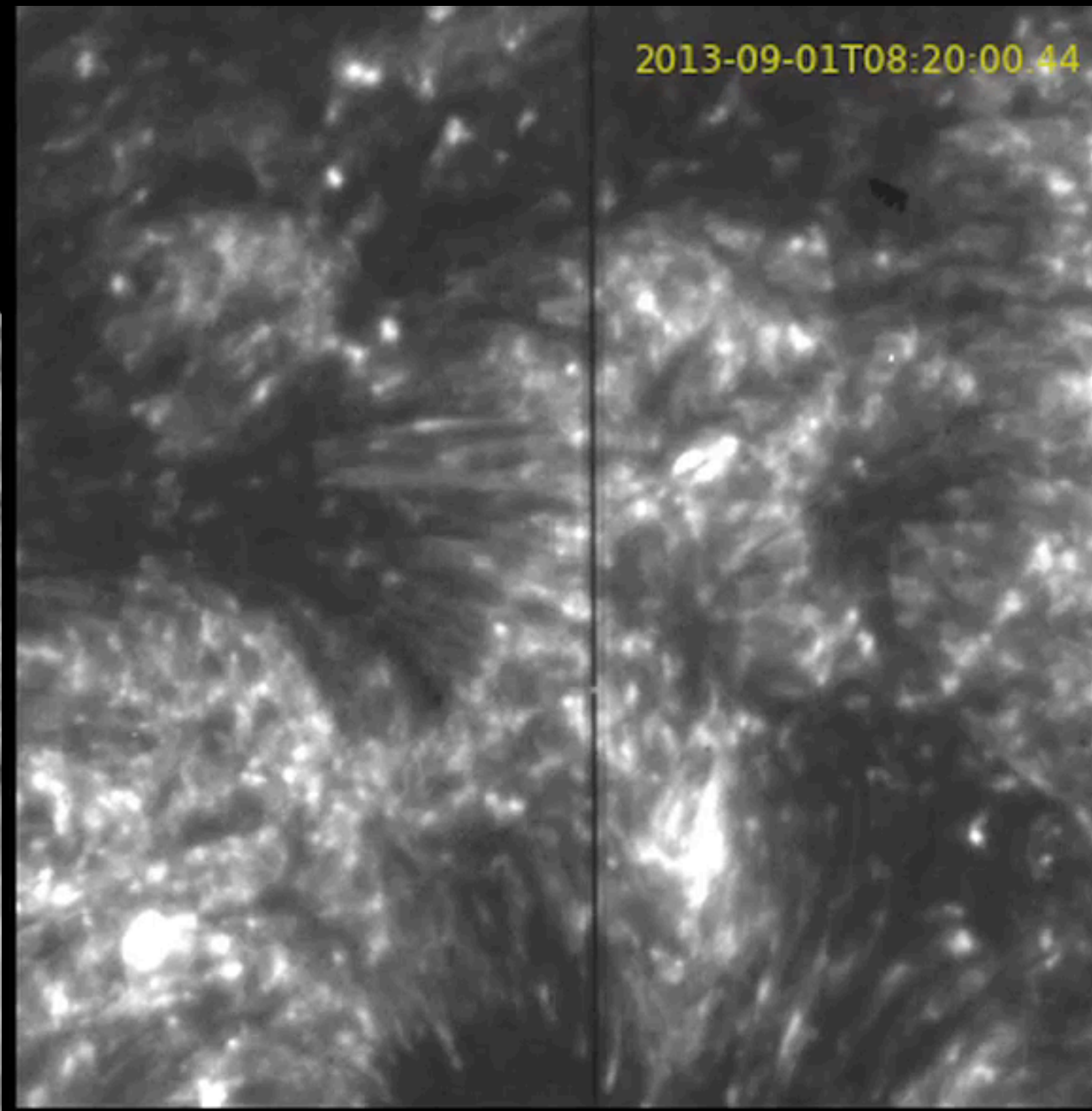
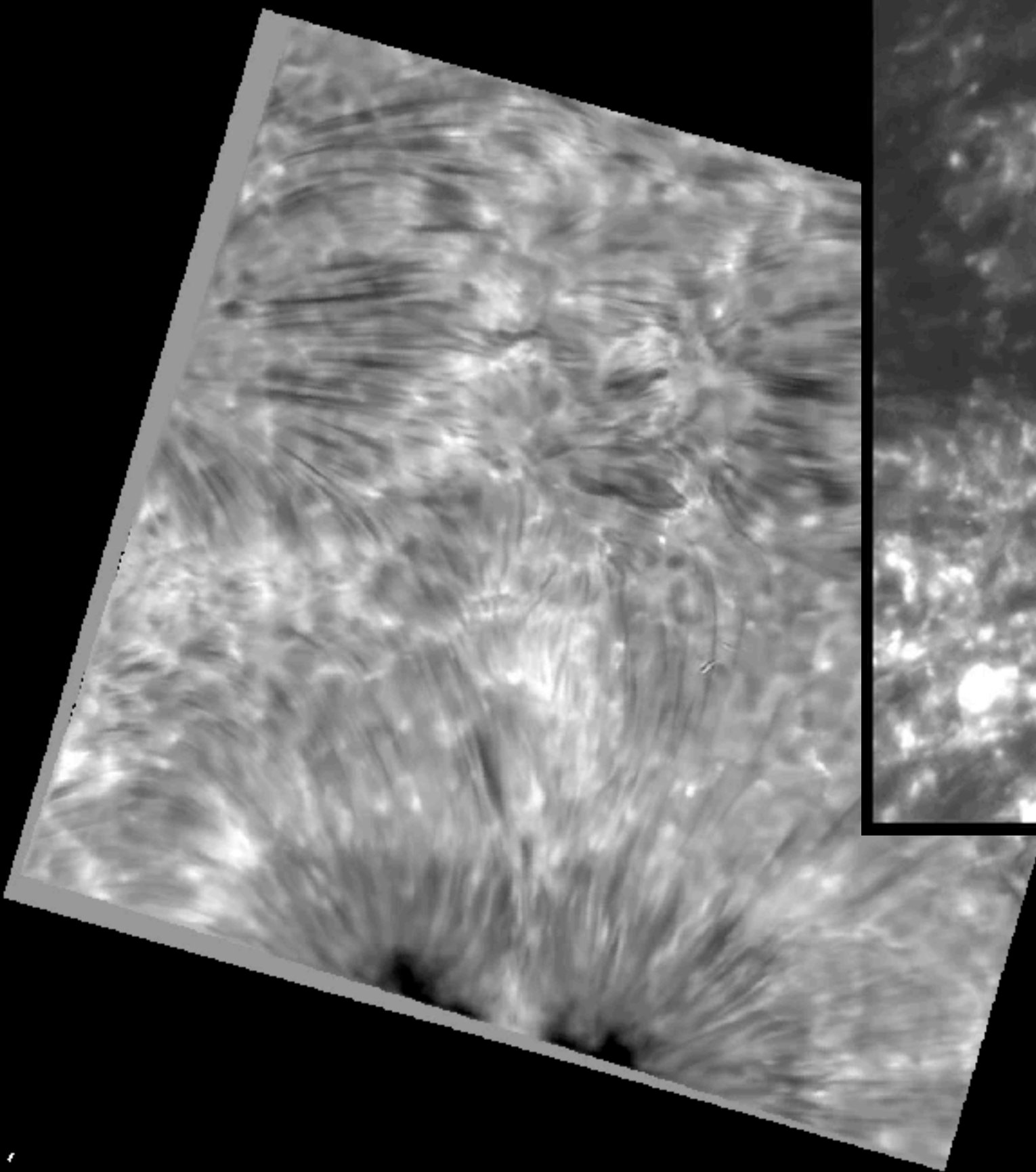
2013-09-01 - 08:22:01: Ca 8542 +0.50



Courtesy Luc Rouppe van der Voort

CRISP / IRIS not same scale / cadence

2013-09-01 - 08:22:01: Ca 8542 -0.30



IRIS at full time range

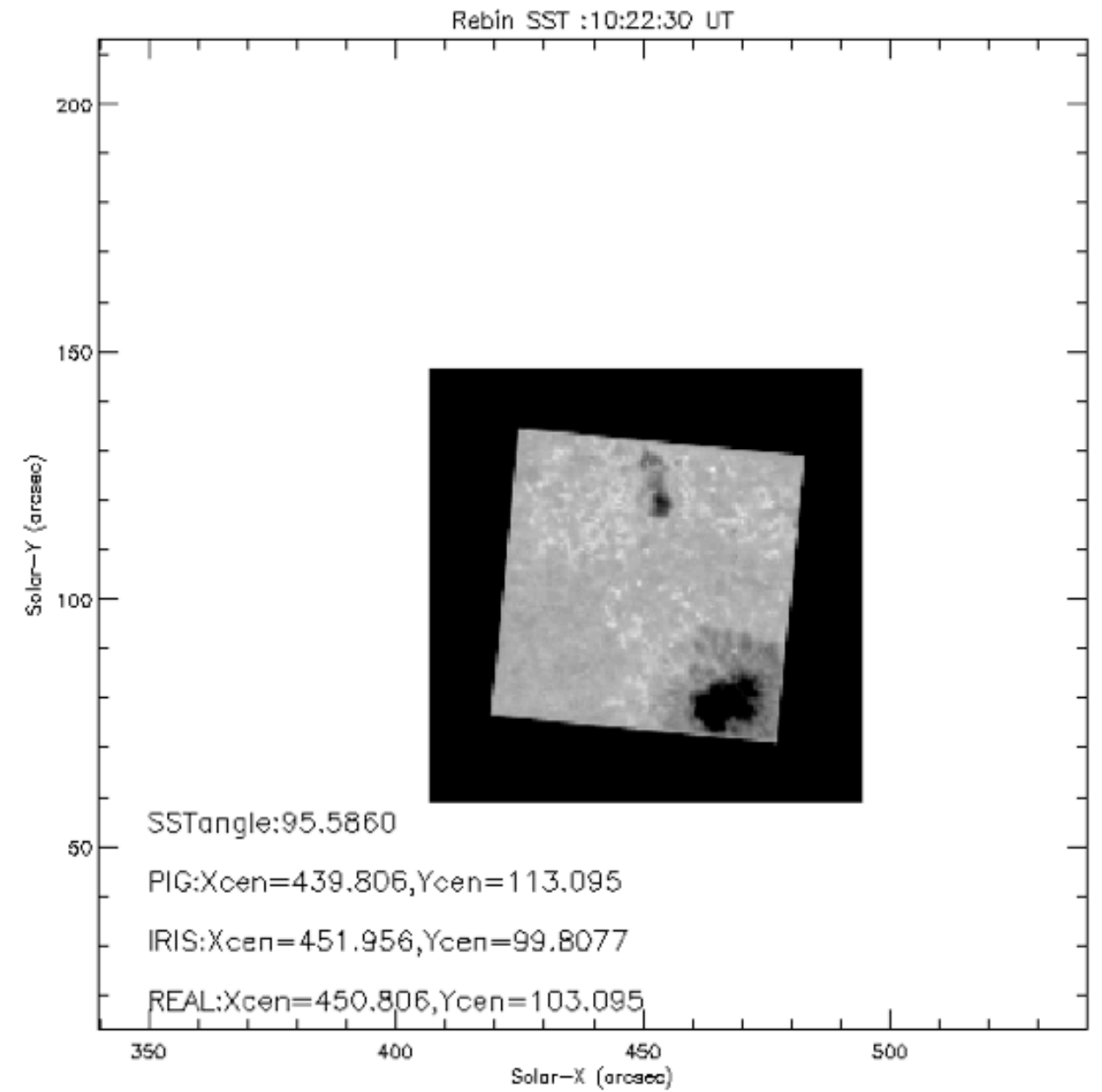
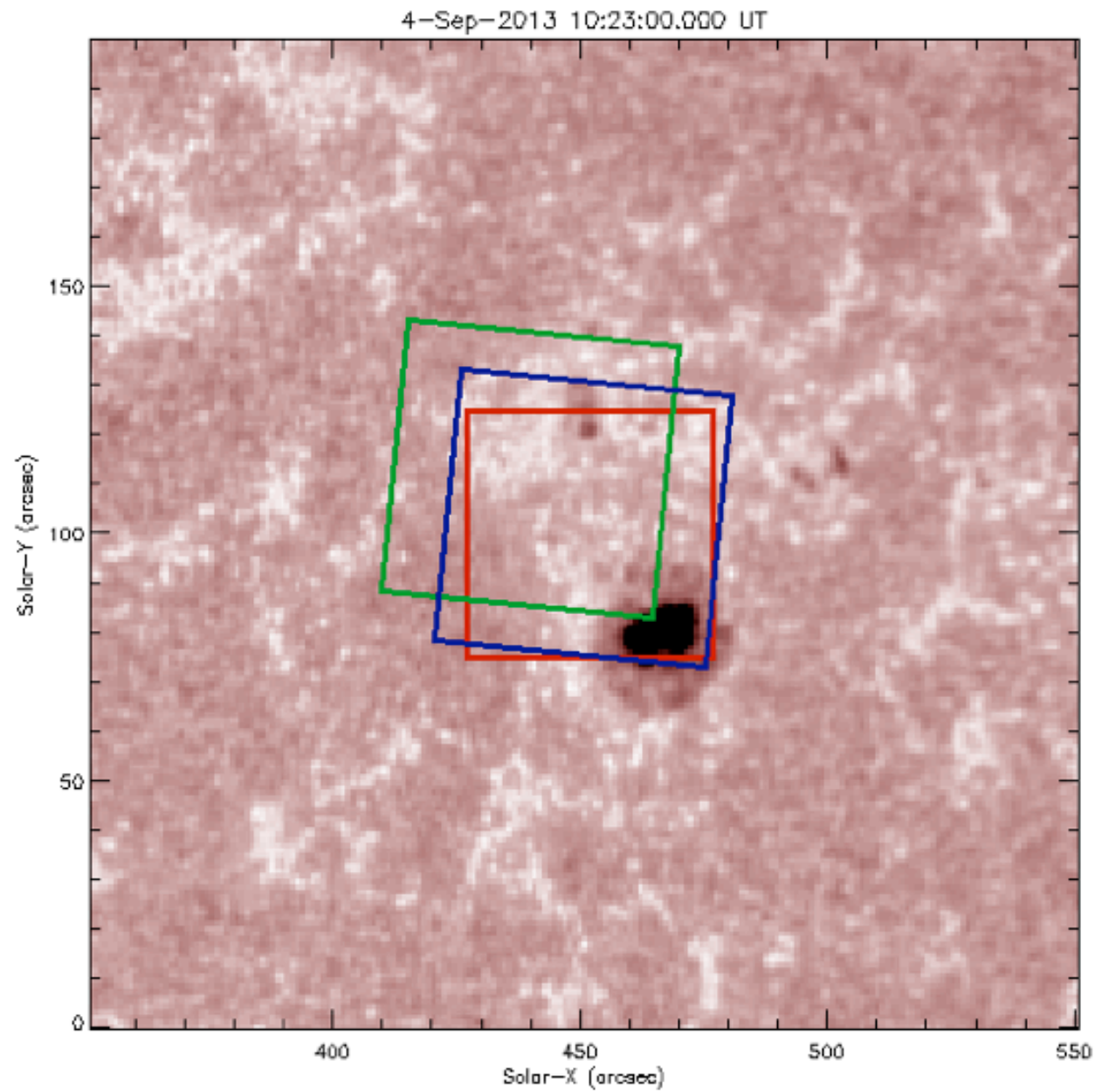


Courtesy Luc Rouppe van der Voort

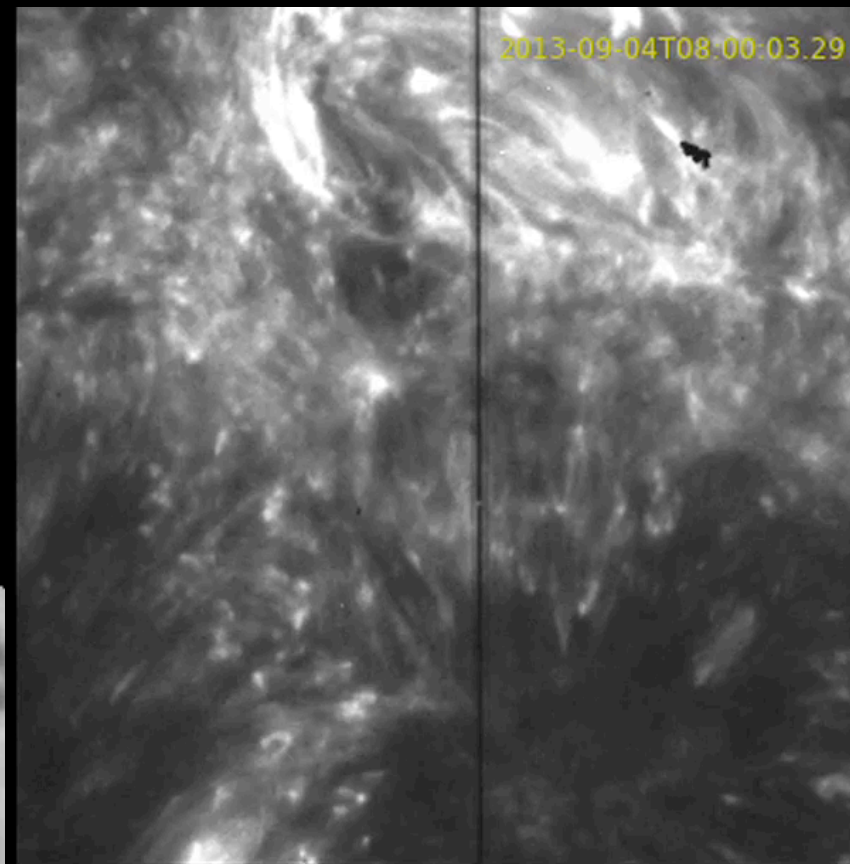
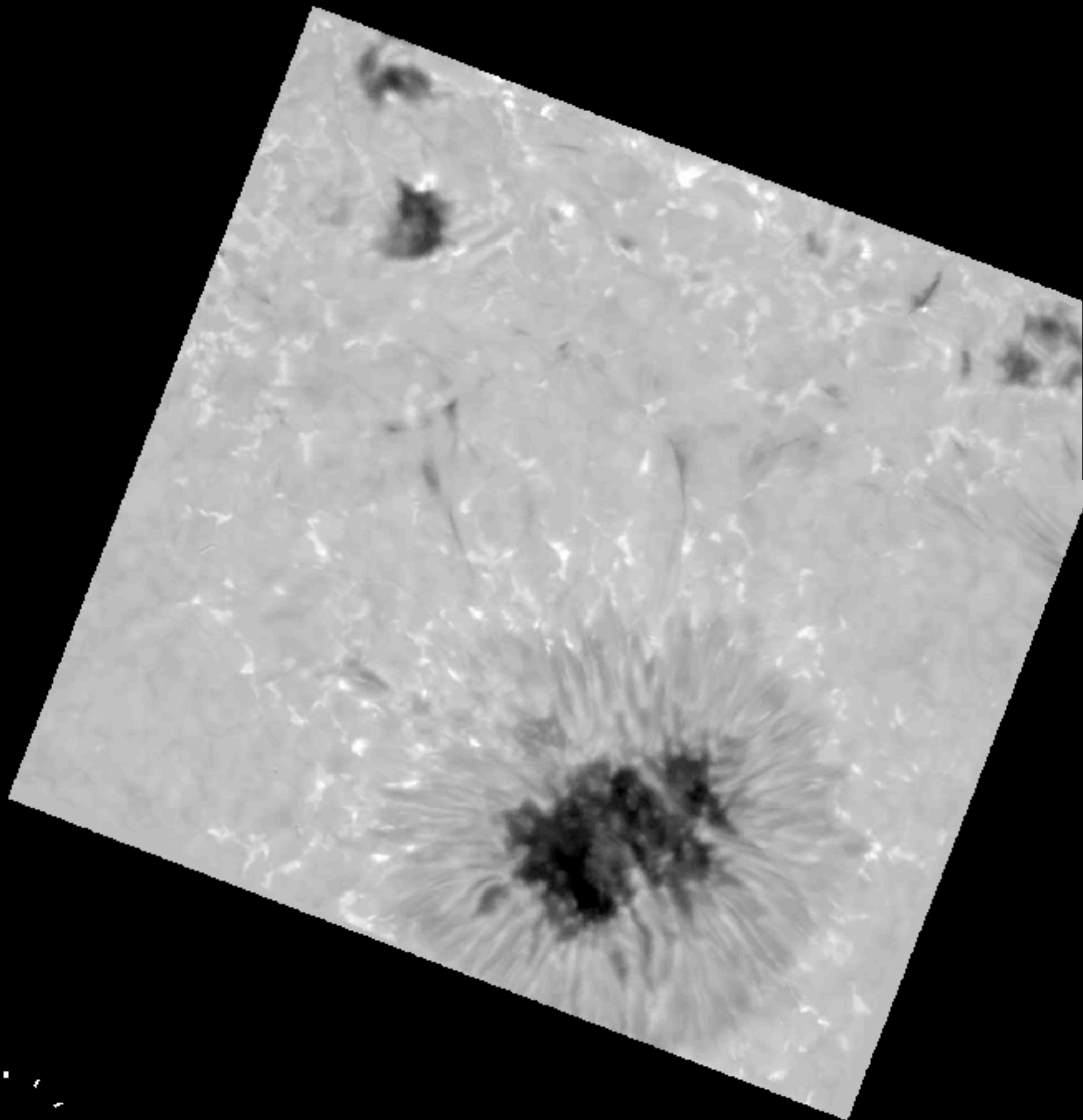
CRISP / IRIS not same scale / cadence

04-Sep-2013 sunspot: Ha only

07:47 - 08:23, 5.5 s cadence



2013-09-04 - 07:47:34: Halpha -1.00



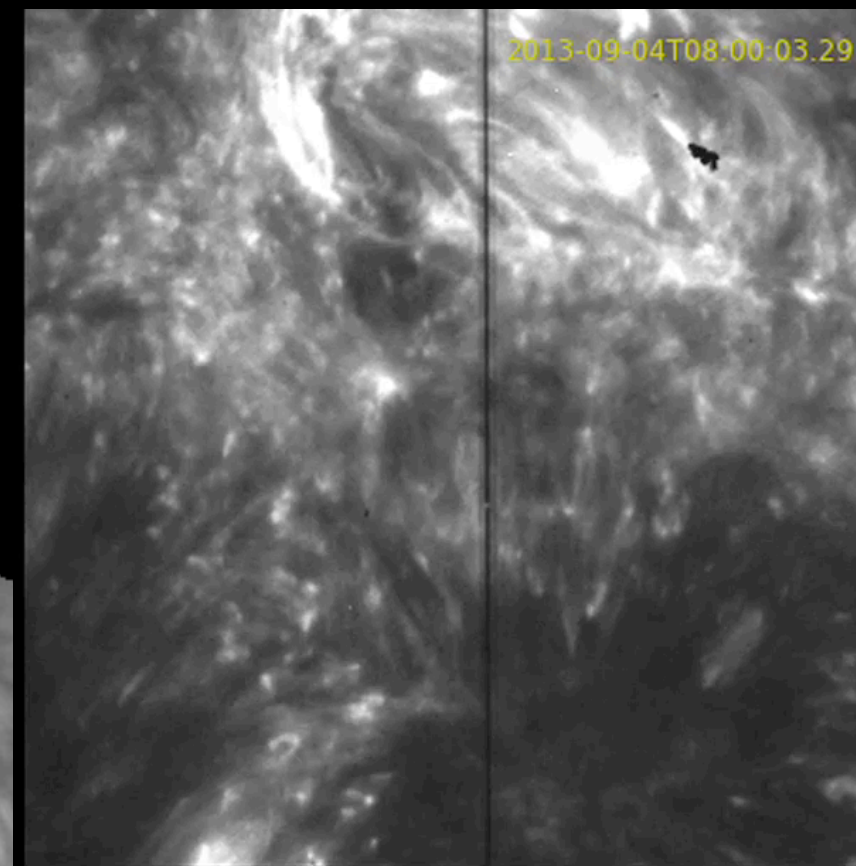
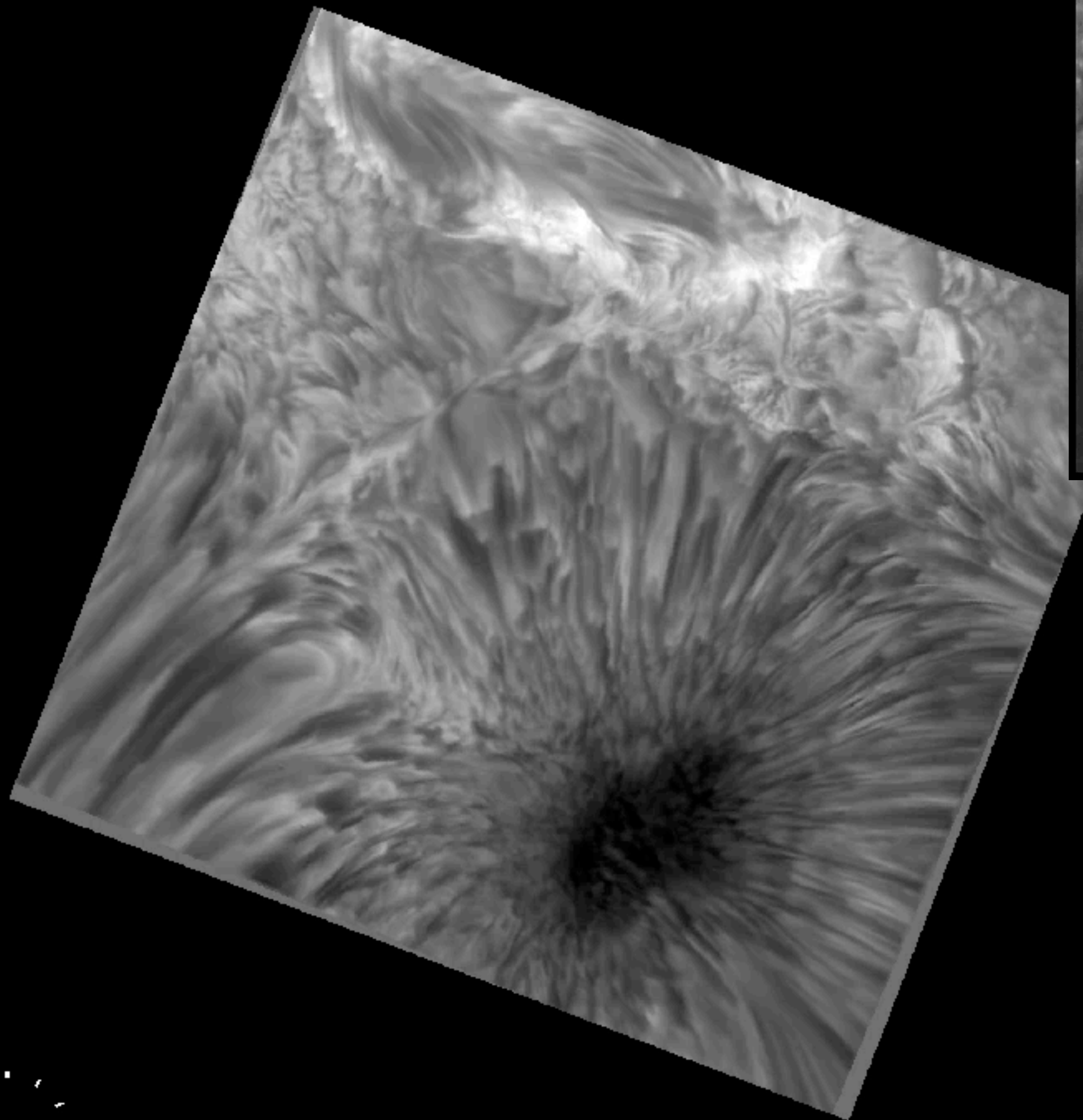
IRIS at full time range



Courtesy Luc Rouppe van der Voort

CRISP / IRIS not same scale / cadence

2013-09-04 - 07:47:34: Halpha +0.00



IRIS at full time range

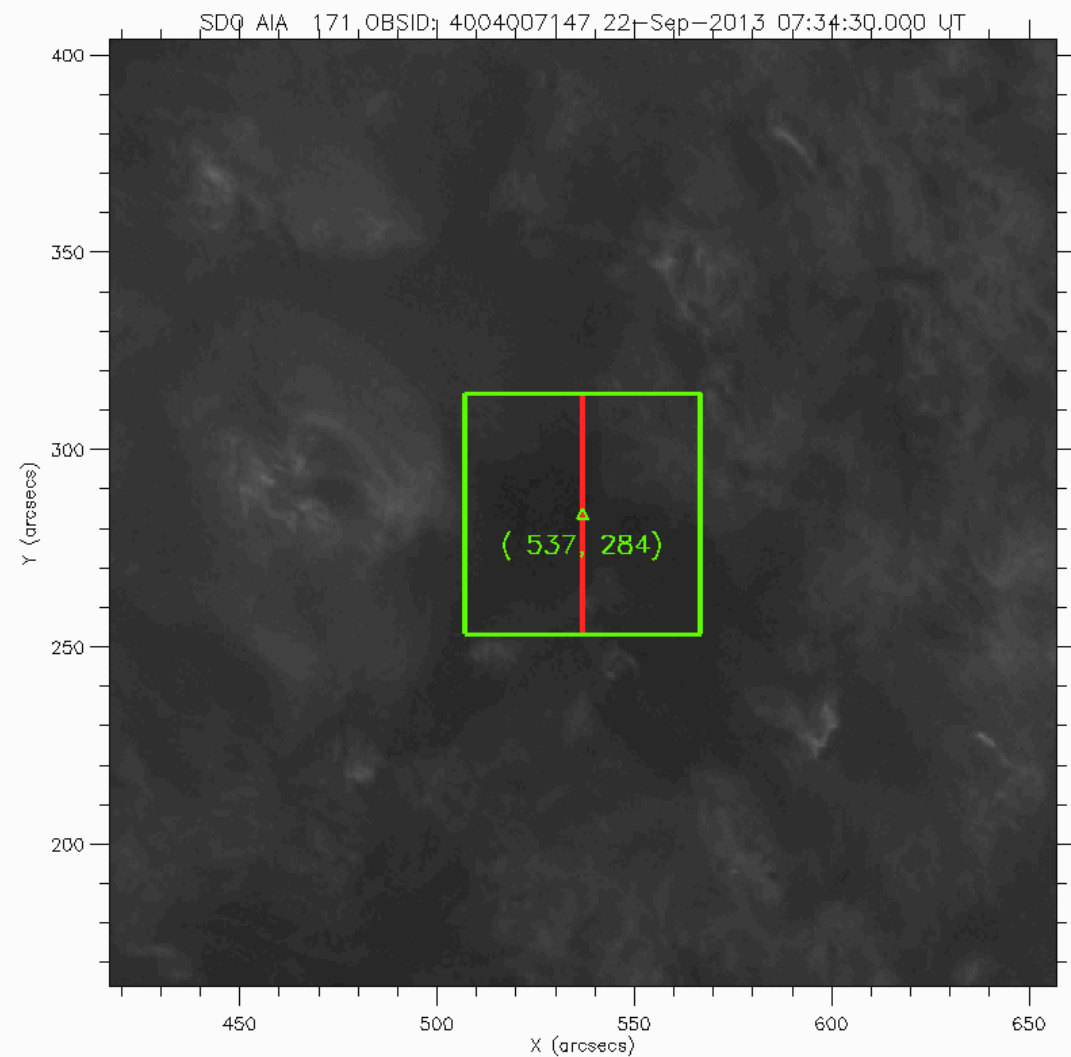
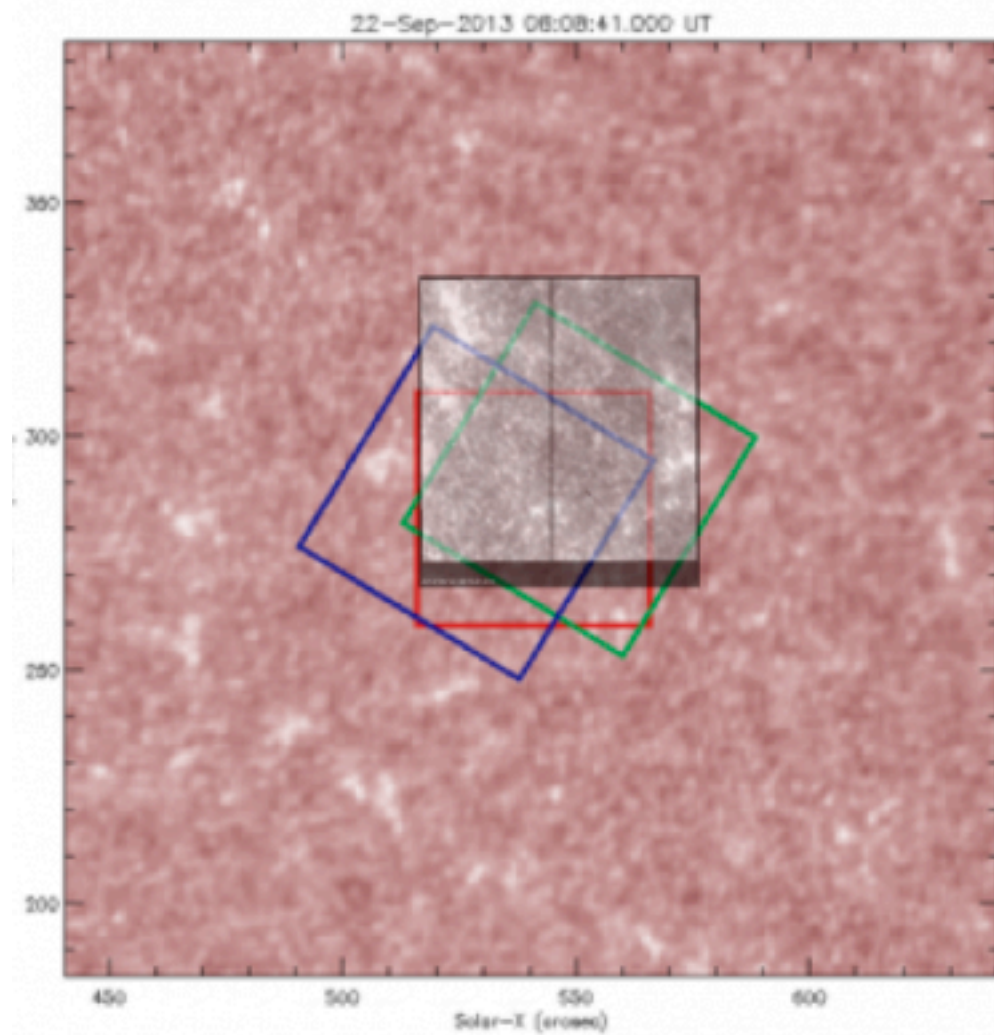


Courtesy Luc Rouppe van der Voort

CRISP / IRIS not same scale / cadence

22-Sep-2013 Coronal Hole: CRISP Program

08:08 - 10:11, 10.8 s cadence



Prefilter: 6302 : line positions: 1 Full Stokes wvl=[-48] mÅ

Prefilter: 6563 : line positions: 15
[-1400,-1200,-1000,-800,-600,-400,-200,0,200,400,600,800,1000,1200,1400] mÅ

Prefilter: 8542 : line positions: 25
[-1200,-1100,-1000,-900,-800,-700,-600,-500,-400,-300,-200,-100,0,100,200,300,400,500,600,700,800,900,1000,1100,1200] mÅ

IRIS CH Programs on 22 Sep

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IRIS Observations (most recent first)

Filter by instrument:

617 matches

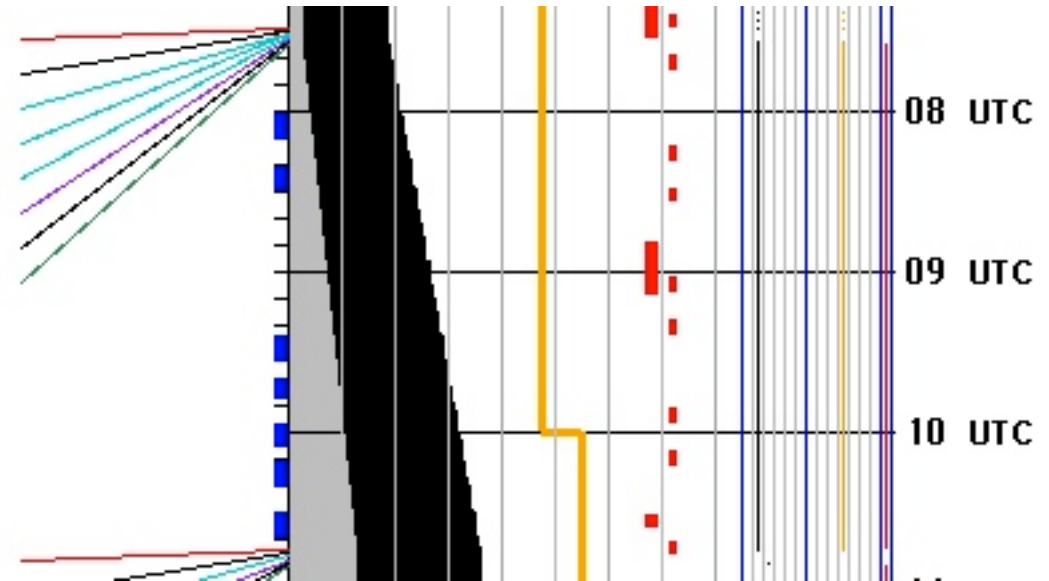
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Overview	Where	Raster	SJI wavelength: cadence, no. of images	Data Links
2013-09-22 07:34:30-11:04:31	CH, Hinode/SST Coord OBS 4004007147: Medium sit-and-stare			
	x,y: 538",283" Max FOV: 60"x61" Target: (NONE)	FOV: 0"x61" Steps: 2472x0" Step Cad: 5.1s Raster Cad: 5s, 1 ras Linelist: v40_00	FOV: 60"x61" 1330: 15s, 766 imgs 1400: 15s, 766 imgs 2796: 15s, 766 imgs	Raster 1779 MB 1330 106 MB 1400 117 MB 2796 109 MB
2013-09-22 06:49:55-07:08:55	CH, Hinode/SST Context OBS 4004258156: Large coarse raster			
	x,y: 521",283" Max FOV: 246"x120" Target: (NONE)	FOV: 127"x120" Steps: 64x2.01" Step Cad: 8.9s Raster Cad: 570s, 2 ras Linelist: v40_00	FOV: 119"x120" 1330: 36s, 32 imgs 1400: 36s, 32 imgs 2796: 36s, 32 imgs 2832: 143s, 8 imgs	Raster 146 MB 1330 21 MB 1400 22 MB 2796 22 MB 2832 6 MB

SOT CH Programs on 22 Sep

```
22_07:29:35 STOP ALL (FG, SP, CT)
22_07:30:00 PNT tracking
22_07:31:00 DISABLE FG FLARE RESPONSE
22_07:31:10 DISABLE SP FLARE RESPONSE
22_07:32:00 SET FOCUS focus:-28, OG: 313
22_07:33:00 CT SERVO ON
22_07:34:00 FG 7, HOP236 Shless Na IV 61x82", 32 s,
22_07:35:00 SP 9, Sparse raster, 8"x61"bottom,, ROI

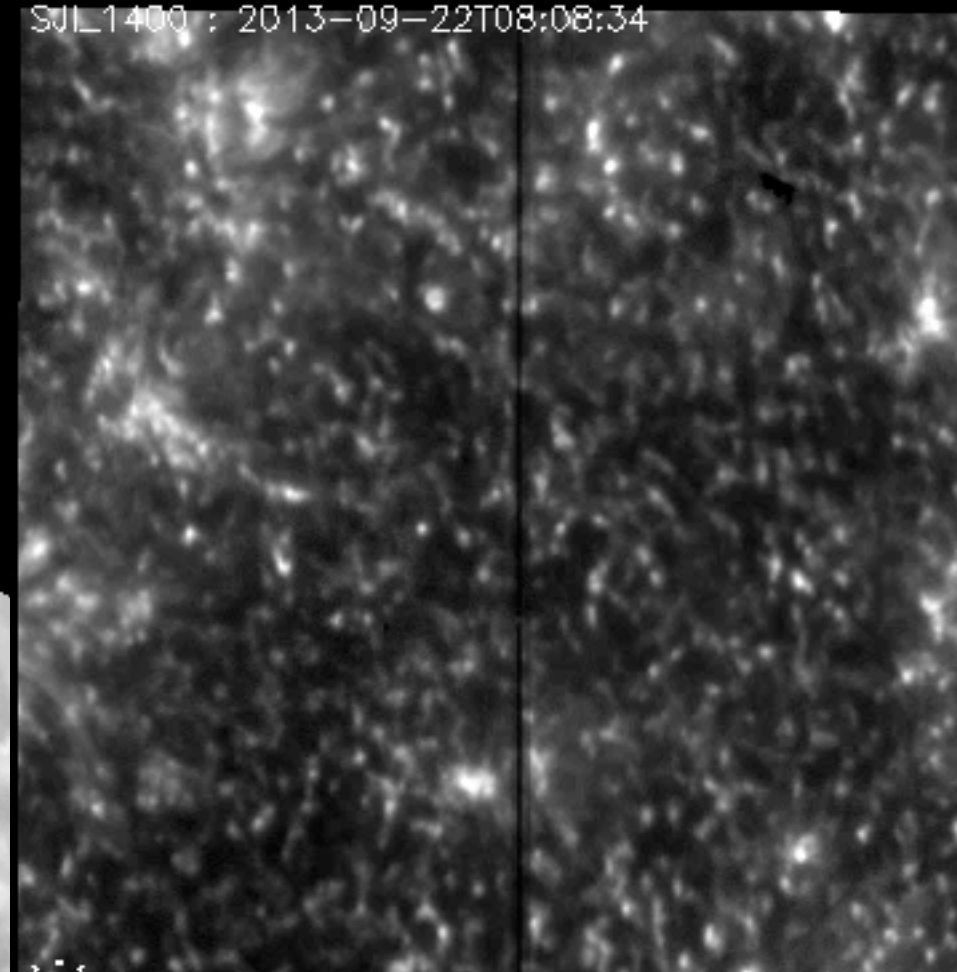
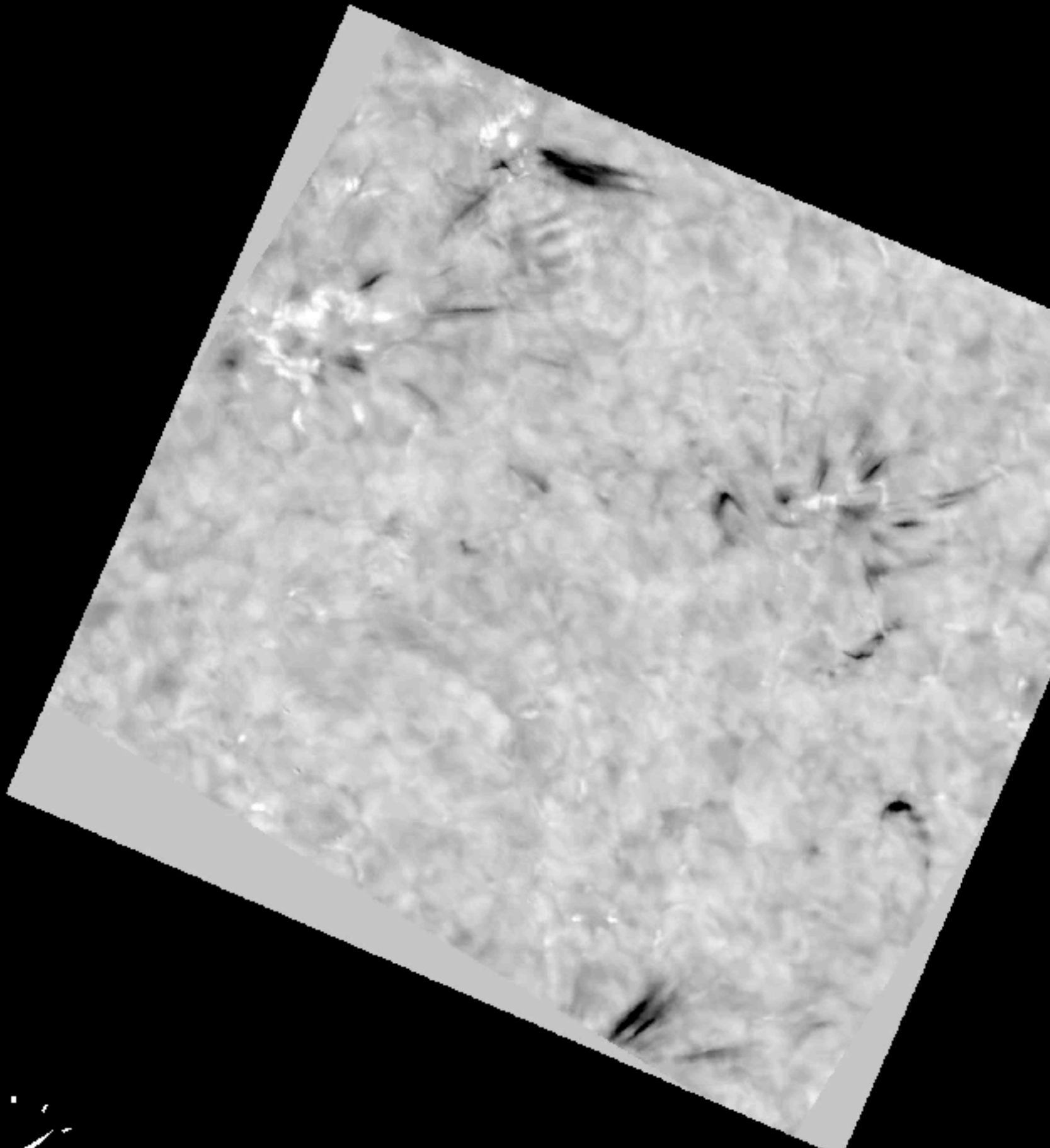
22_10:44:35 STOP ALL (FG, SP, CT)
```



- Duration 7:35 - 10:44 UT
- SOT SP: sparse, fast maps, 8 x 41 arcsec, 55 s cadence
- NFI: Na D Shutterless I & V, -170 & +148 mA, 61 x 82 arcsec, 36 s cadence
- BFI: Ca H images, 55 x 55 arcsec, 36 s cadence

2013-09-22 - 08:08:41: Halpha -1.00

SOL1400 : 2013-09-22T08:08:34

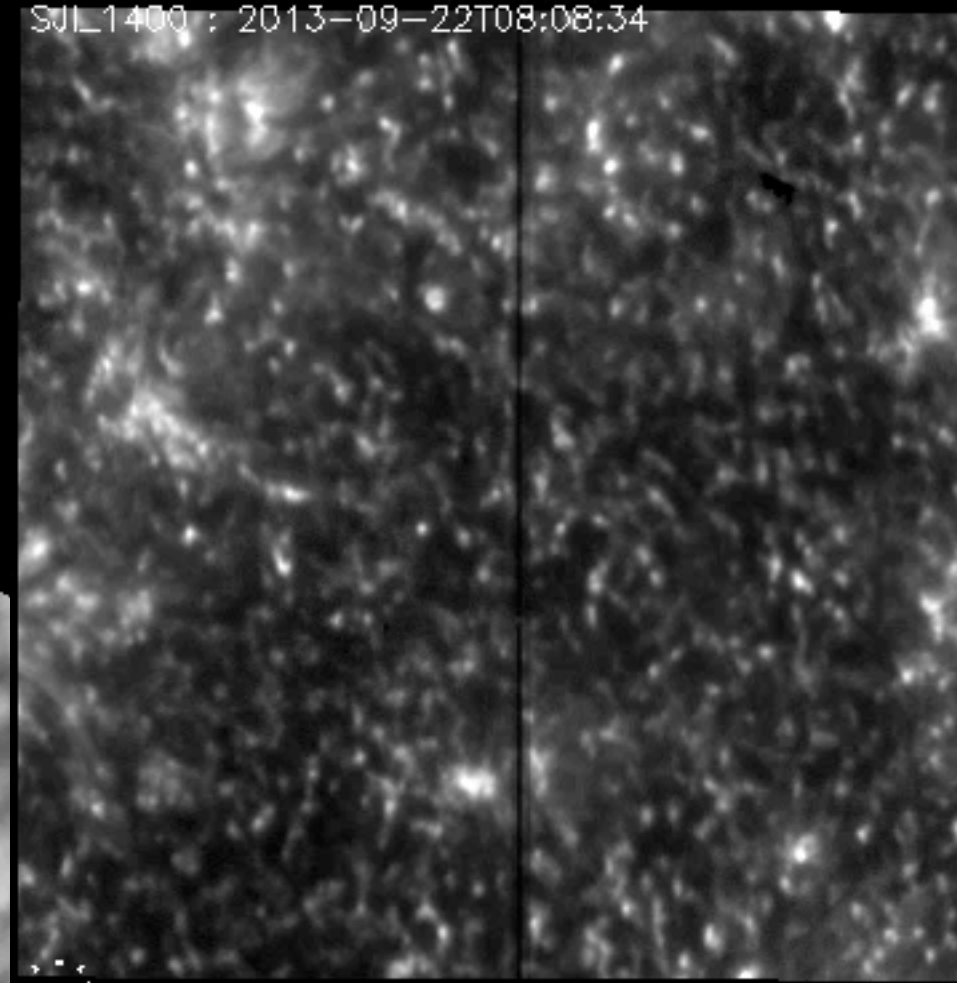
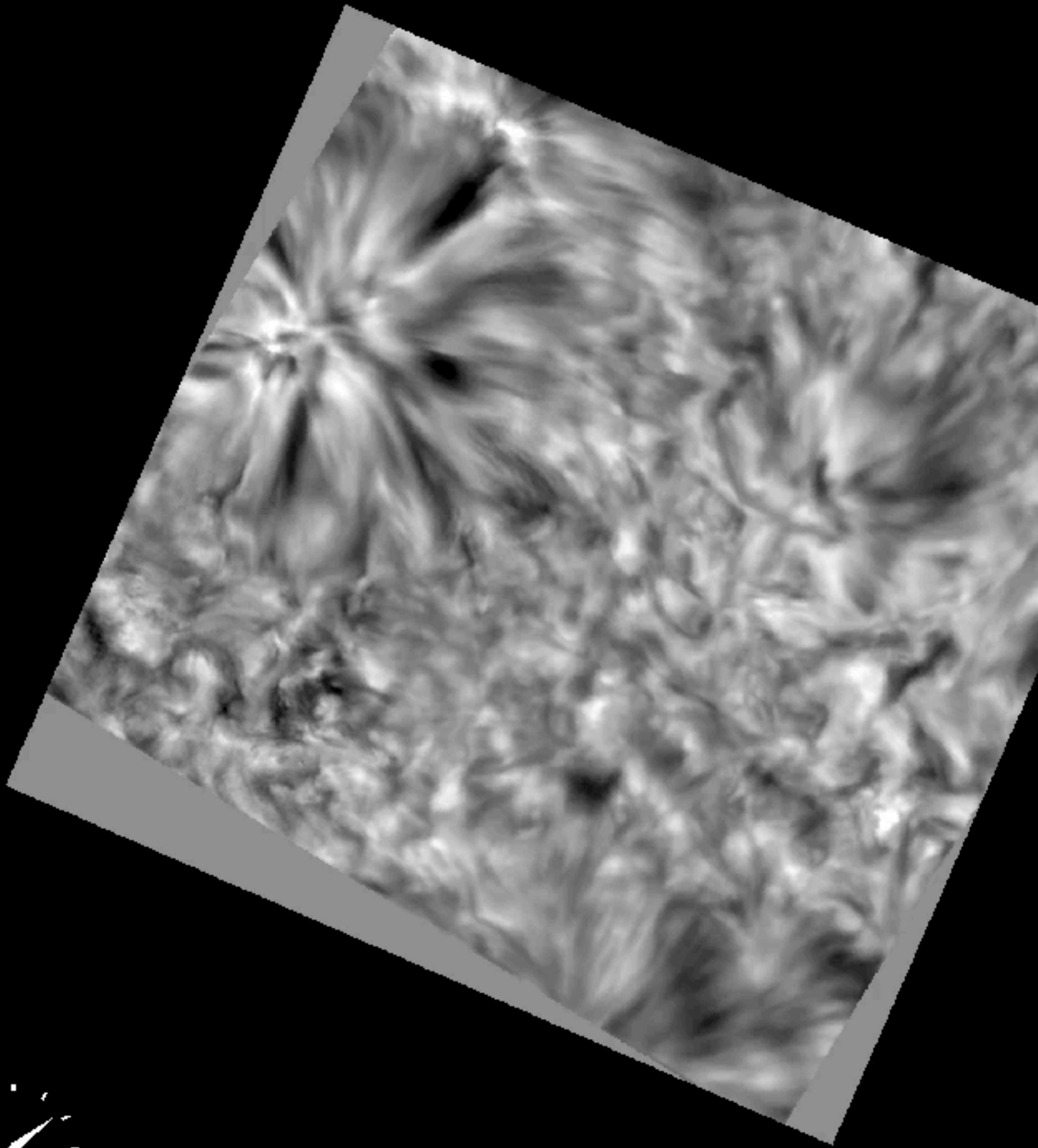


Courtesy Luc Rouppe van der Voort

CRISP / IRIS not same scale / cadence

2013-09-22 - 08:08:41: Halpha +0.00

SOL1400 : 2013-09-22T08:08:34

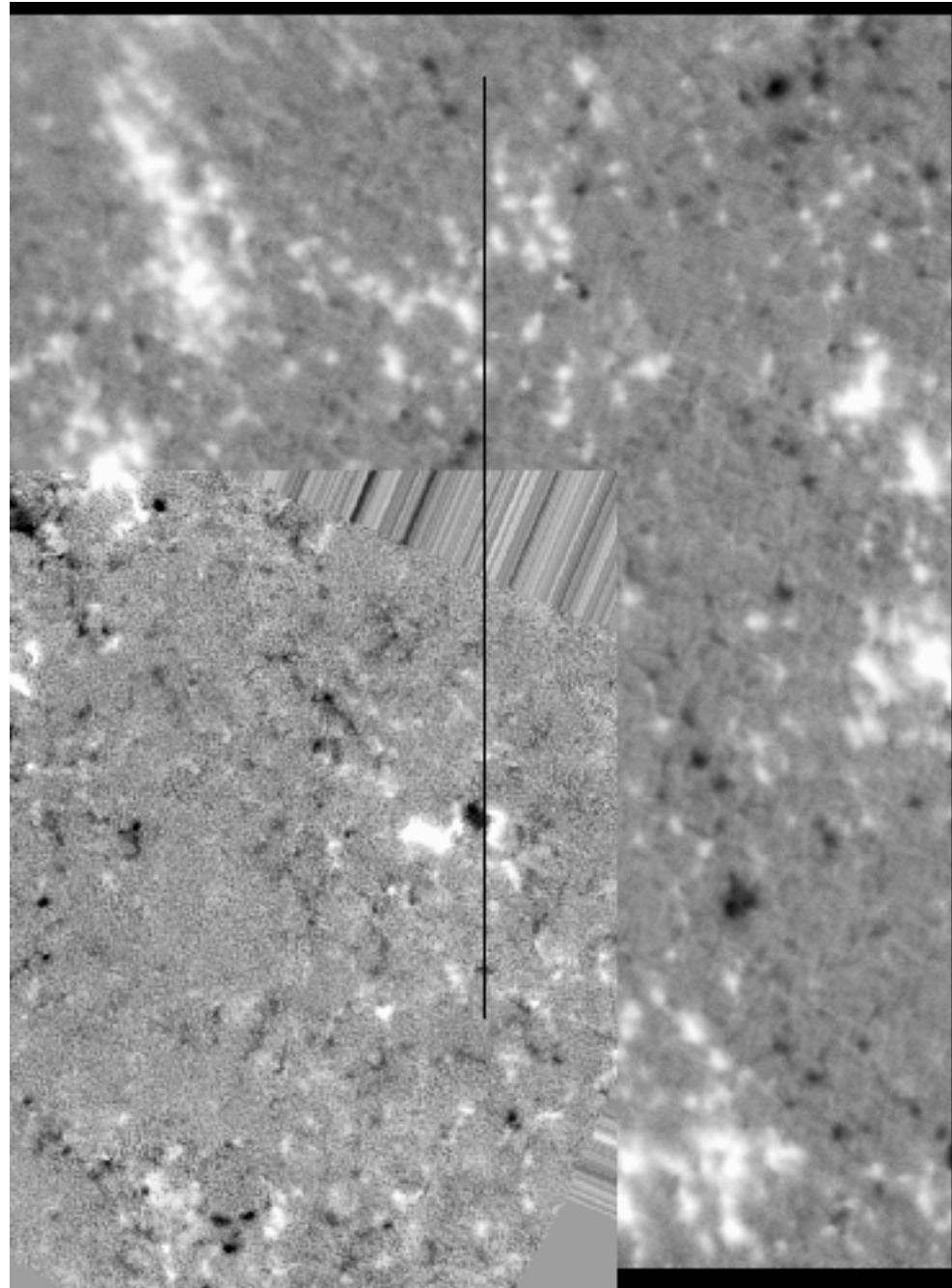


Courtesy Luc Rouppe van der Voort

CRISP / IRIS not same scale / cadence

22-Sep-2013 Coronal Hole

08:13:07 SOT - CRISP Coalignment



SOT Na D Mgram 61 x 82''

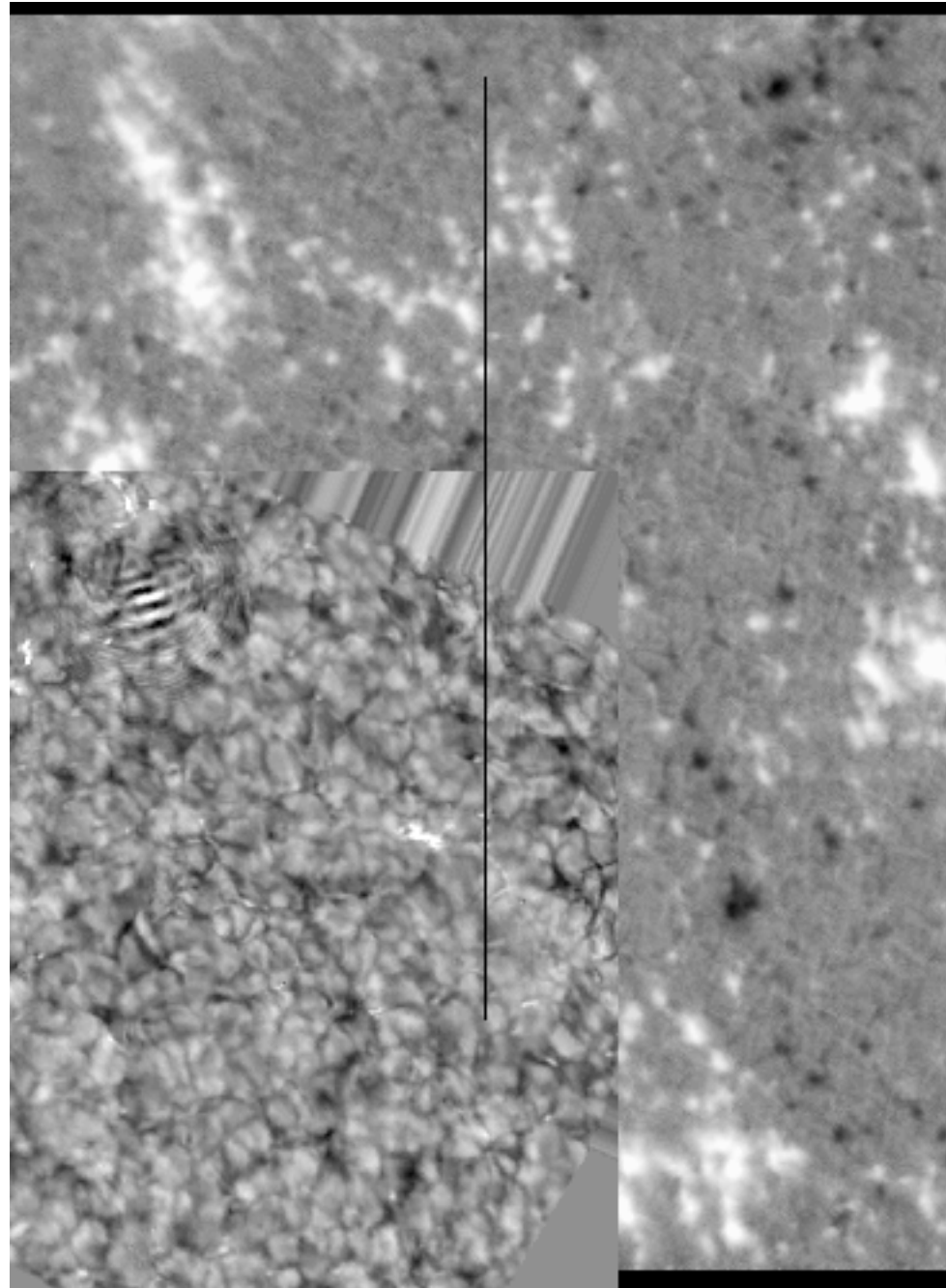
SST CRISP

6302 Stokes V

40 x 53''

22-Sep-2013 Coronal Hole

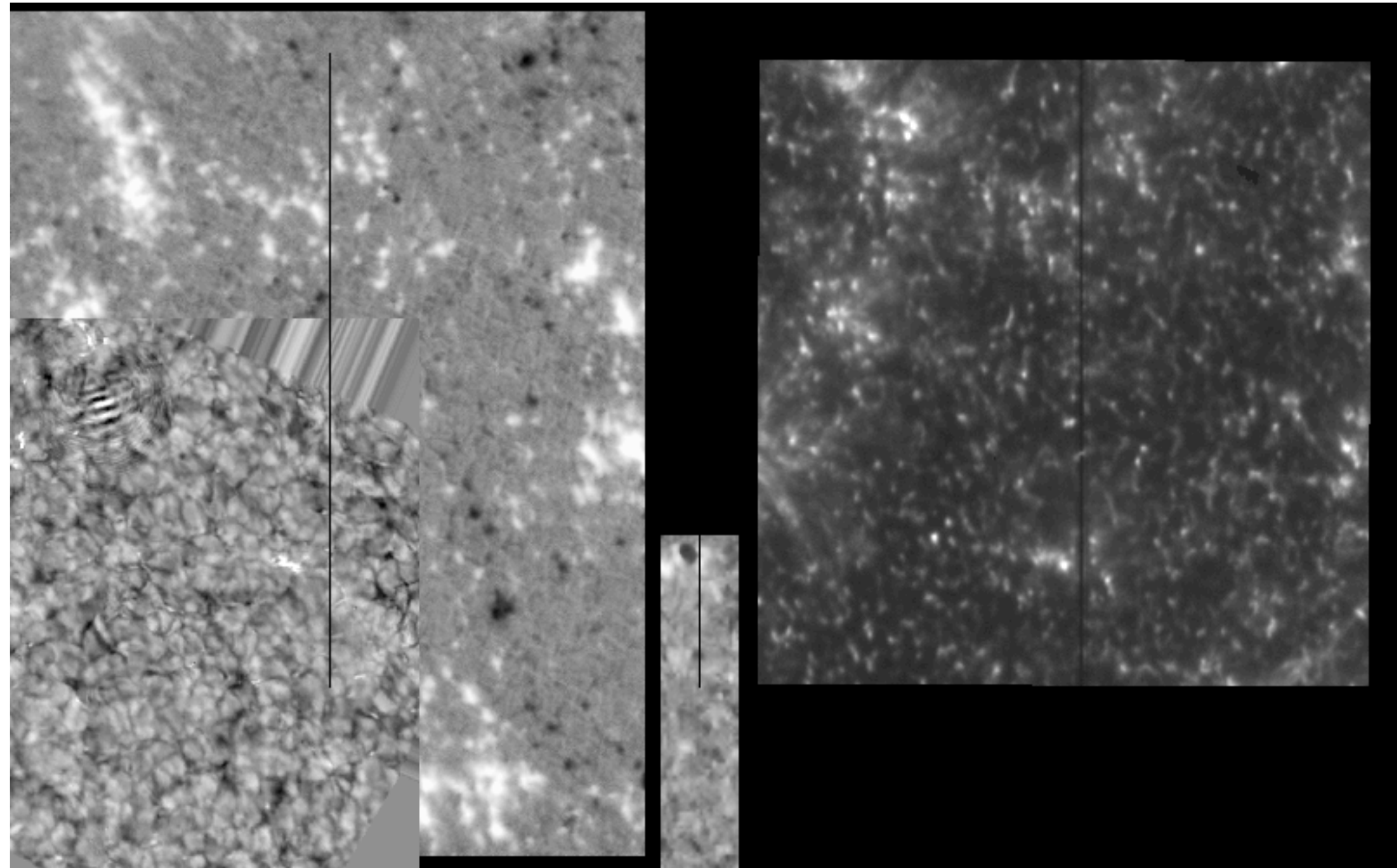
08:13:07 5 min after start of CRISP series



SST CRISP H-alpha Blue to Red
& 6302 Stokes V
40 x 53''

22-Sep-2013 Coronal Hole

08:13:07 5 min after start of CRISP series



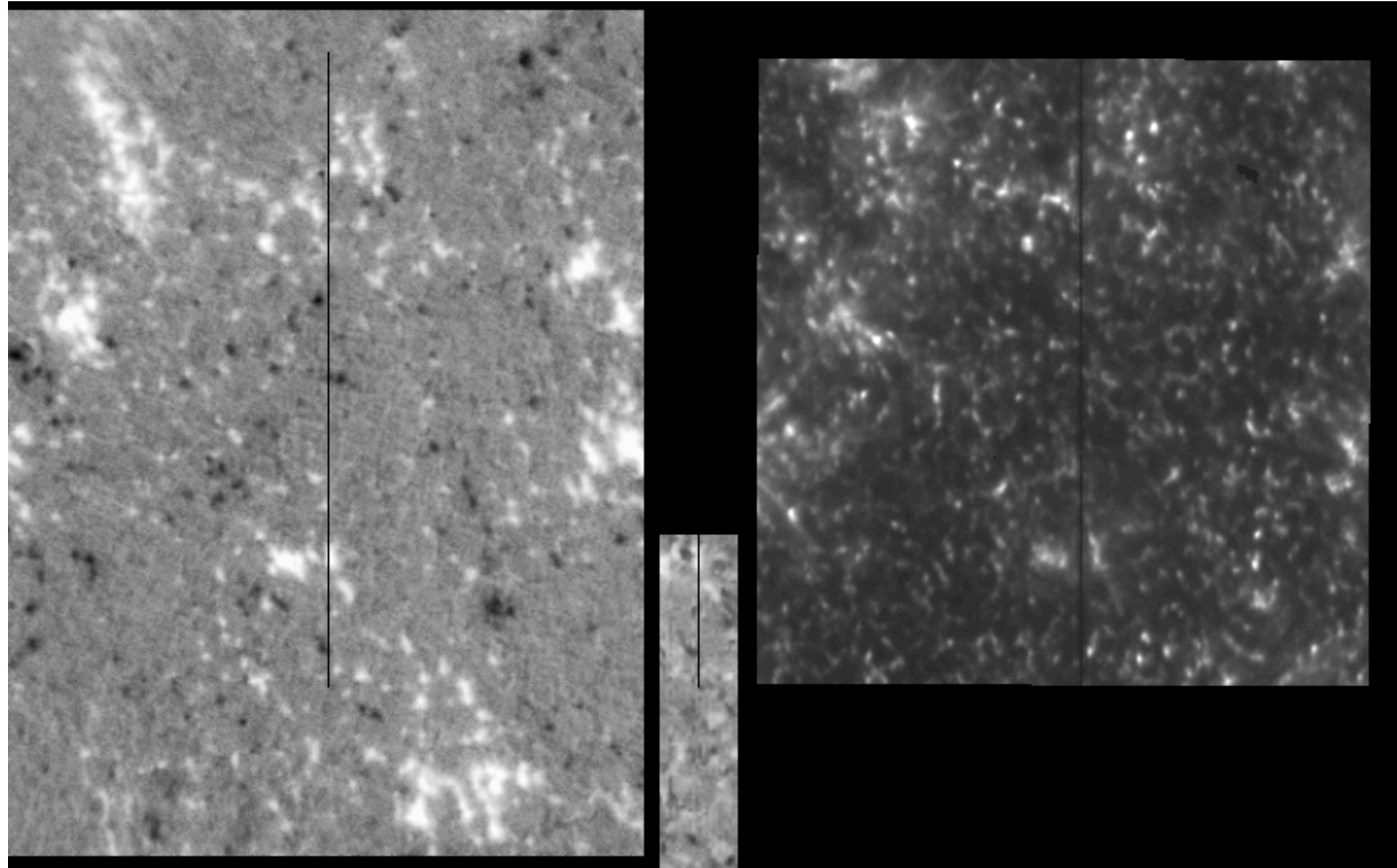
SST CRISP H-alpha Blue to Red
& 6302 Stokes V
40 x 53"

SOT SP Blos
7.7 x 41"

IRIS I400 A
60 x 61"

22-Sep-2013 Coronal Hole

08:08 - 09:00, 15 s cadence



SOT Na D Mgram
61 x 82"
original cadence
35 s

SOT SP Blos
7.7 x 41"
original cadence
55 s

IRIS I400 A
60 x 61"
original cadence
15 s

What's Next?

- Look at the spectra for interesting events seen in the movies & (duh!)
 - IRIS FUV & NUV spectra
 - CRISP H-alpha line profiles with CRISPEX
 - CRISP Ca 8542 profiles (after coalignment)
- Make compatible cubes of SOT magnetic movies
- Come to my talk at the AGU Meeting in December