

Report on Amateurs' observations during
F-CHROMA Observing Campaign
F-HUNTERS 1 (19-27 September, 2015)

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1 Summary of Observations obtained from Amateurs during F-CHROMA Observing Campaign

Irrespective of clouds covering many flares, enormous records of the solar atmosphere in multi-wavelength has been received from amateur astronomers. Although not all of the data is very useful for scientific analysis, following is a day-wise report with a representation of coverage of data obtained from the amateurs.

1.1 September 19, 2015

At the start date of the campaign, two C-Class flares occurred. Figure 1 shows the coverage of data obtained from the amateurs, shown in respective colours. GOES observations in 1-8 Å are shown in black colour.

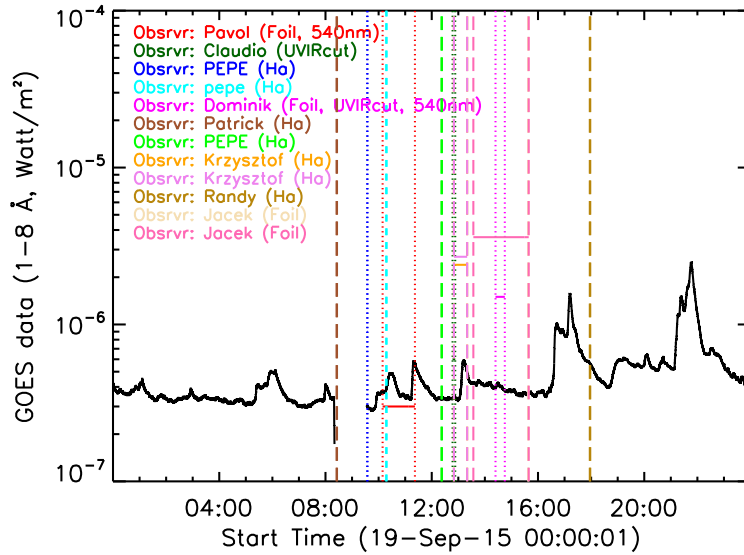


Figure 1: Coverage of data obtained from the amateurs, shown by dotted bars and mentioned in respective colours. GOES observations in 1-8 Å are shown in black colour.

It may be noted that although several records in multi-wavelength filters are available, however, only before the C-class flare SOL2015-09-19T17:13, which commenced at ~ 16:00 UT. Noticeably, observation in H α wavelength at 17:57:12 UT corresponding to the decay phase of the flare is recorded by observer Randy Shivak as given in figure 2.

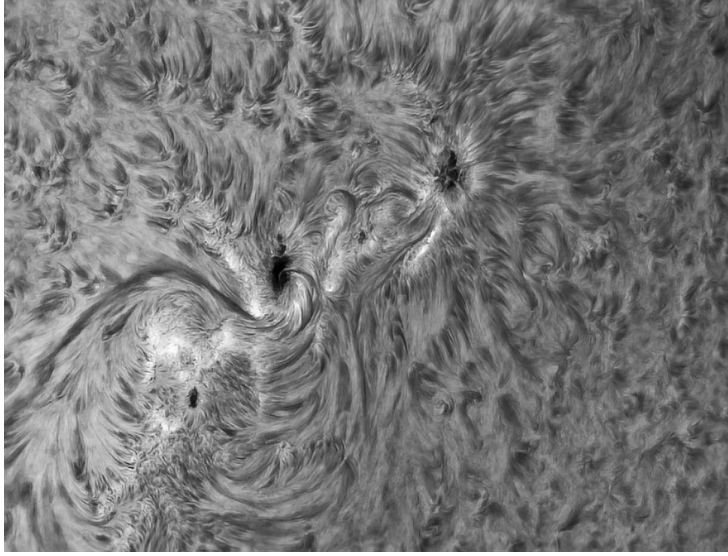


Figure 2: Decay phase of the SOL2015-09-19T17:13 observed at 17:57:12 UT by amateur observer Randy Shvak

1.2 September 20, 2015

On September 20, 2015, two M-class and one C-class flare occurred on the Sun. Figure 3 shows the coverage of data obtained from the amateurs, shown in respective colours. GOES observations in 1-8 Å are shown in black colour.

It may be noted that several records, mostly in $H\alpha$ wavelength, are captured during the pre-impulsive phase of the M-Class flare SOL2015-09-20T18:07. Unfortunately the rise phase of the aforesaid flare mostly deprives from RHESSI observations. Noticeably, observation in $H\alpha$ wavelength at 16:14 UT corresponding to the pre-impulsive phase of the flare is recorded by observer Pepe as given in figure 4.

1.3 September 21, 2015

On September 21, 2015, four C-class flare occurred on the Sun, however, before the observing coverage time of the campaign. Figure 5 shows the coverage of data obtained from the amateurs, shown in respective colours. GOES observations in 1-8 Å are shown in black colour.

It may be noted that only one record in continuum wavelength is available during 07:18-13:06 UT, mostly corresponding to the quiet time. Observation in 540 nm recorded at 12:01:02 UT is shown in figure 6.

1.4 September 22, 2015

Although several observations in multi-wavelength band were recorded by many amateur observers on September 22, 2015, the X-ray activity on this day was below C-class flare level. Figure 7 shows the coverage of data obtained from the

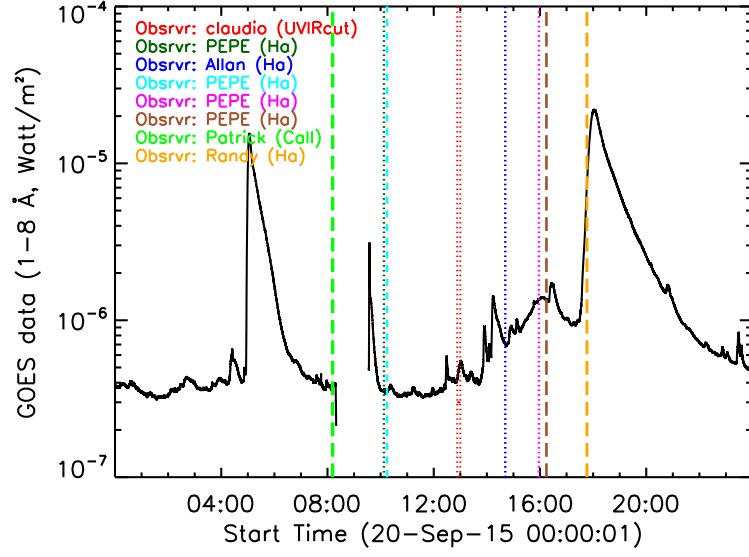


Figure 3: Coverage of data obtained from the amateurs, shown by dotted bars and mentioned in respective colours. GOES observations in 1-8 Å are shown in black colour.

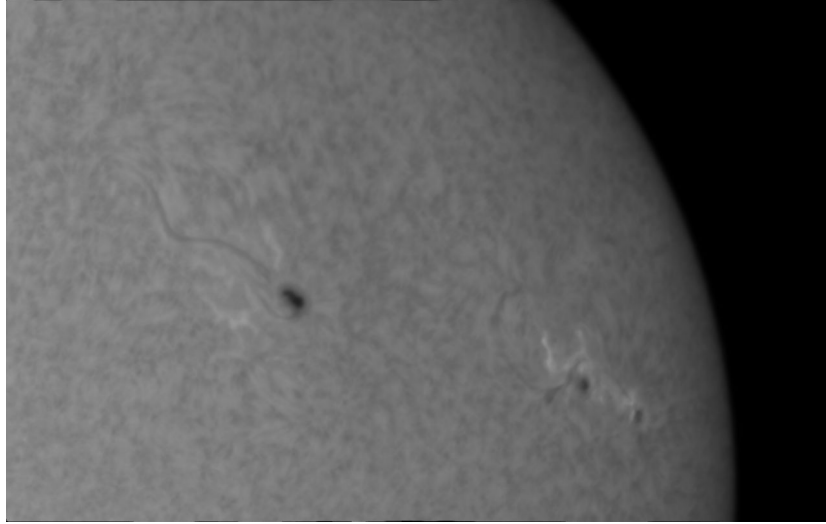


Figure 4: Rise phase of the SOL2015-09-20T18:07 observed at 16:14 UT by amateur observer Pepe Mateca

amateurs, shown in respective colours. GOES observations in 1-8 Å are shown in black colour.

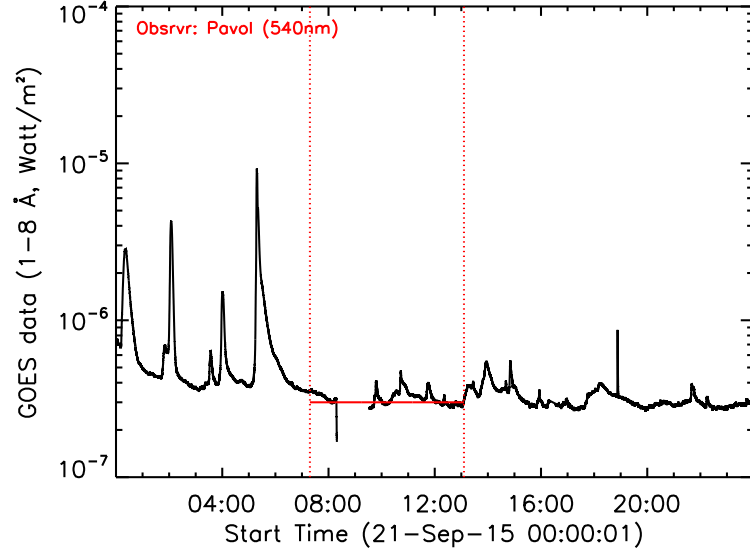


Figure 5: Coverage of data obtained from the amateurs, shown by dotted bars and mentioned in respective colours. GOES observations in 1-8 Å are shown in black colour.

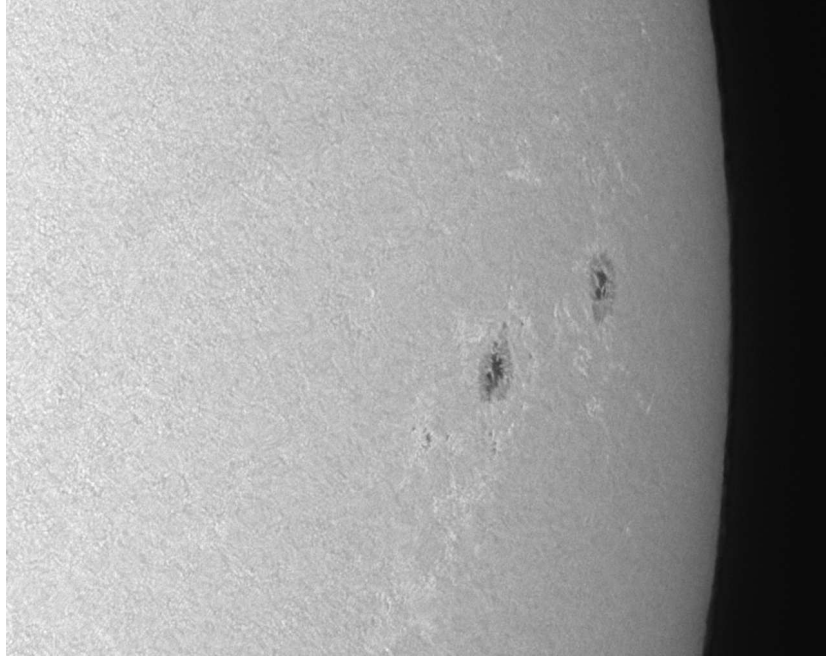


Figure 6: Continuum observation at 12:01:02 UT as recorded by Pavol Rapavy

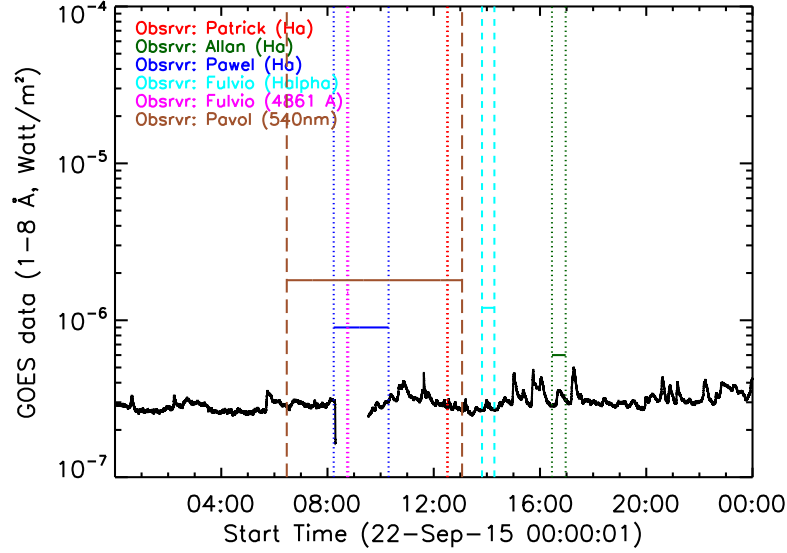


Figure 7: Coverage of data obtained from the amateurs, shown by dotted bars and mentioned in respective colours. GOES observations in 1-8 Å are shown in black colour.

1.5 September 23, 2015

On September 23, 2015, several C-class flare occurred on the Sun. On the other hand, probably due to cloudy weather, no data were reportedly recorded by amateur group.

1.6 September 24, 2015

On September 24, 2015, although solar activity in X-rays was very low, several observations were made available by amateur observers as may be noted from figure 8.

Observation in $H\alpha$ wavelength at 17:09:54 UT associated with a $\sim B8$ flare, recorded by observer Randy Shivak is given in figure 9.

1.7 September 25, 2015

On September 25, 2015, the Sun was not very active in terms of the flares except one C-class flare which occurred after the co-ordinated campaign observing time. On the other hand, several observations were made available by amateur observers as may be noted from figure 10.

1.8 September 26, 2015

On September 26, 2015, one C-class and several B-class flares activities have been recorded by GOES. On the contrary, most probably due to bad weather,

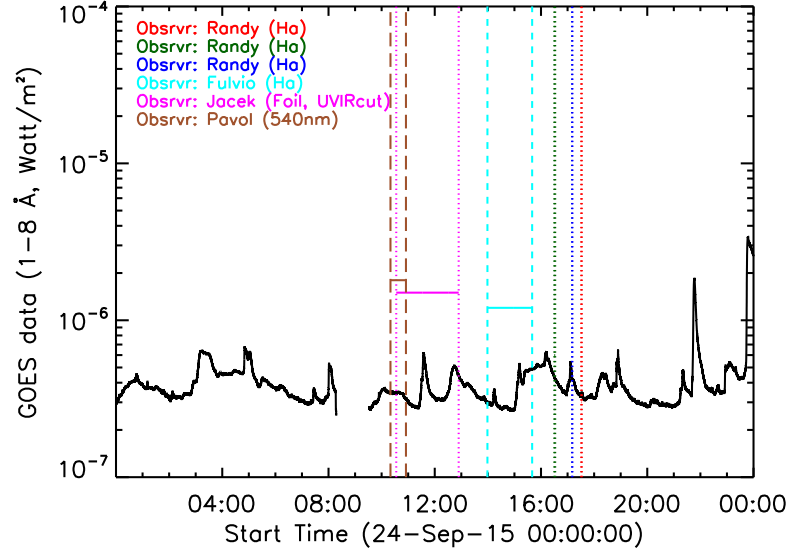


Figure 8: Coverage of data obtained from the amateurs, shown by dotted bars and mentioned in respective colours. GOES observations in 1-8 Å are shown in black colour.

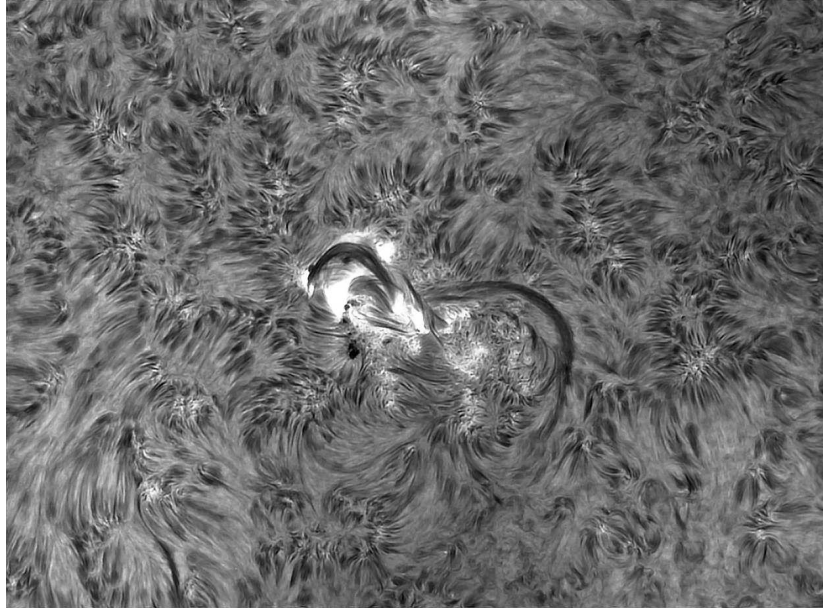


Figure 9: H α image at 17:09:54 UT associated with a \sim B8 flare by observer Randy Shivak

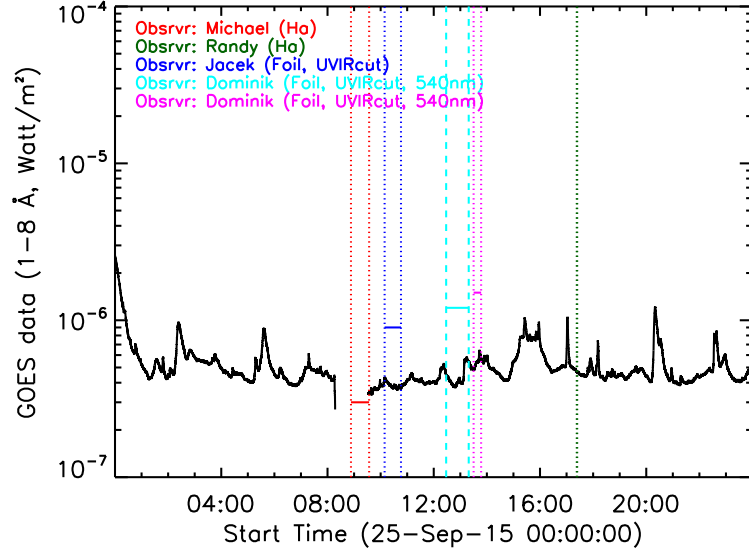


Figure 10: Coverage of data obtained from the amateurs, shown by dotted bars and mentioned in respective colours. GOES observations in 1-8 Å are shown in black colour.

only one observations is made available by the observers as may be noted from figure 11.

1.9 September 27, 2015

September 27, 2015, the last day of the F-CHROMA observing campaign, turned up as the most exciting in the sense of capturing flare. SOL2015-09-27T10:41, a M-class flare occurred and recorded in multi-wavelength band by several observers as shown in figure 12.

Observation in H α wavelength at 10:44:52 UT associated with the peak of SOL2015-09-27T10:41, recorded by observer Herald is given in figure 13.

2 Summary

An exhaustive overview of the data acquired by amateur observers in co-ordination with the F-CHROMA observing campaign suggests the success of outreach efforts made by F-CHROMA outreach team. Although the observations obtained during the campaign could cover a multi-wavelength overview of the solar atmosphere during the campaign, it may not serve as a standalone set of data for scientific level analysis. A few records made during this campaign may serve the purpose of providing the spatial and temporal evolution of active region pre- and post-flare.

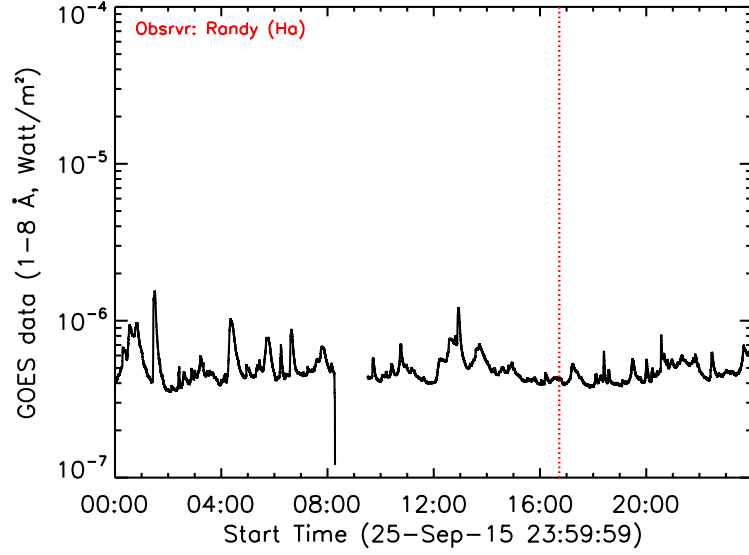


Figure 11: Coverage of data obtained from the amateurs, shown by dotted bars and mentioned in respective colours. GOES observations in 1-8 Å are shown in black colour.

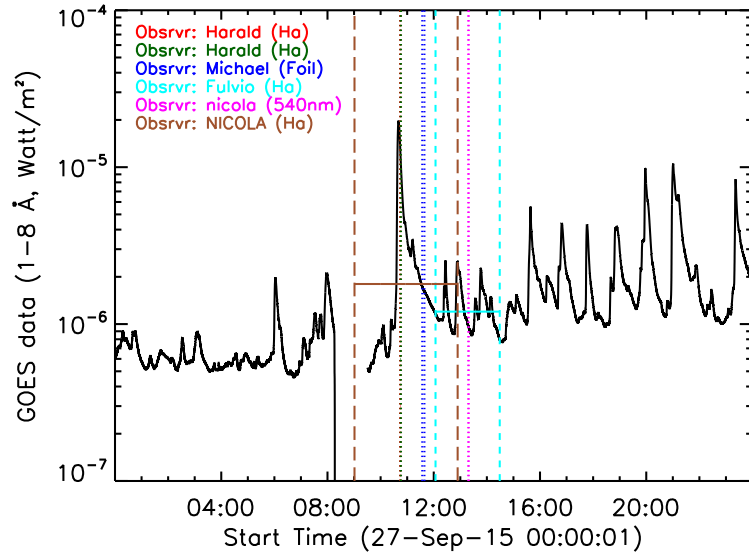


Figure 12: Coverage of data obtained from the amateurs, shown by dotted bars and mentioned in respective colours. GOES observations in 1-8 Å are shown in black colour.

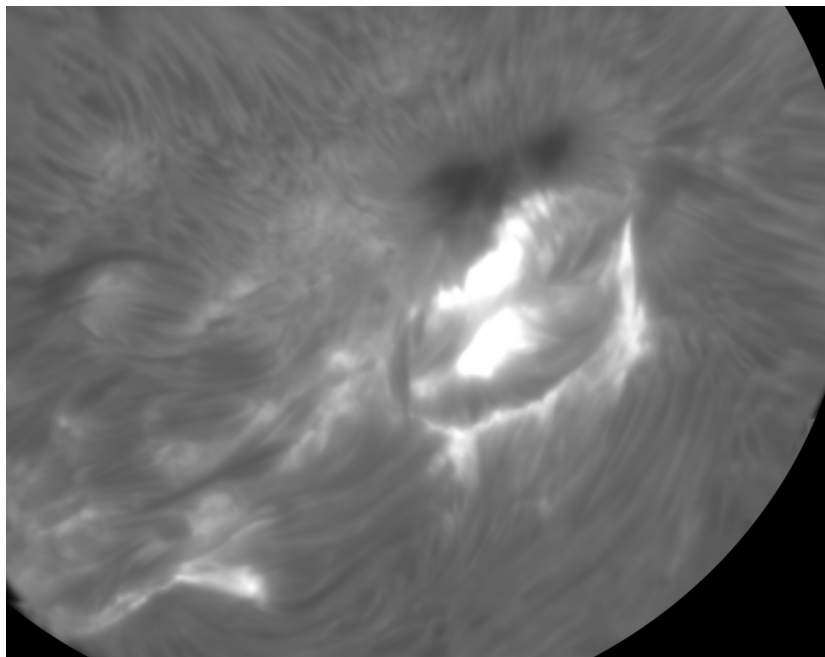


Figure 13: $H\alpha$ image at 10:44:52 UT associated with the peak of SOL2015-09-27T, recorded by observer Herald Paleska.