

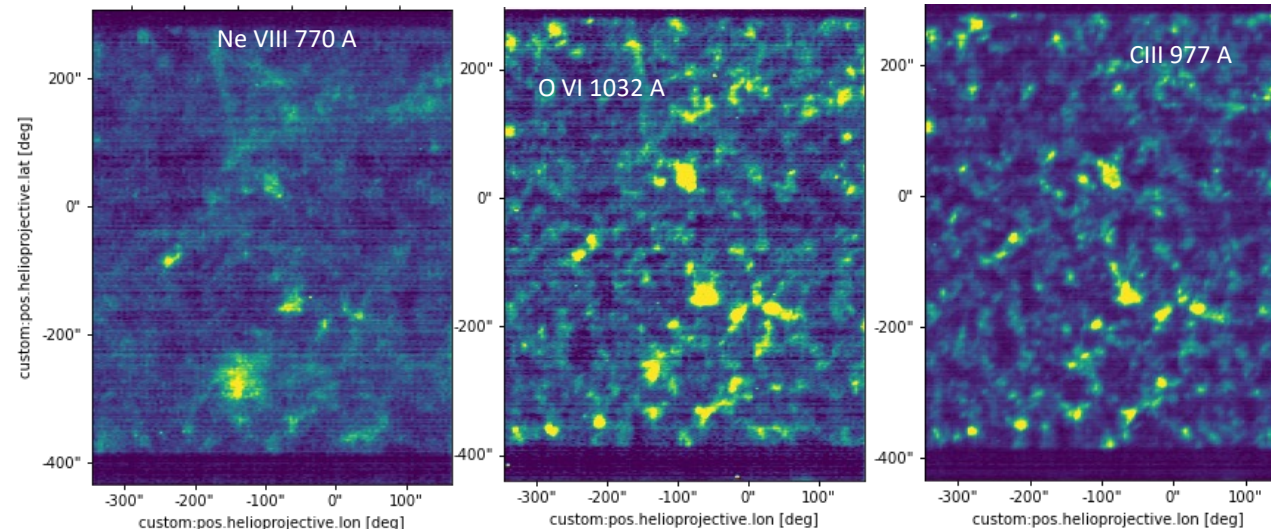
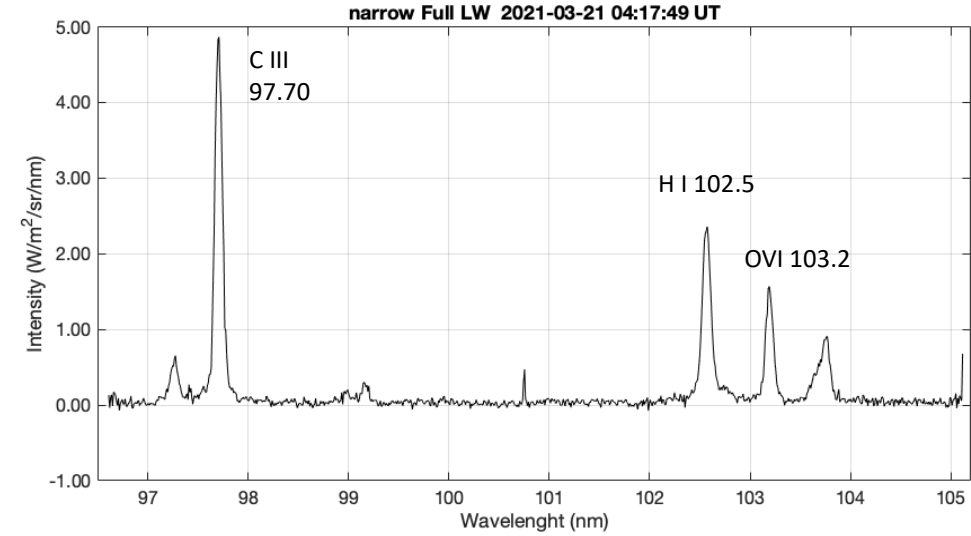
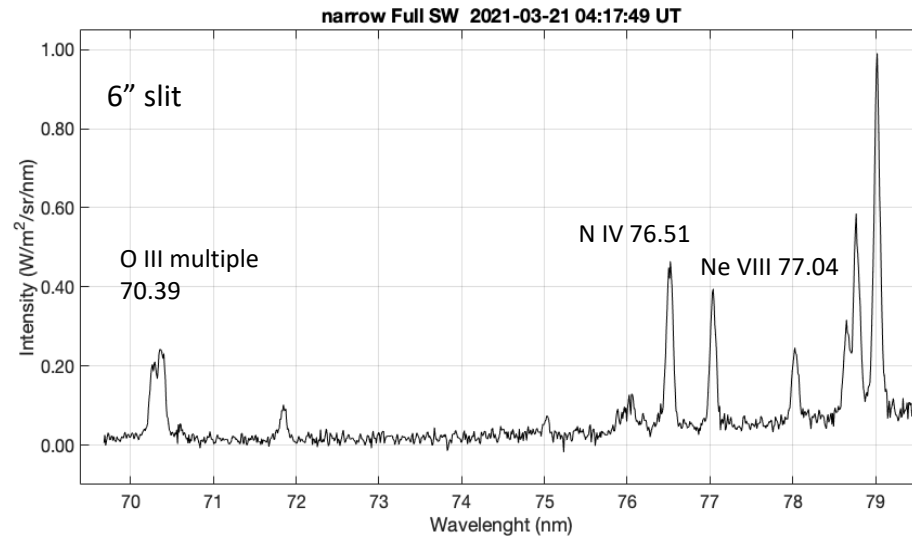
# A Study of Small-Scale Brightenings using EUV Data from SPICE on board Solar Orbiter

**Jenny M. Rodríguez Gómez<sup>1,2</sup>, Peter Young<sup>1</sup>, Therese Kucera<sup>1</sup> and SPICE Team**

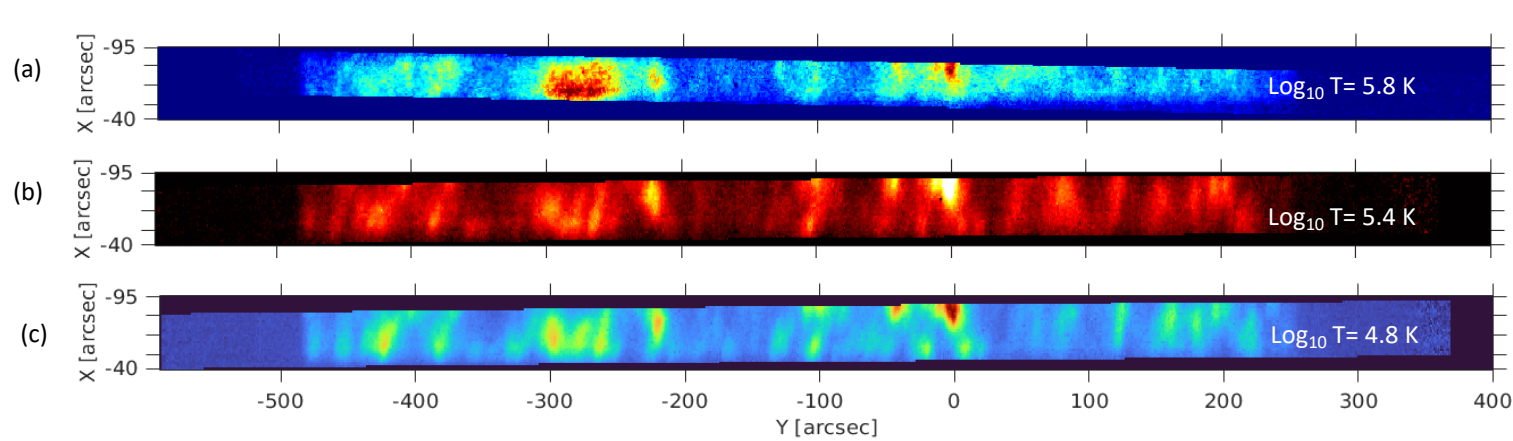
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Washington, D.C. 20064

# Spectral Imaging of Coronal Environment (SPICE) EUV spectrometer

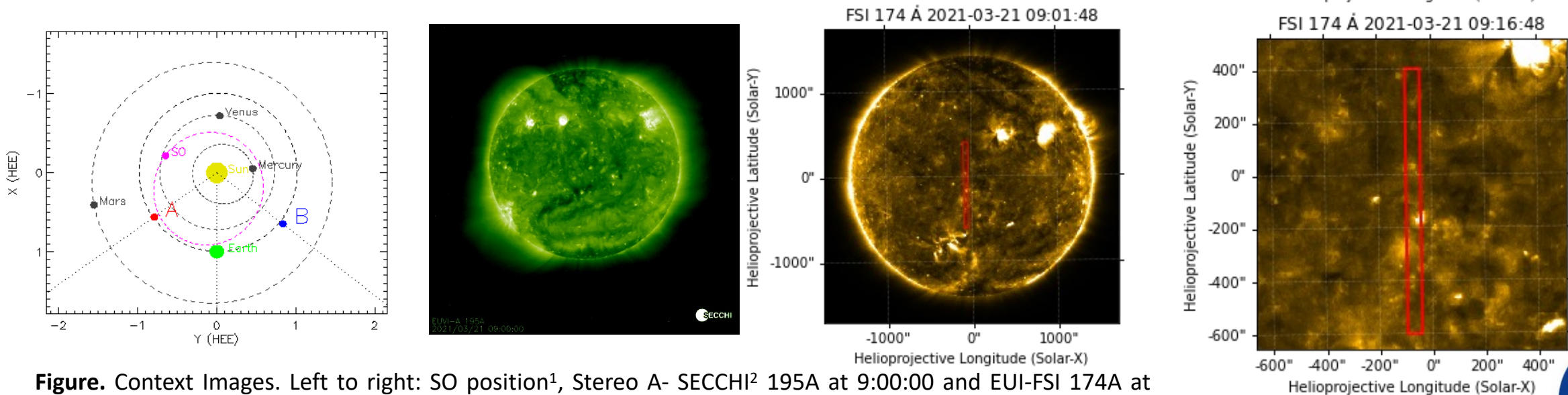
The Spectral Imaging Of Coronal Environment (SPICE; SPICE consortium et al. 2020) Instrument was launched on Solar Orbiter (García Marirrodriga et al. 2021; Müller et al. 2020) in February 2020. It is a high-resolution imaging spectrometer that observes the Sun in two extreme ultraviolet (EUV) wavelength bands, 70.4 -79.0 nm and 97.3 - 104.9 nm (Fludra et al. 2021).



# SPICE width slit (30'') movies on 2021-03-21 from 09:01:27 to 09:17:56 UT

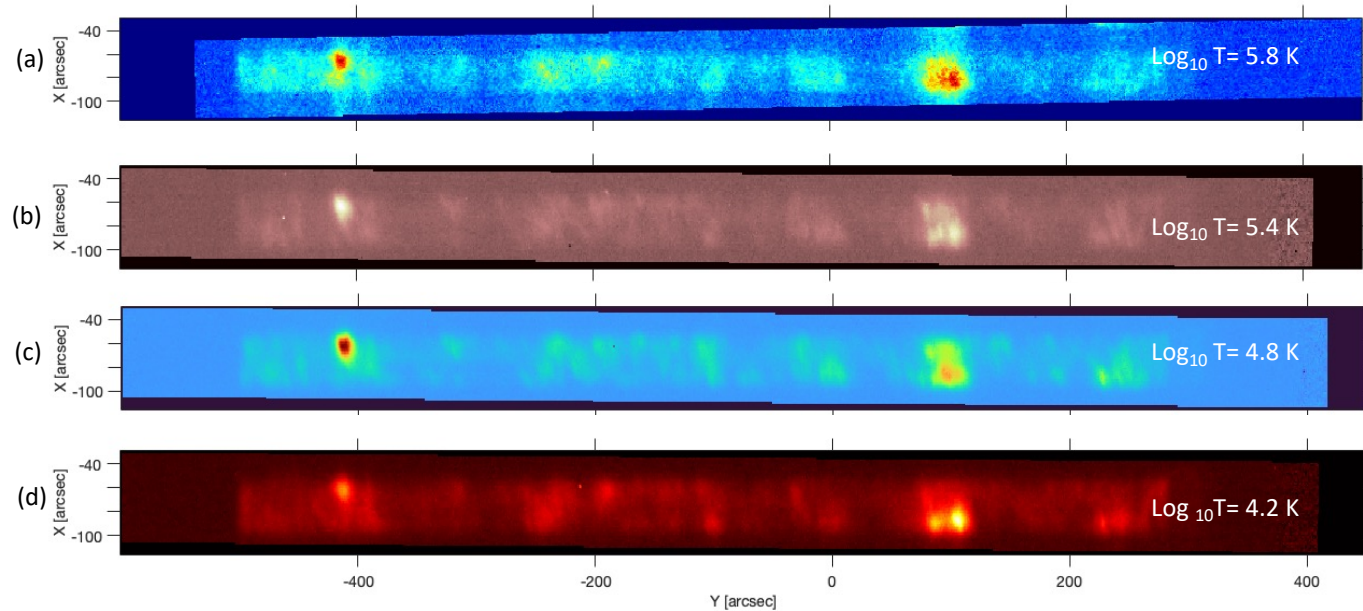


**Figure.** Wide slit images 2021-03-21 at 09:17:56 UT, Ne VIII (a), OVI (b), CIII (c) wavelengths.  $X_{\text{center}} = -66.26''$  and  $Y_{\text{center}} = -84.58''$ , time cadence 5.15 s, distance from Sun 0.68 AU.

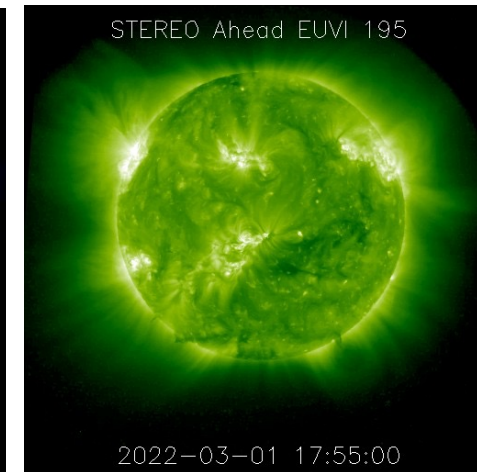
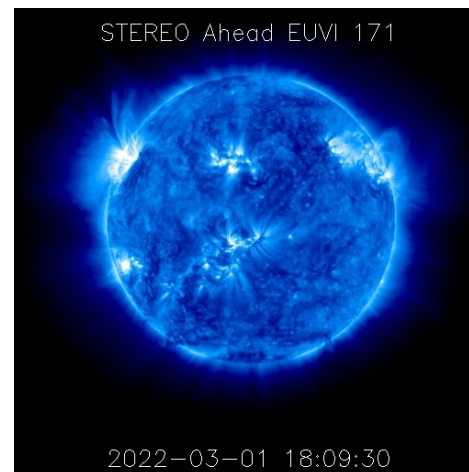
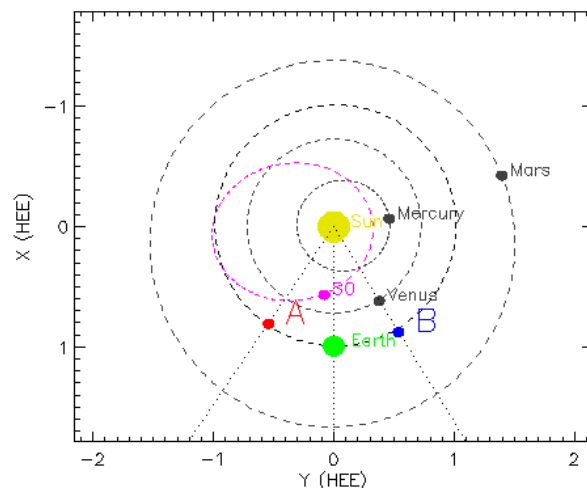


**Figure.** Context Images. Left to right: SO position<sup>1</sup>, Stereo A- SECCHI<sup>2</sup> 195A at 9:00:00 and EU-ESI 174A at 09:01:48

# SPICE width slit (30'') movies on 2022-03-01 from 17:51:11 to 18:24:28 UT



**Figure.** Wide slit images 2022-03-01 at 17:51:11 UT, Ne VIII (a), OVI (b), CIII (c) and Ly- $\beta$  (d).  $X_{\text{center}} = -84.77''$  and  $Y_{\text{center}} = -65.76''$ , time cadence 5.20 s, distance from Sun 0.56 AU.



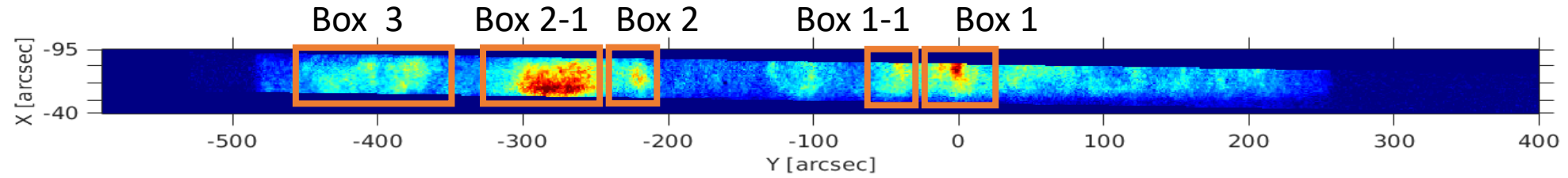
**Figure.** Context Images. Left to right: SO position<sup>1</sup>, Stereo A- SECCHI<sup>2</sup> 171A and 195A at 17:55:00 and 18:09:30 UT

<sup>1</sup> [https://stereo-ssc.nascom.nasa.gov/cgi-bin/make\\_where\\_gif](https://stereo-ssc.nascom.nasa.gov/cgi-bin/make_where_gif)

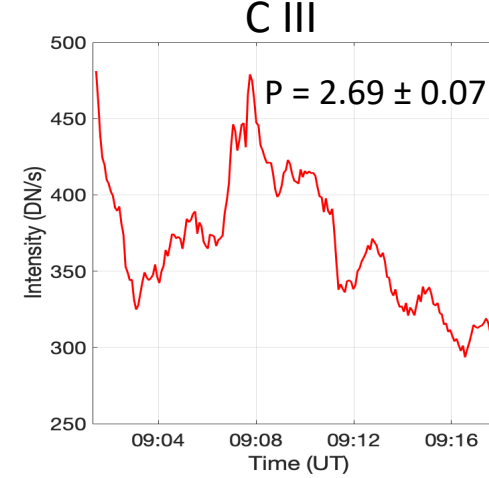
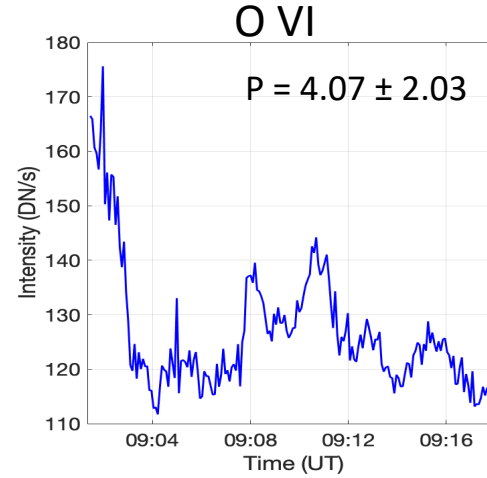
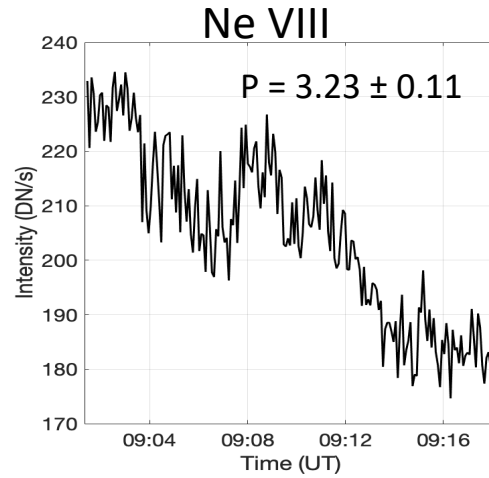
<sup>2</sup> <https://stereo-ssc.nascom.nasa.gov/cgi-bin/images>



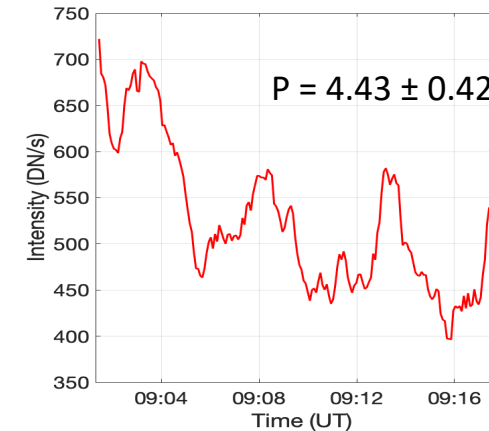
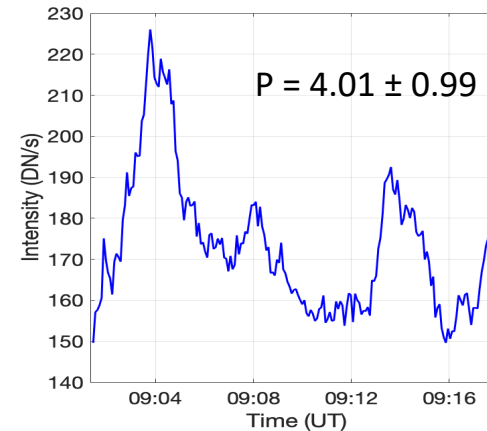
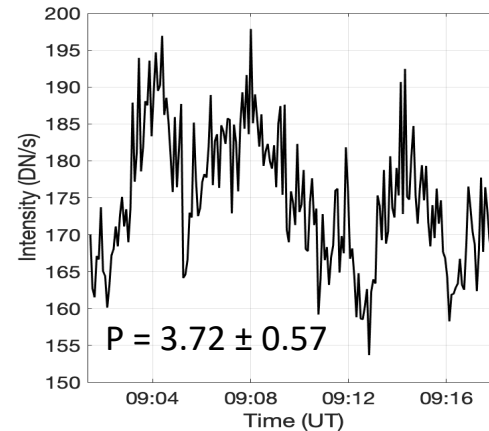
# 2021-03-21 from 09:01:27 to 09:17:56 UT



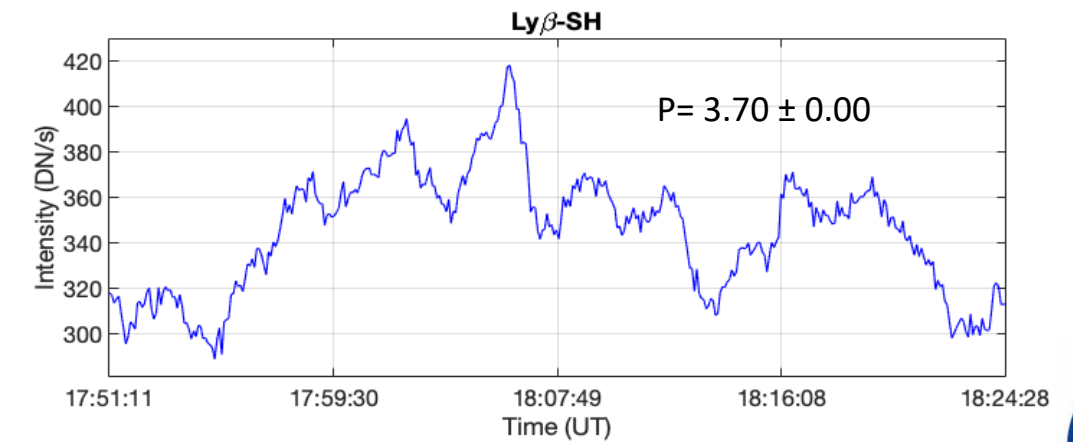
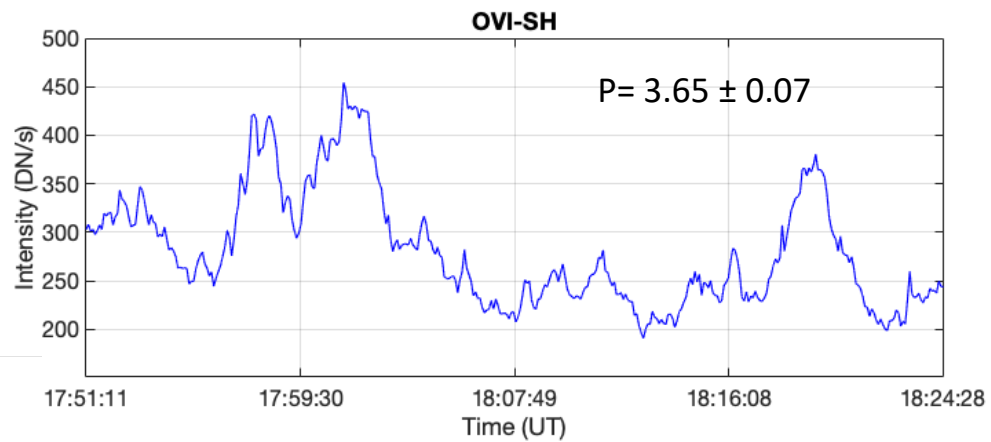
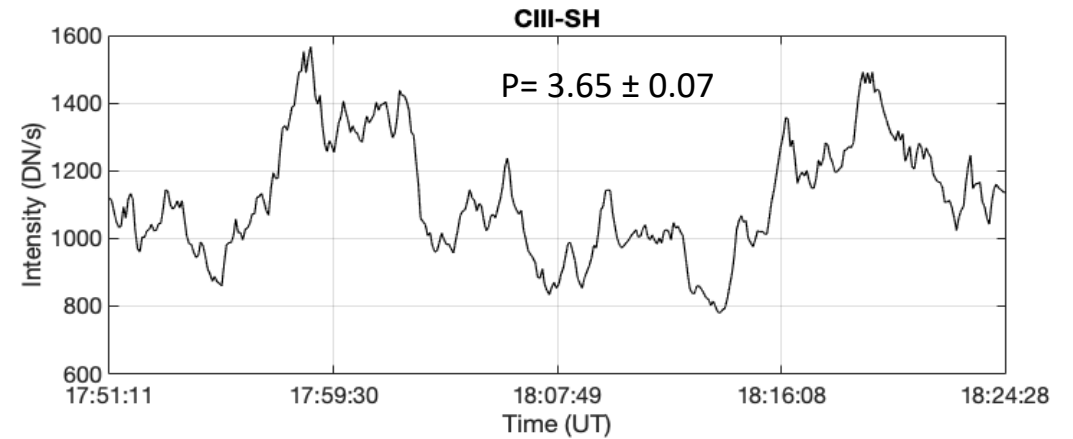
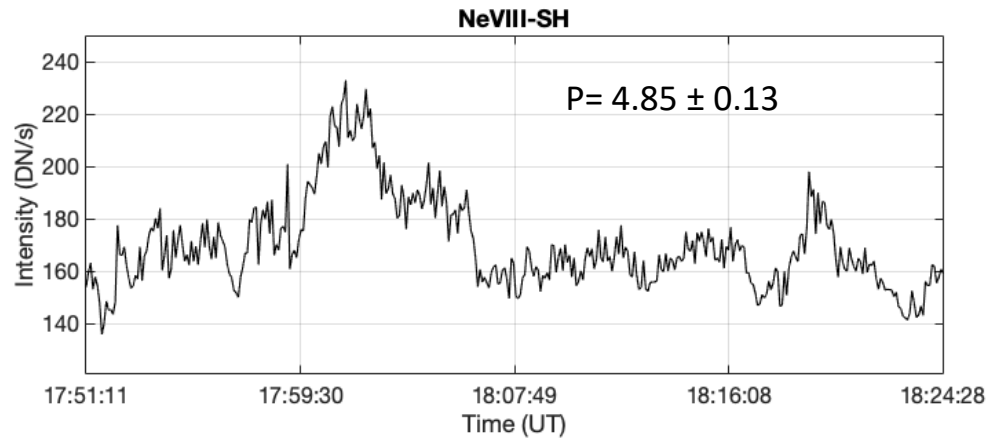
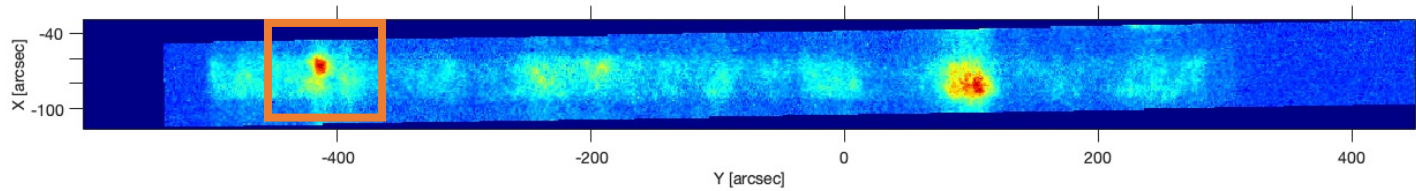
Box 1

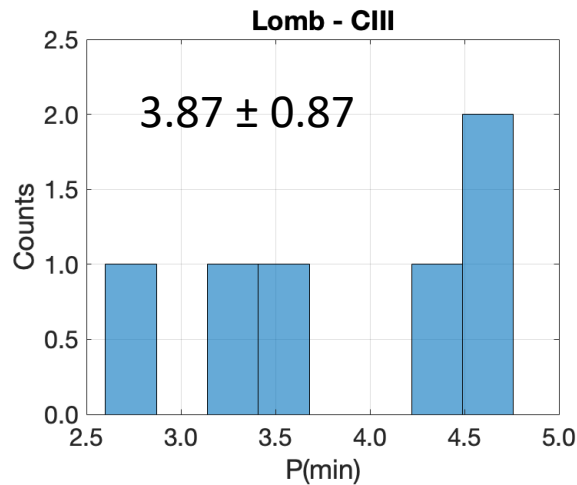


Box 2

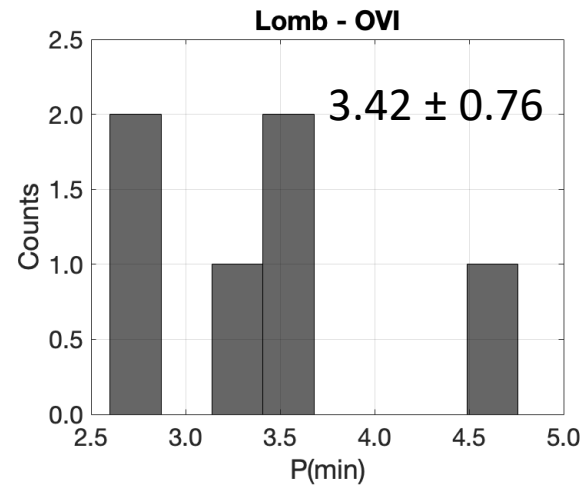


# 2022-03-01 from 17:51:11 to 18:24:28 UT

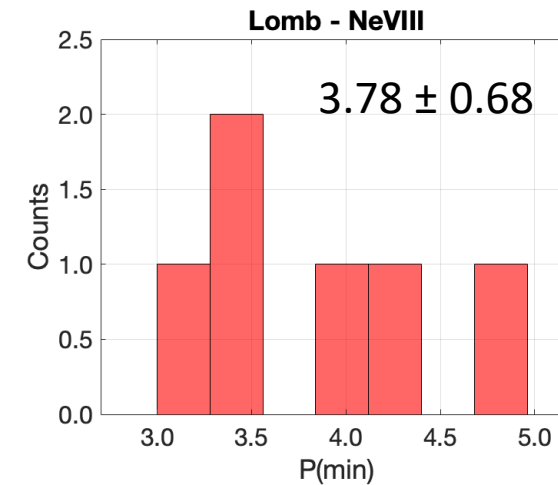




$\text{Log}_{10}(T)=4.8 \text{ K}$



$\text{Log}_{10}(T)=5.4 \text{ K}$



$\text{Log}_{10}(T)=5.8 \text{ K}$

## Summary

- SPICE provides a wonderful opportunity to study the upper chromosphere and transition region, with simultaneous datasets in high time cadence.
- The periodogram analysis confirms the oscillatory nature of the small-scale brightening with periods ranging between 2 and 5 minutes.
- The predominance of short periods related to high-temperature lines, i.e., Ne VIII 770 Å and O VI 1032 Å with  $\text{Log}_{10}(T)=5.8 \text{ K}$  and  $\text{Log}_{10}(T) = 5.4 \text{ K}$ , respectively.