

# The Sun as a Star: Flare Response of the FUV Continuum

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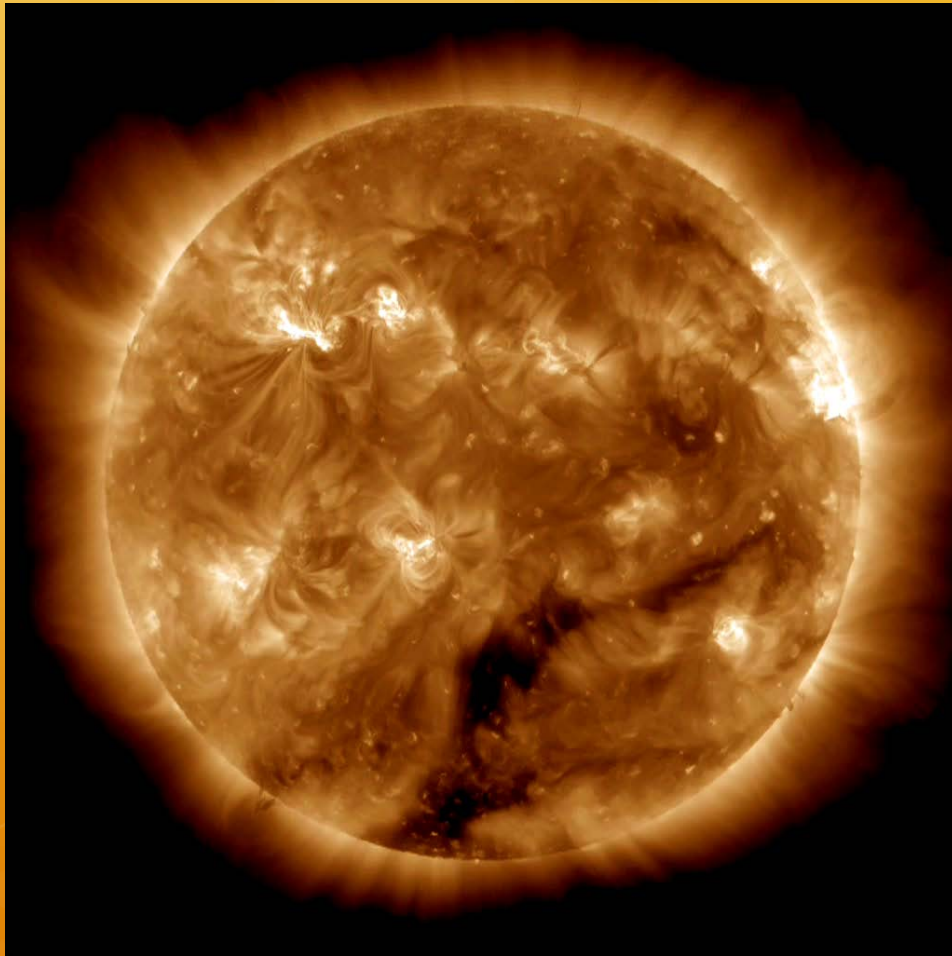
# Outline

- ★ Flares and FUV
- ★ Purpose
- ★ Analysis
- ★ Final Results

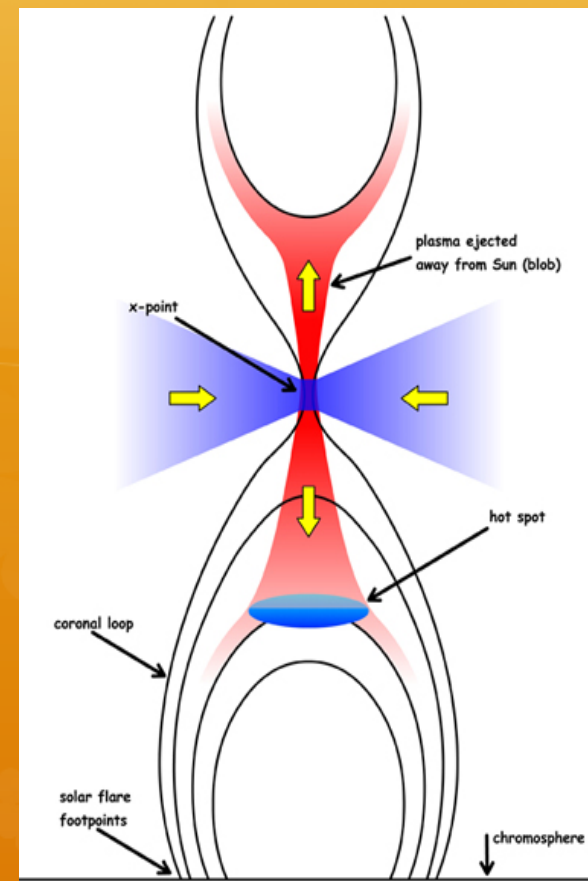




# Flares

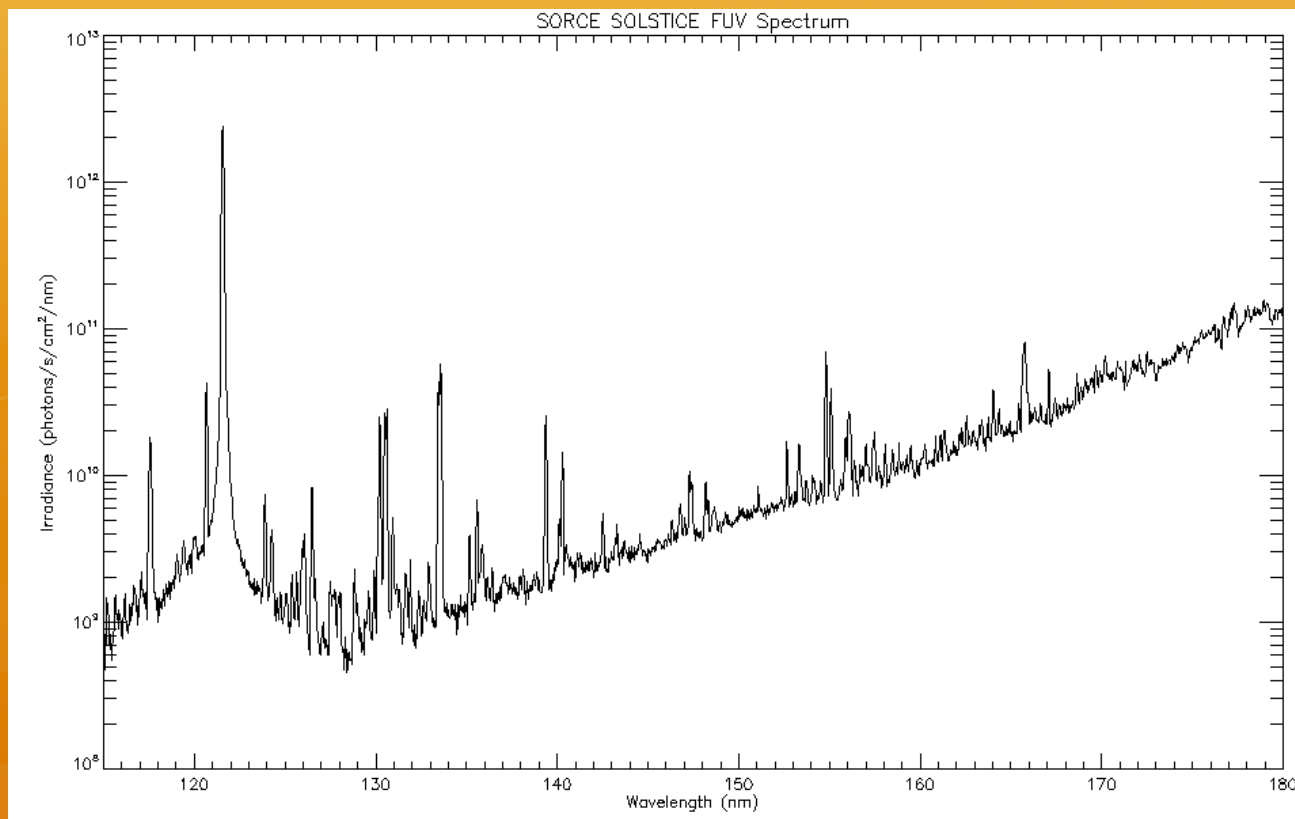


- ★ Flares are built up magnetic energy that is released into the solar atmosphere



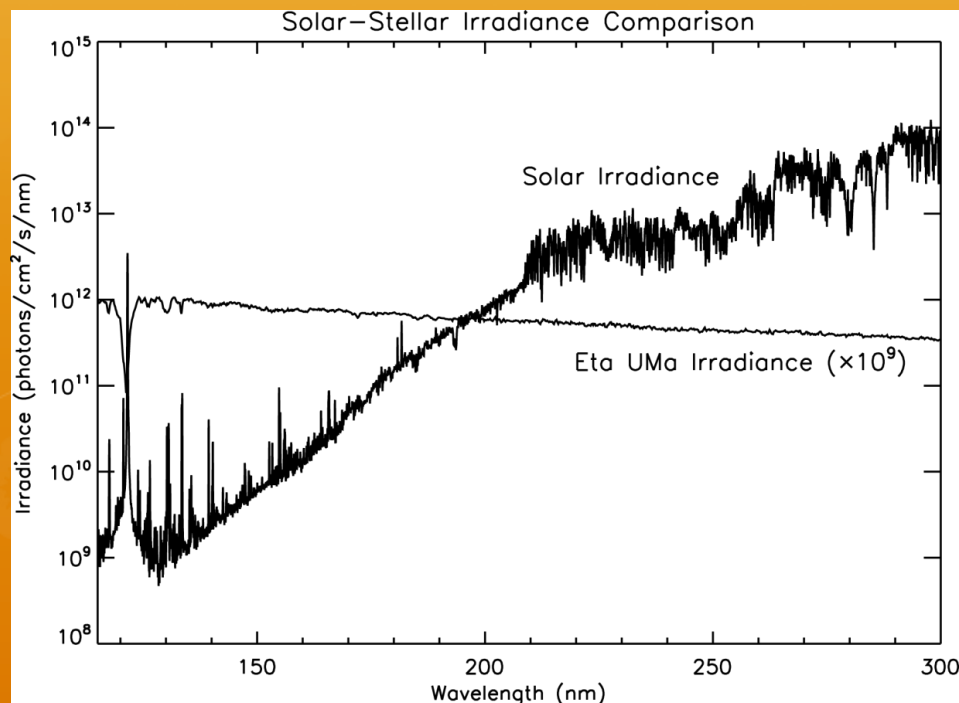
# FUV Continuum

- ★ Far Ultraviolet is considered from 115 nm to 180 nm
- ★ We looked at 150 to 153 nm of this continuum



# SOLSTICE II

- ★ SOLar-STellar Irradiance Comparison Experiment
- ★ Launched January 2003.
- ★ Scanning grating monochromator
- ★ Measures 115-320 nm
  - ★ FUV 115-180 nm ( $\Delta\lambda=0.1$  nm)
  - ★ MUV 180-320 nm ( $\Delta\lambda=0.1$  nm)



# SOLSTICE Planning

- ★ Normal vs Quick Scans
- ★ Integration time between these scans is different

SORCE Planning Summary

From 2008/001-00:00:00 to 2008/002-00:00:00

Success Failure Unknown/Indeterminate

290 activities/events were found. 17 activities/events are shown.

Instrument	Start Time	Stop Time	Activity	Parameters
SolsticeB	2008/001-01:11:11.800	2008/001-01:13:40.820	FUVSolarQuickScan	
SolsticeB	2008/001-01:29:36.820	2008/001-01:36:50.440	FUVSolarQuickScan	
SolsticeB	2008/001-05:27:47.920	2008/001-06:16:38.250	FUVSolarNormalScanUp	
SolsticeB	2008/001-06:16:38.250	2008/001-06:28:18.250	FUVSolarQuickScan	
SolsticeB	2008/001-07:04:57.140	2008/001-07:53:47.520	FUVSolarNormalScanUp	
SolsticeB	2008/001-08:42:06.360	2008/001-09:30:56.780	FUVSolarNormalScanDown	
SolsticeB	2008/001-09:30:56.780	2008/001-09:42:36.780	FUVSolarQuickScan	
SolsticeB	2008/001-11:56:24.810	2008/001-12:45:15.300	FUVSolarNormalScanDown	
SolsticeB	2008/001-13:33:34.040	2008/001-14:22:24.560	FUVSolarNormalScanUp	
SolsticeB	2008/001-14:22:24.560	2008/001-14:34:04.560	FUVSolarQuickScan	
SolsticeB	2008/001-15:10:43.280	2008/001-15:59:33.810	FUVSolarNormalScanDown	
SolsticeB	2008/001-18:25:01.780	2008/001-19:13:52.300	FUVSolarNormalScanUp	
SolsticeB	2008/001-19:13:52.300	2008/001-19:25:32.300	FUVSolarQuickScan	
SolsticeB	2008/001-20:02:11.030	2008/001-20:51:01.540	FUVSolarNormalScanDown	
SolsticeB	2008/001-21:39:20.280	2008/001-22:28:10.770	FUVSolarNormalScanUp	
SolsticeB	2008/001-22:28:10.770	2008/001-22:39:50.770	FUVSolarQuickScan	
SolsticeB	2008/001-23:16:29.540	2008/002-00:17:00.000	FUVSolarNormalScanDown	



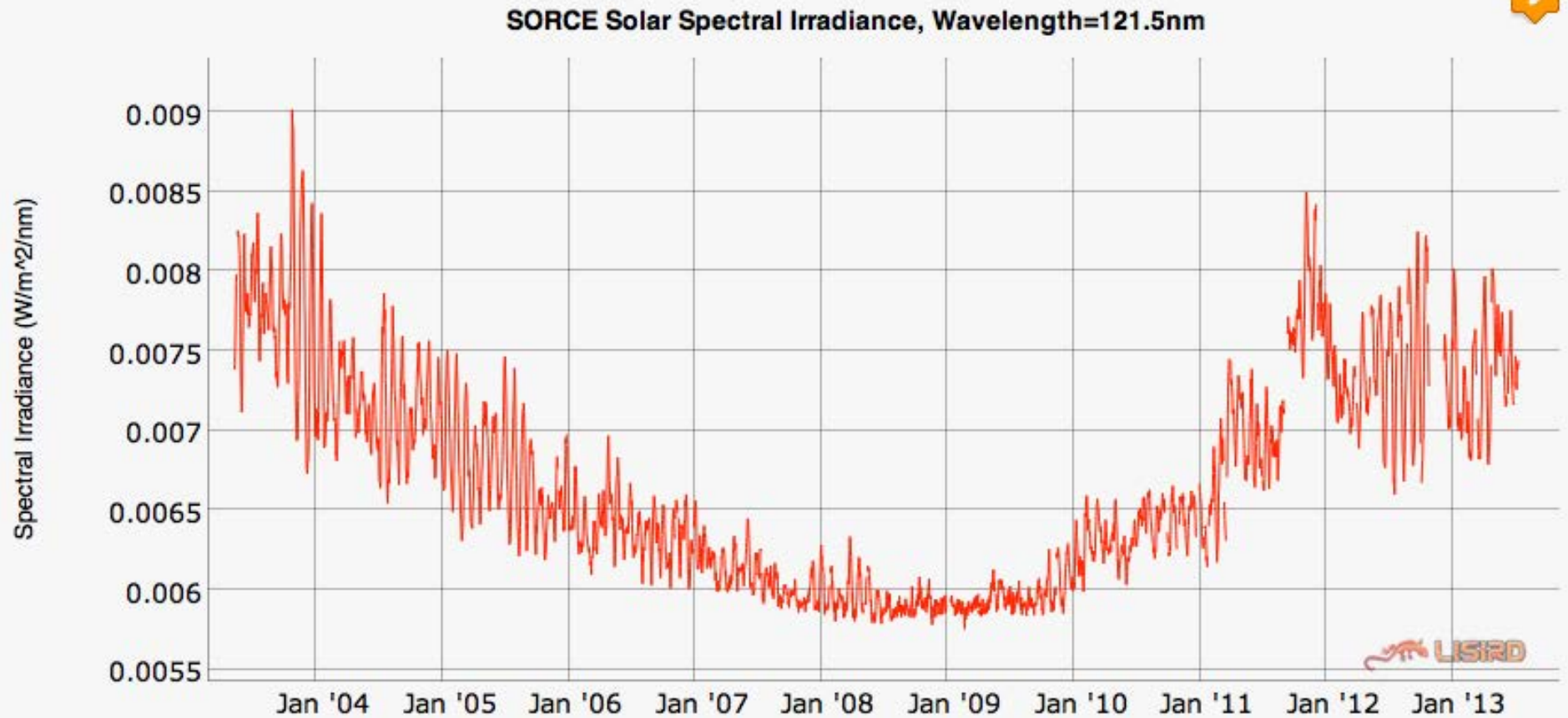
# Purpose

- ★ The spectral distribution of solar flares in the ultraviolet is not well known.
- ★ Ultimately this analysis will help us find out more about where the energy of a flare goes, and more about flares themselves.



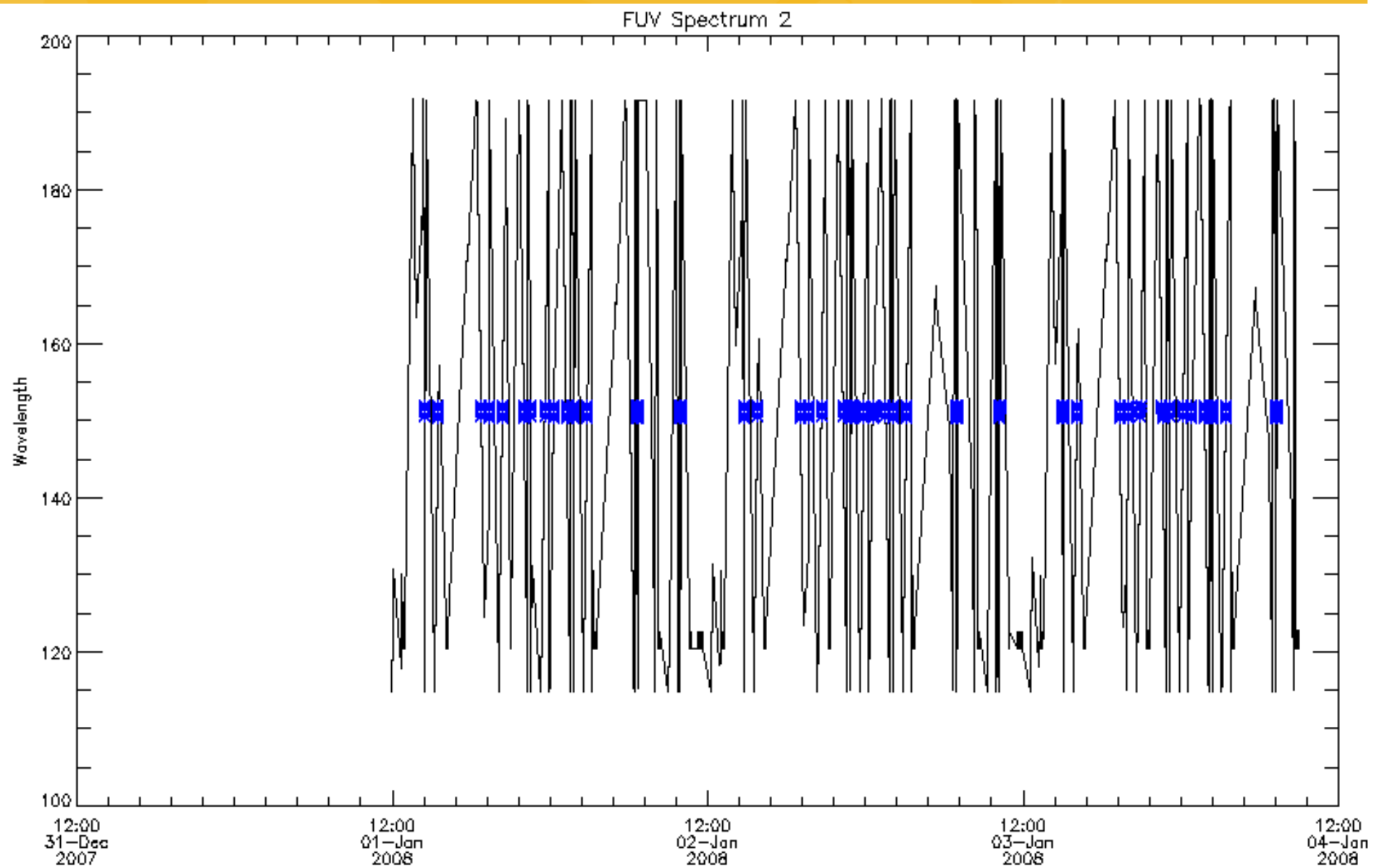
# SORCE Time Series

## SORCE SOLAR SPECTRAL IRRADIANCE - TIME SERIES

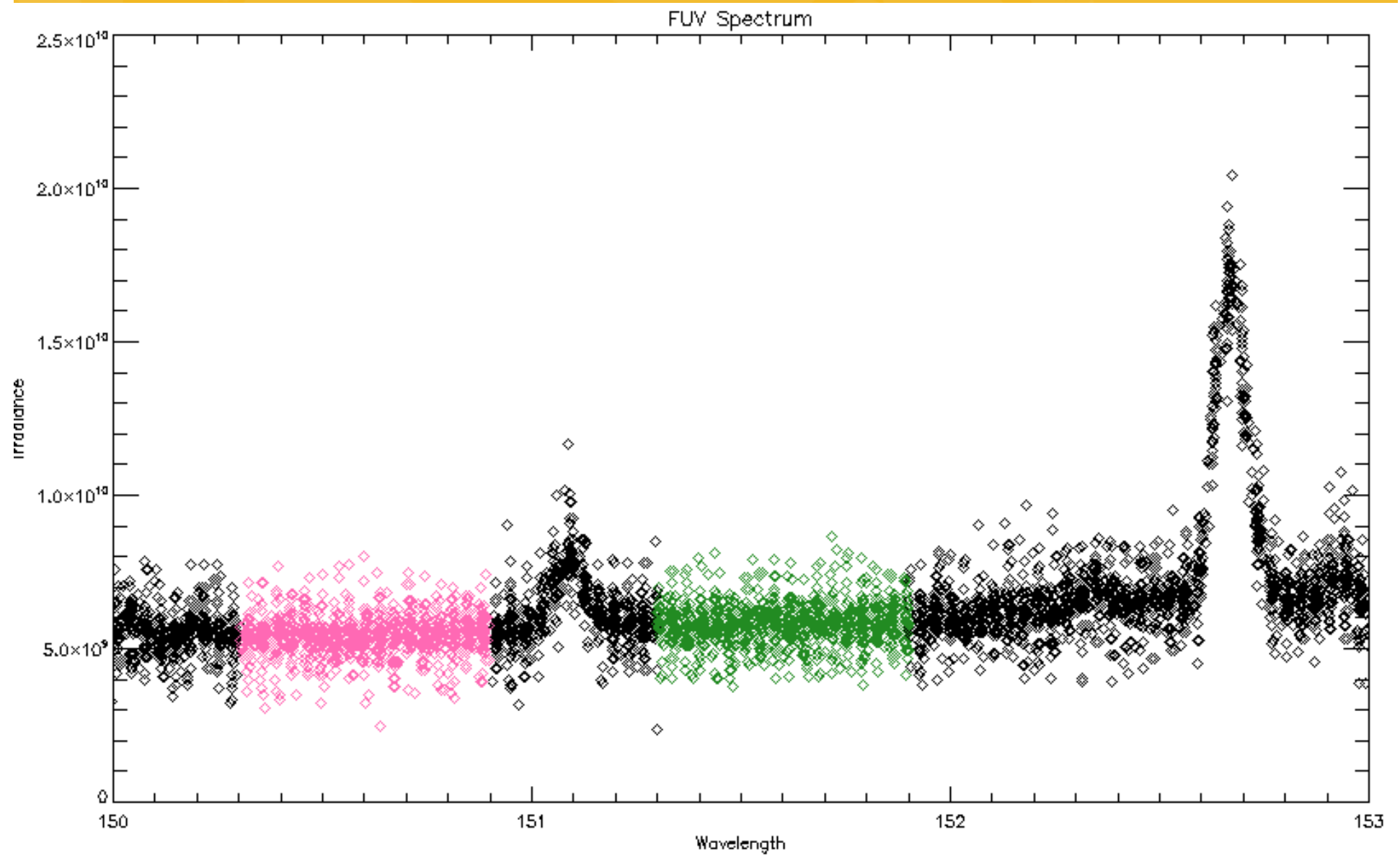




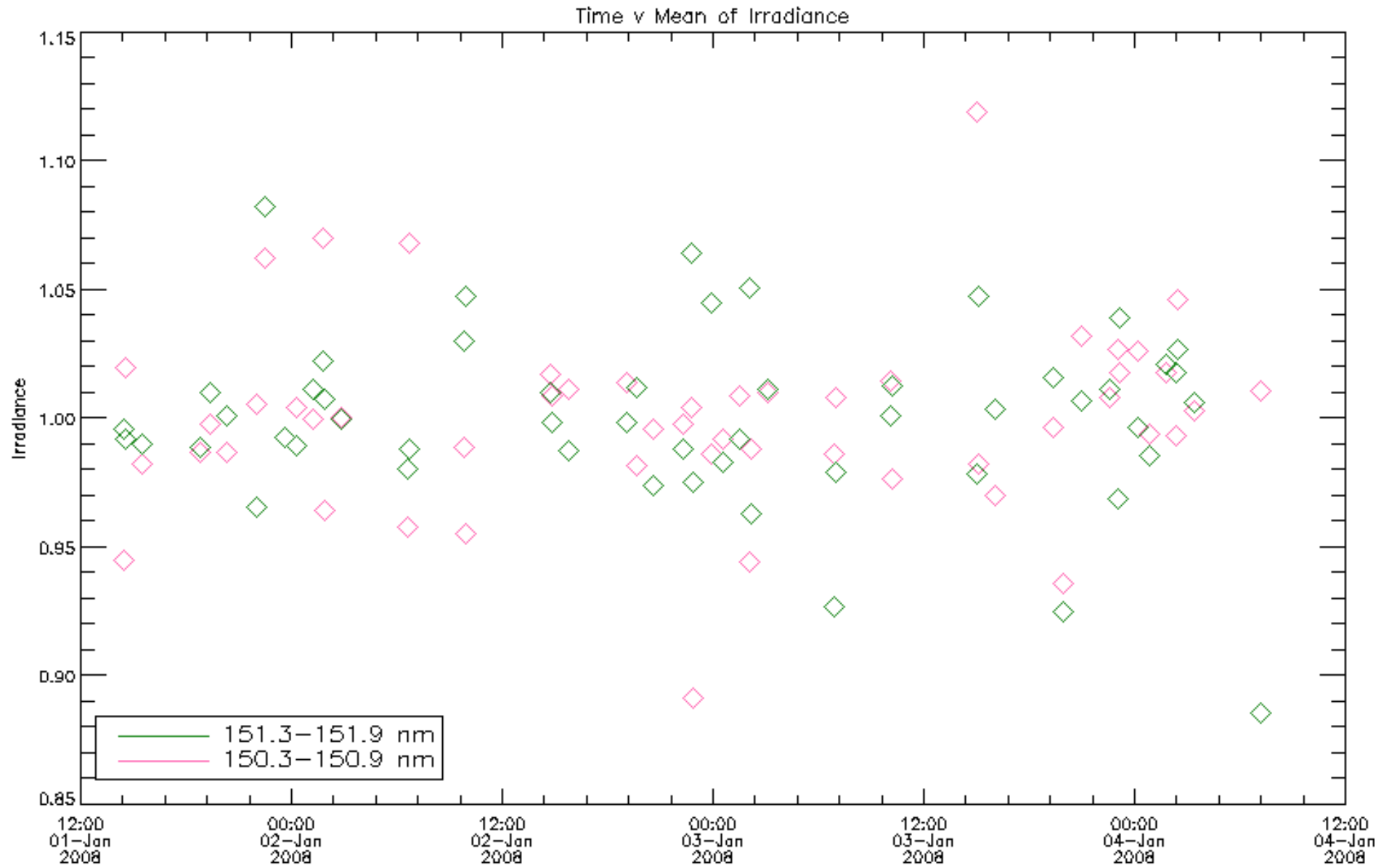
## Day in the Life of SORCE



## Spectrum of Portion of Interest

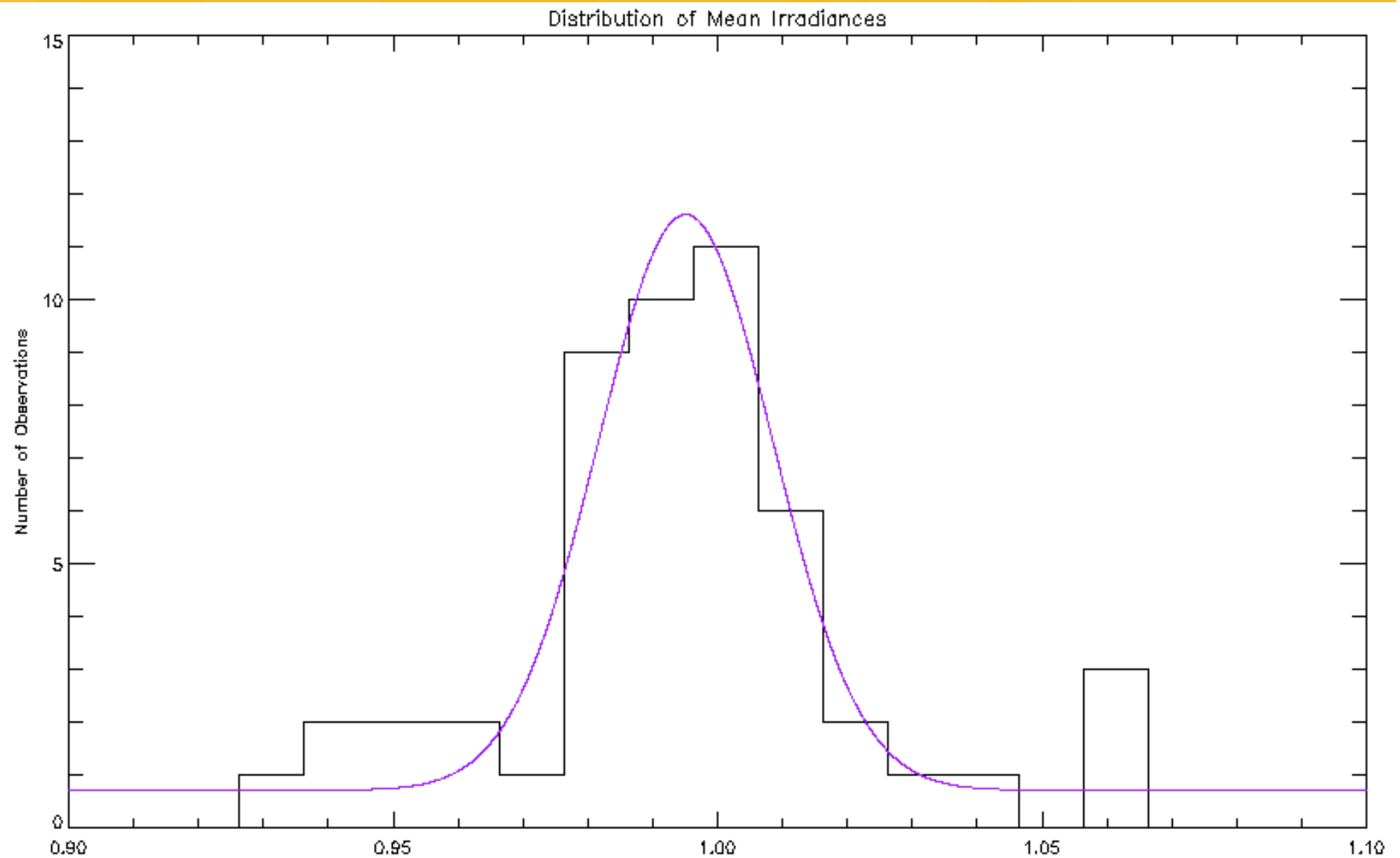


## Average Irradiance of SORCE scans



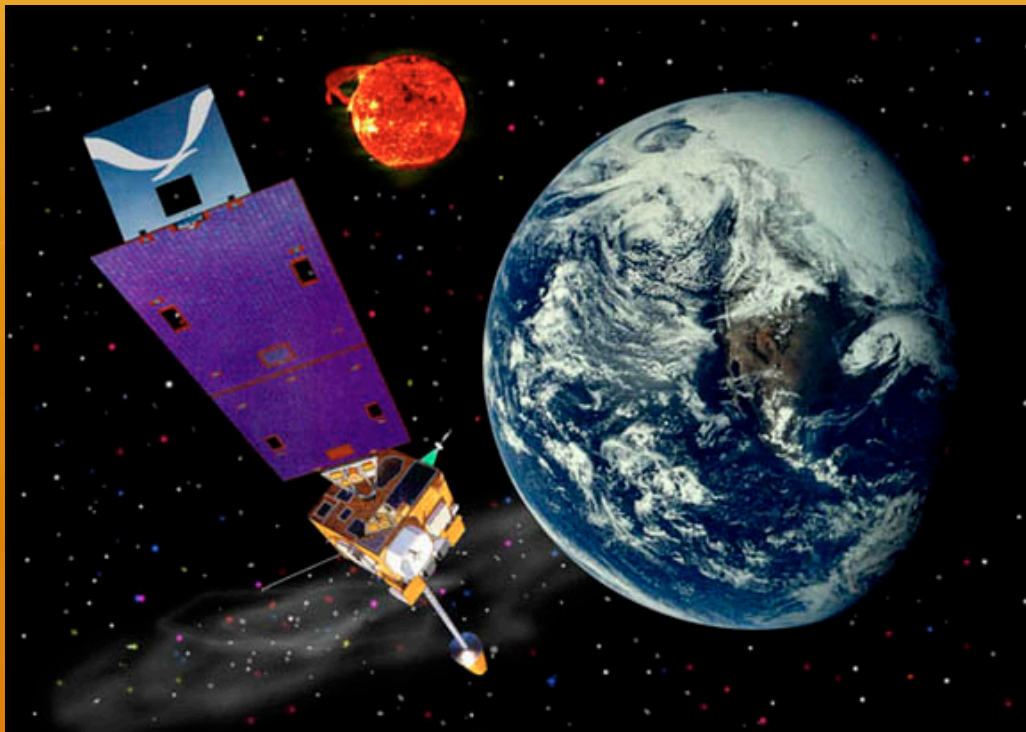


## Histogram of Averaged Irradiance

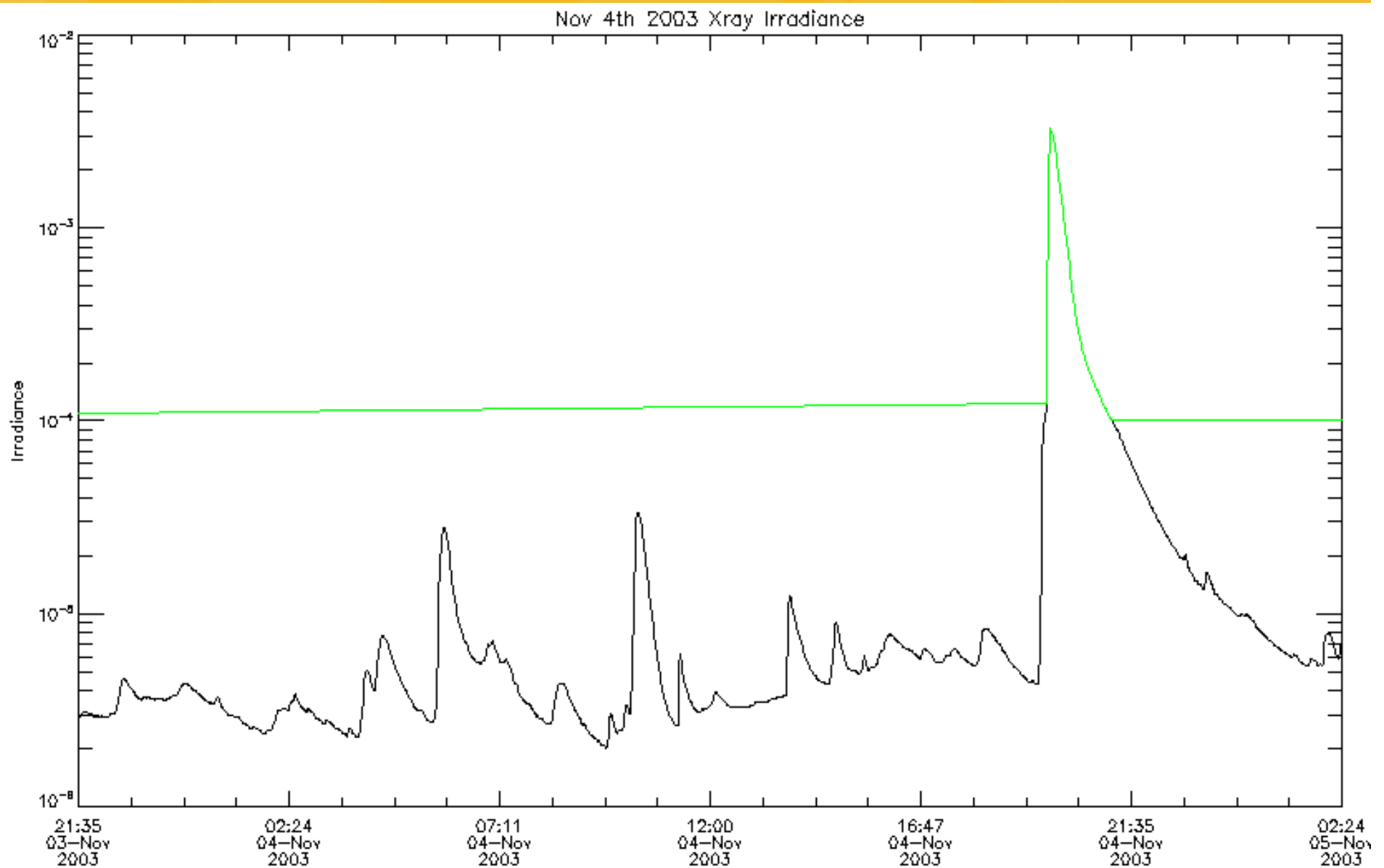


# Data Mining

- ★ Looked at data from GOES to find dates of X-class flares
- ★ Decided on 2003

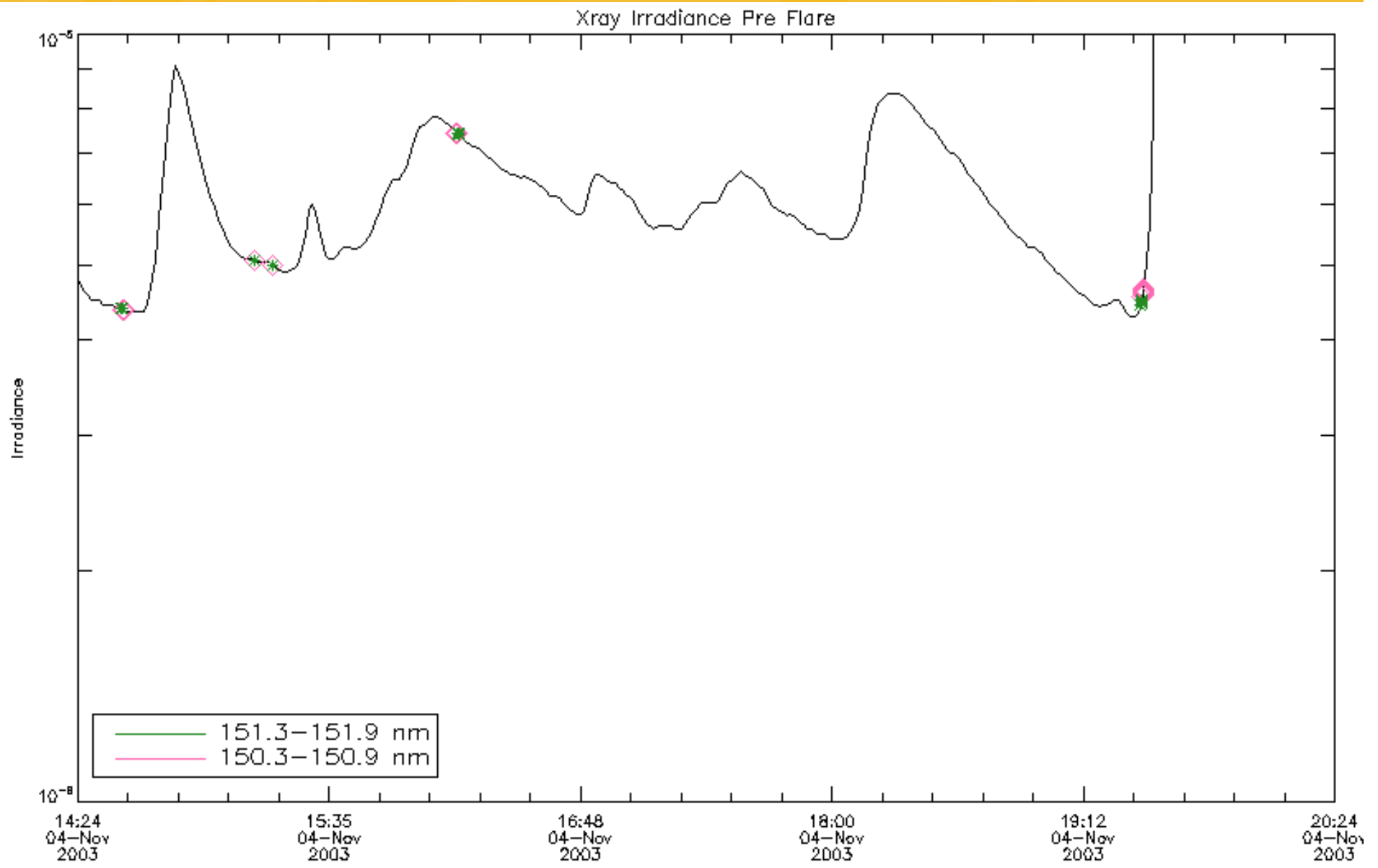


## Xray Irradiance of November 4<sup>th</sup> 2003

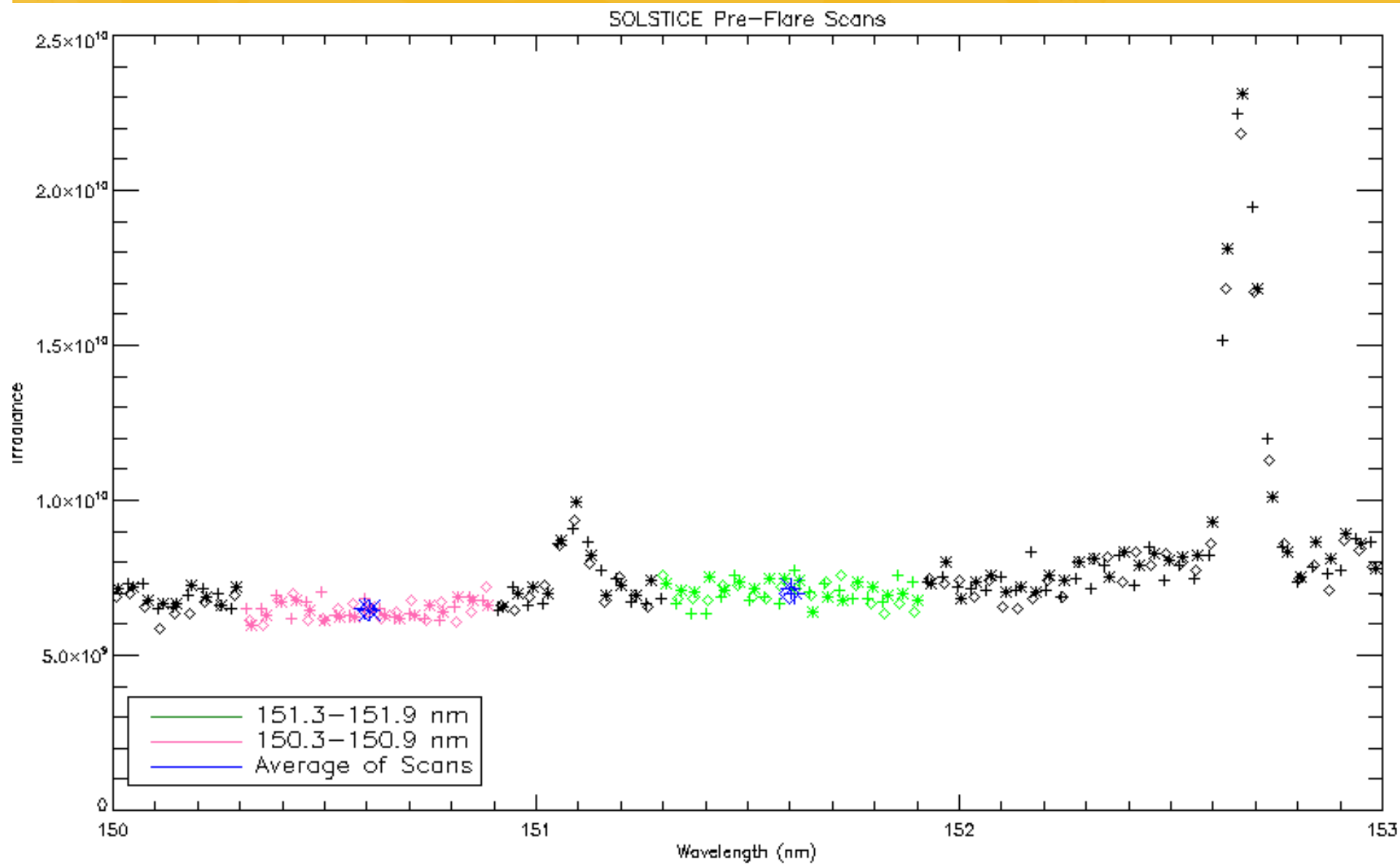




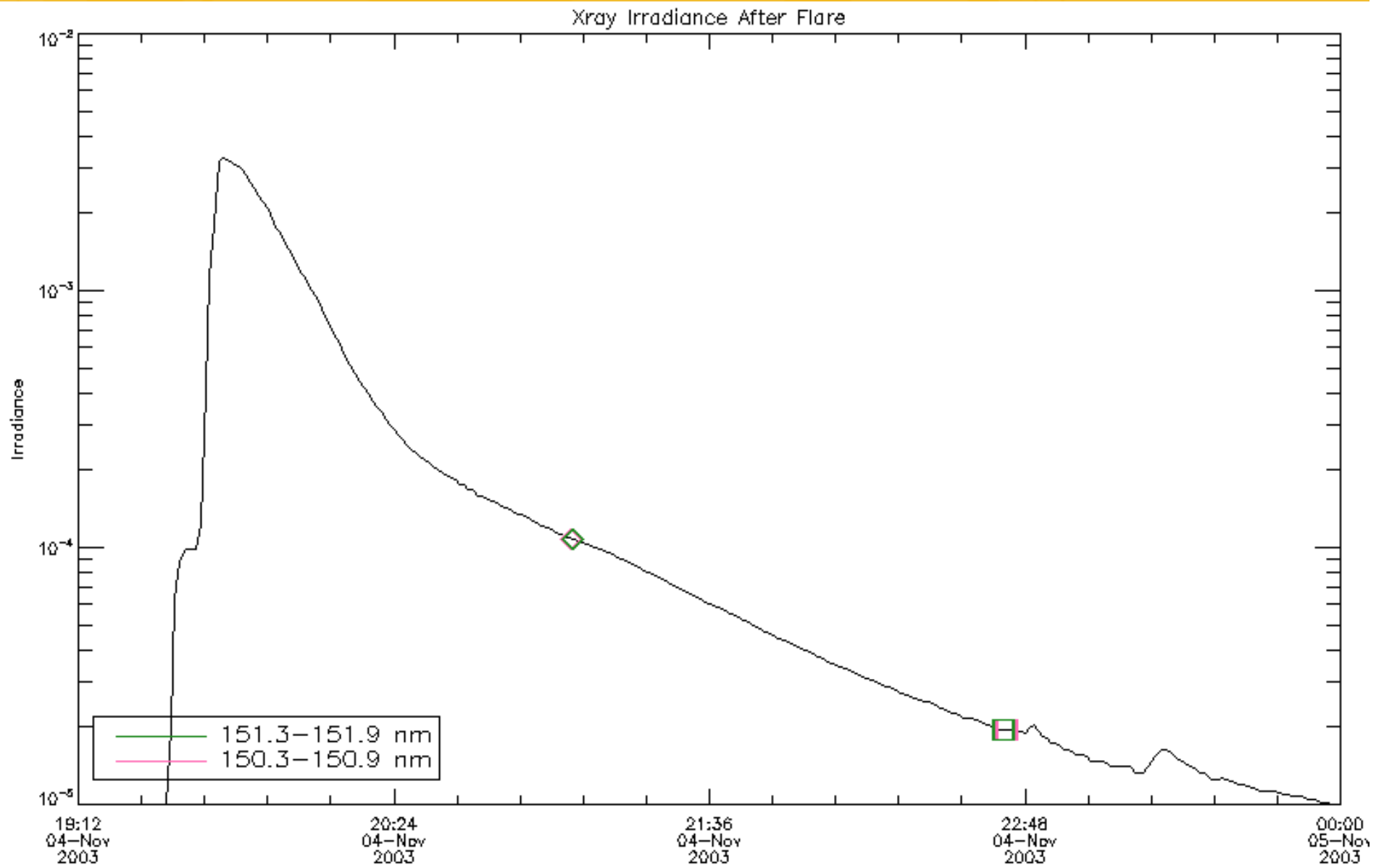
## Time Before the Flare-Xray Irradiance



## Time Before the Flare-SOLSTICE Scans

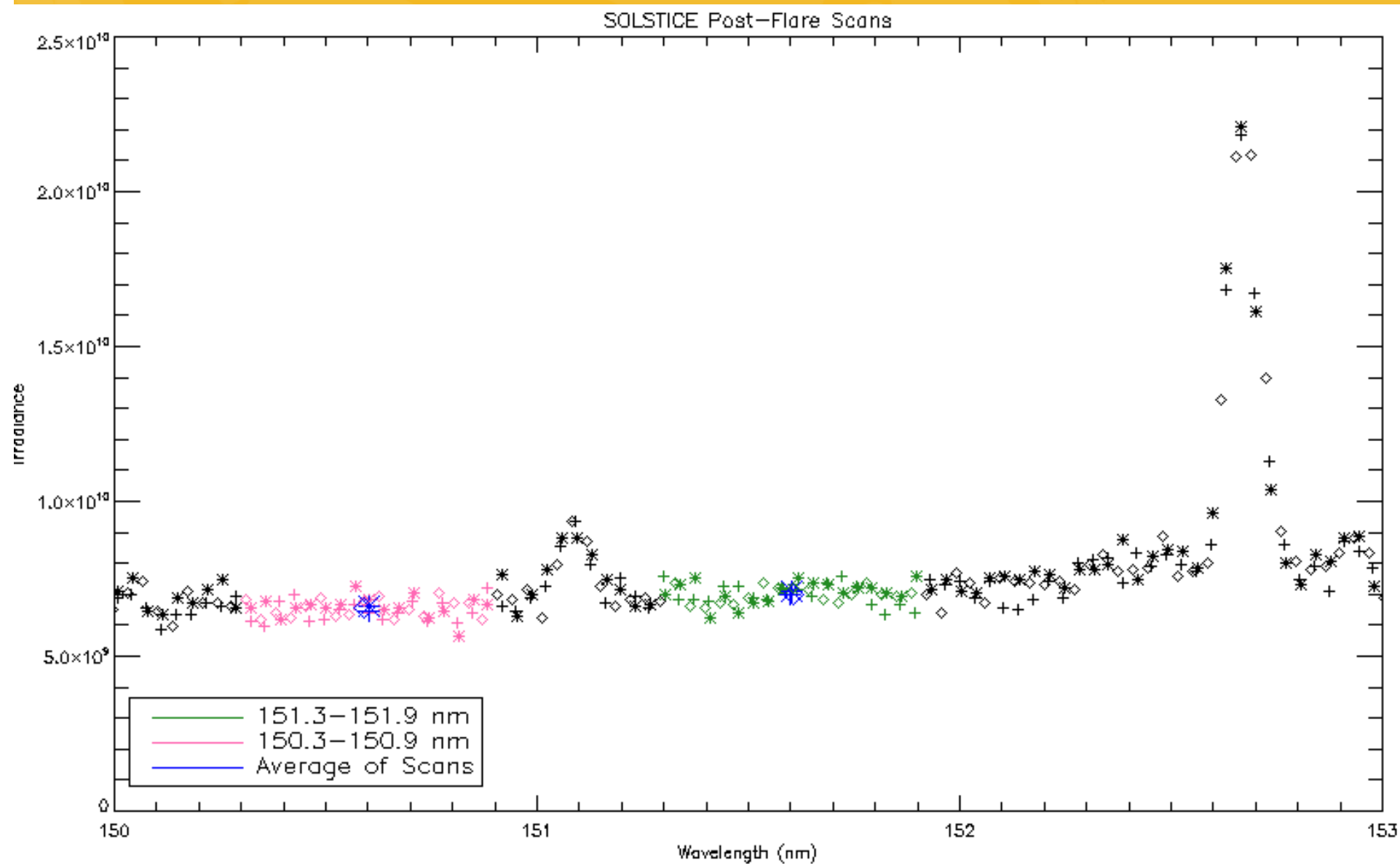


## Time After the Flare-Xray Irradiance

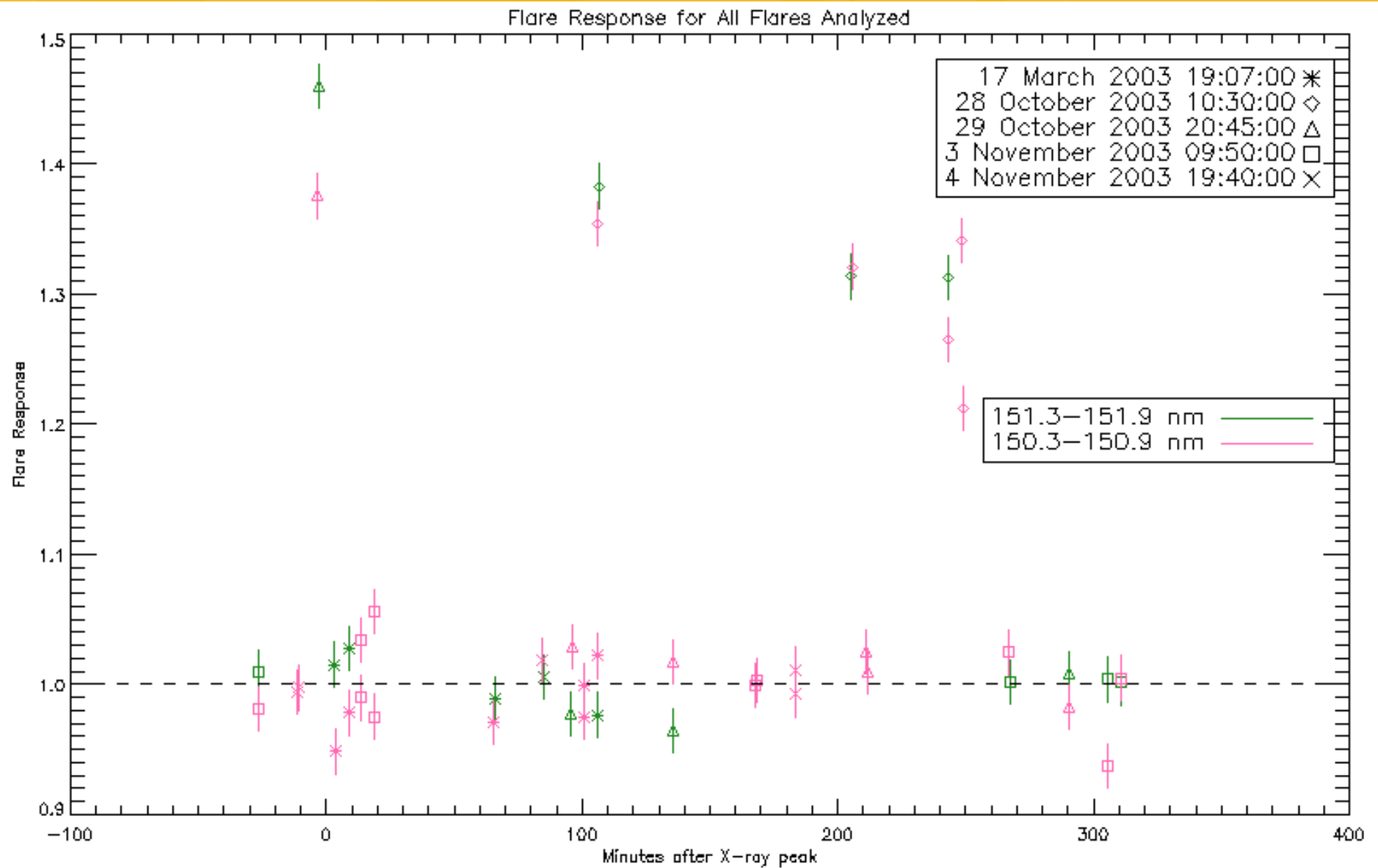




## Time After the Flare-SOLSTICE Scans



## Final Results



# Acknowledgments

- ✎ Martin Snow
- ✧ LASP and CU Boulder
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# Questions?

