

# Lyman Alpha Airglow

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# Overview

- What is the Geocorona
- What is Lyman alpha
- The SOLSTICE II
- Analysis
- Results

# Geocorona

- The **Geocorona** refers to an extension of the outermost region of the Earth's atmosphere. It includes neutral hydrogen atoms.

# Lyman alpha

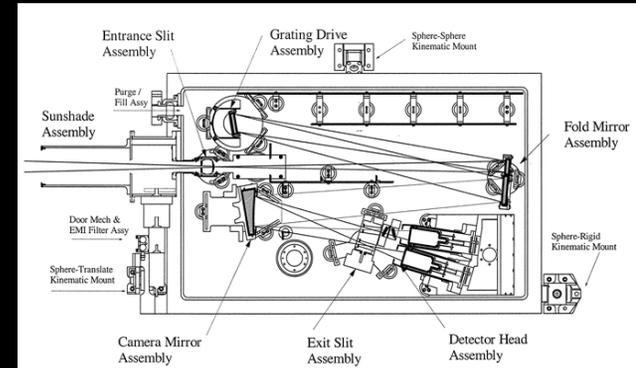
- Lyman alpha is formed when light from the Sun hits hydrogen atoms in the geocorona.

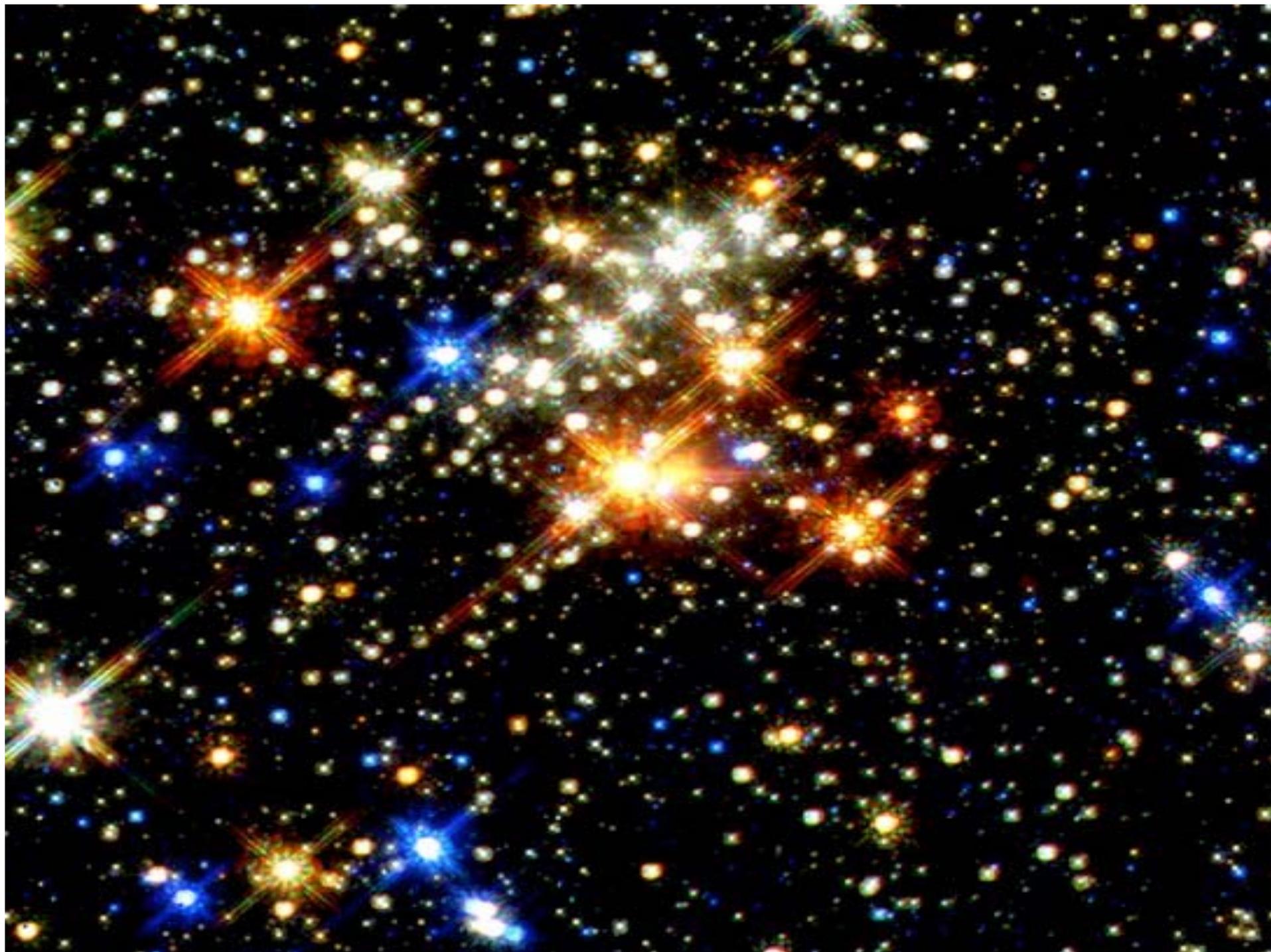
## The driving force of the Geocorona and Lyman alpha

- The Sun the driving force of the geocorona
- The density and structure of the geocorona are also influenced by a number of factors

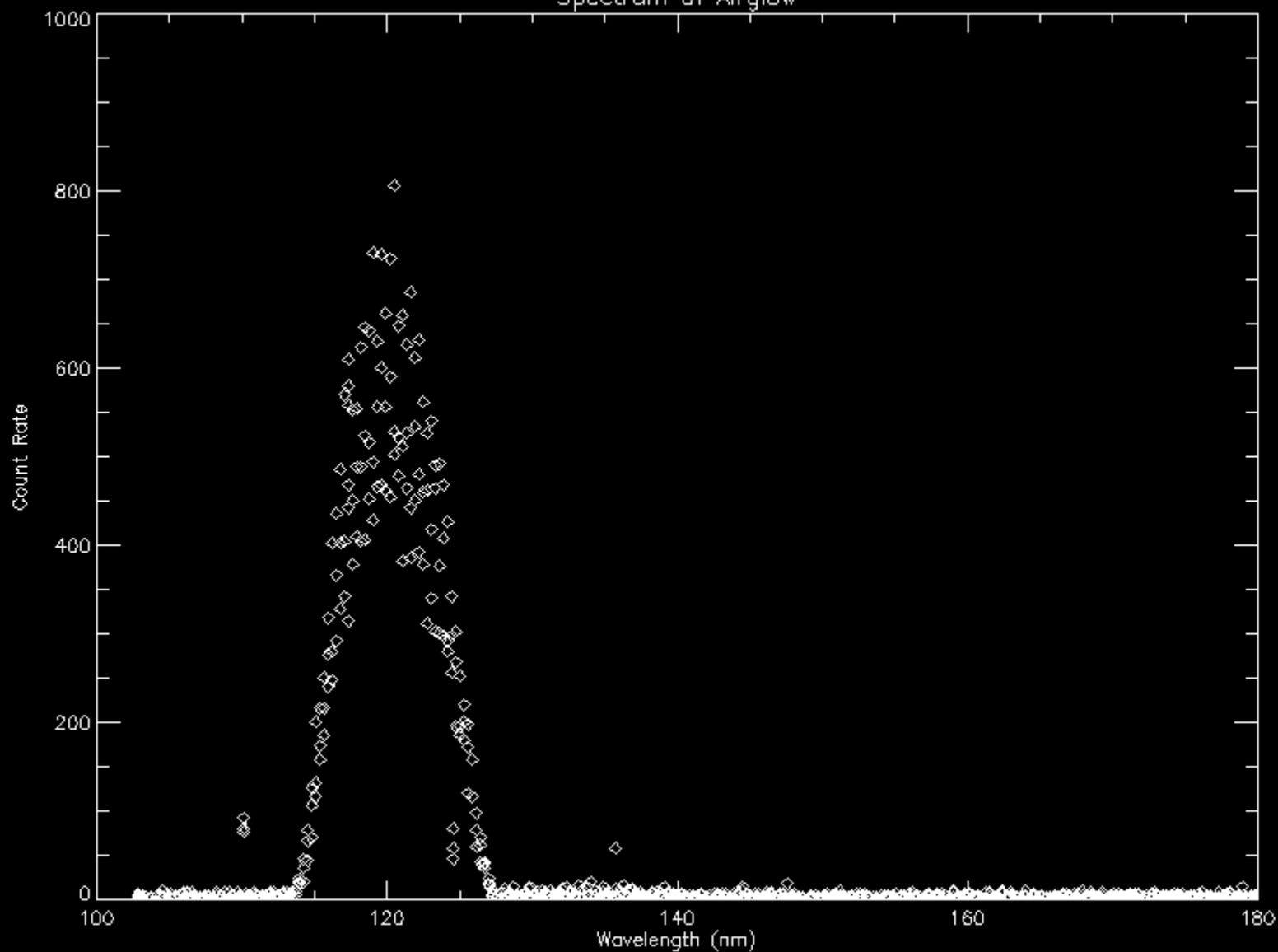
# The Solstice II

- The SOLSTICE II is one of four solar irradiance measurement experiments that was launched as part of the Solar Radiation and Climate Experiment (SORCE) on January 25, 2003.
- This SOLSTICE II is a follow-up to the SOLSTICE launched aboard the Upper Atmospheric Research Satellite (UARS) in 1991. The Solstice II measure solar ultraviolet irradiance from 120 to 320 nm
- SOLSTICE II provides precise measurement of solar spectral irradiance at ultraviolet wavelengths
- The SOLSTICE II measure solar ultraviolet irradiance from 120 to 320 nm

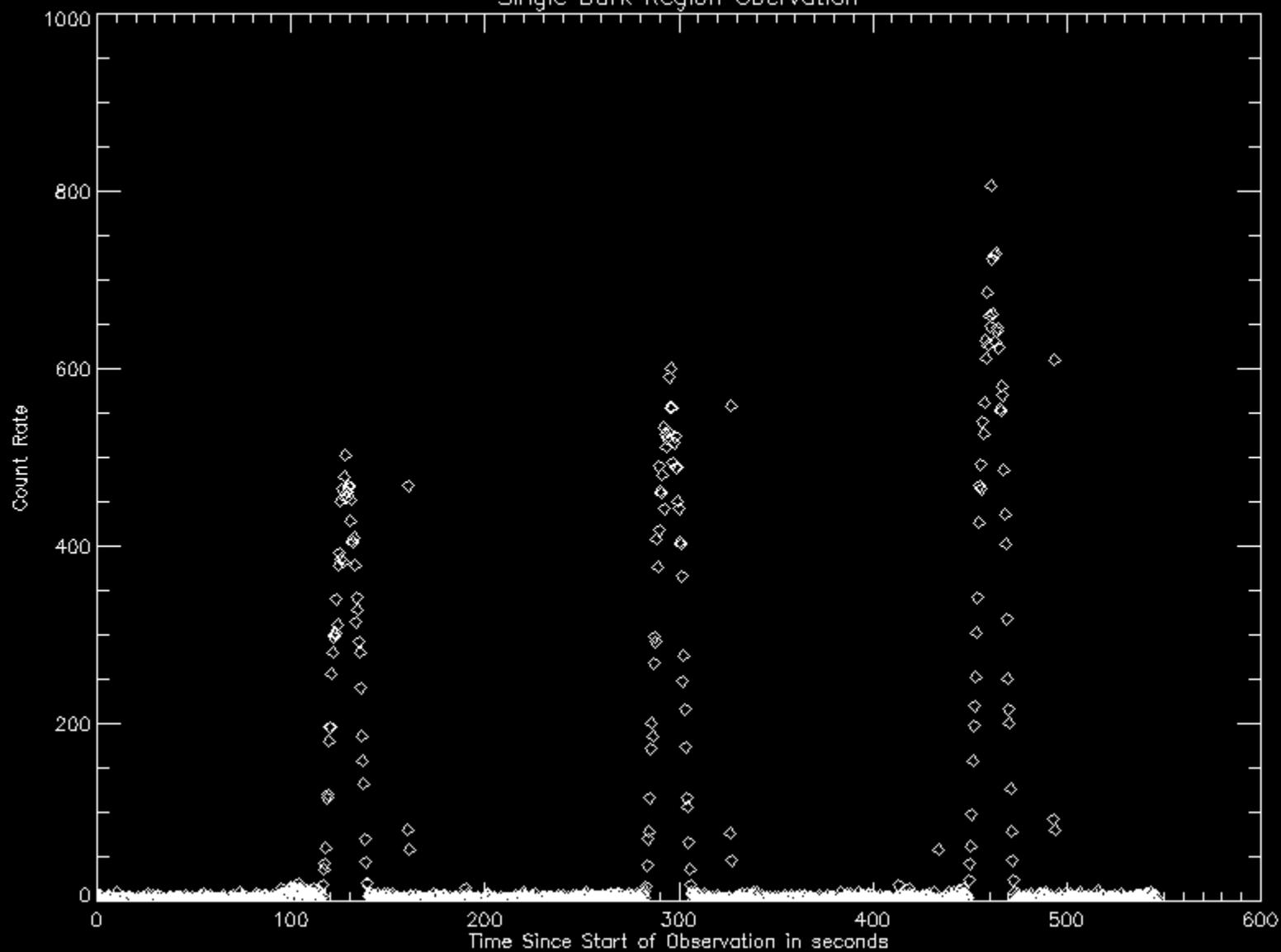




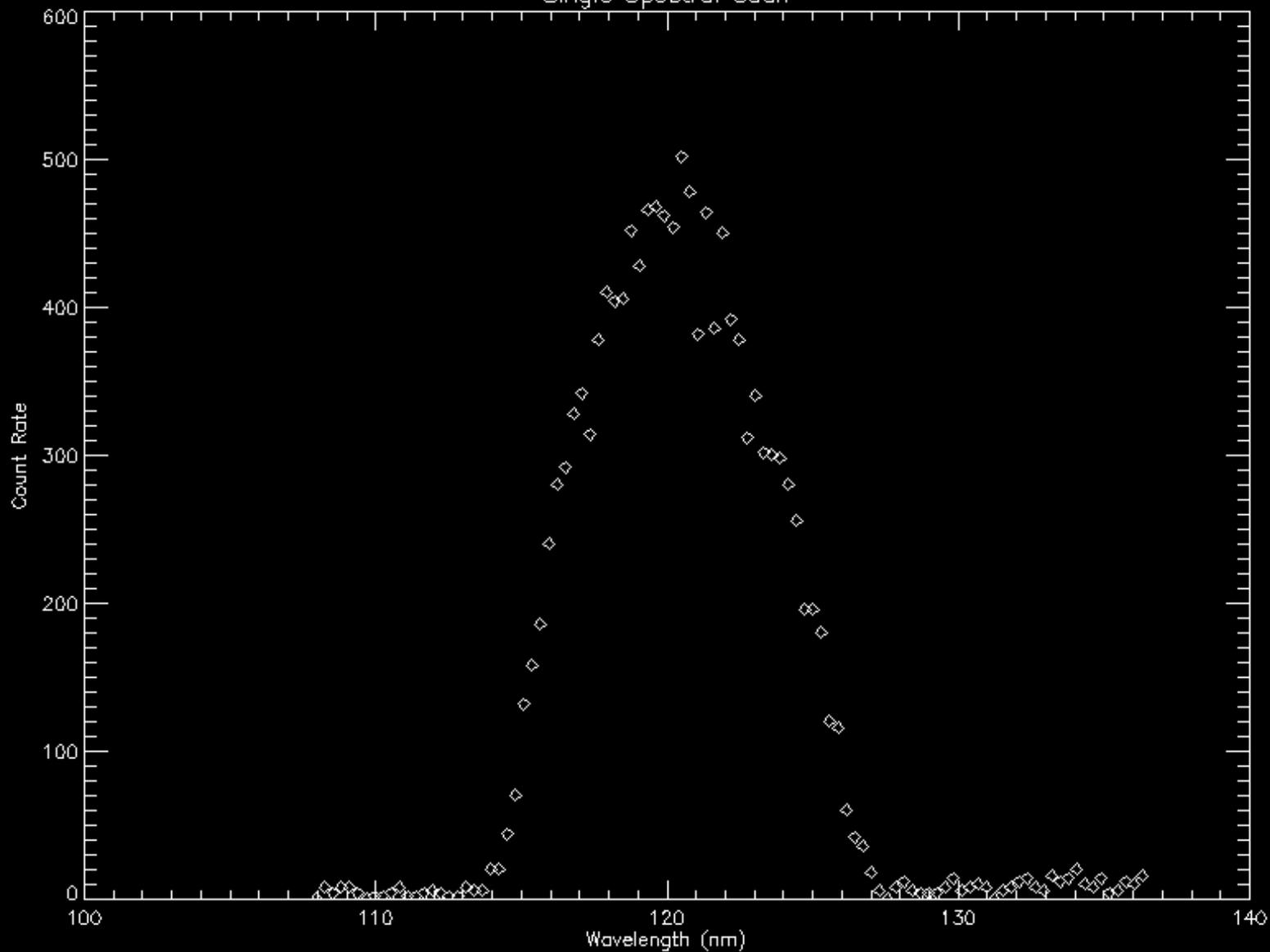
Spectrum of Airglow

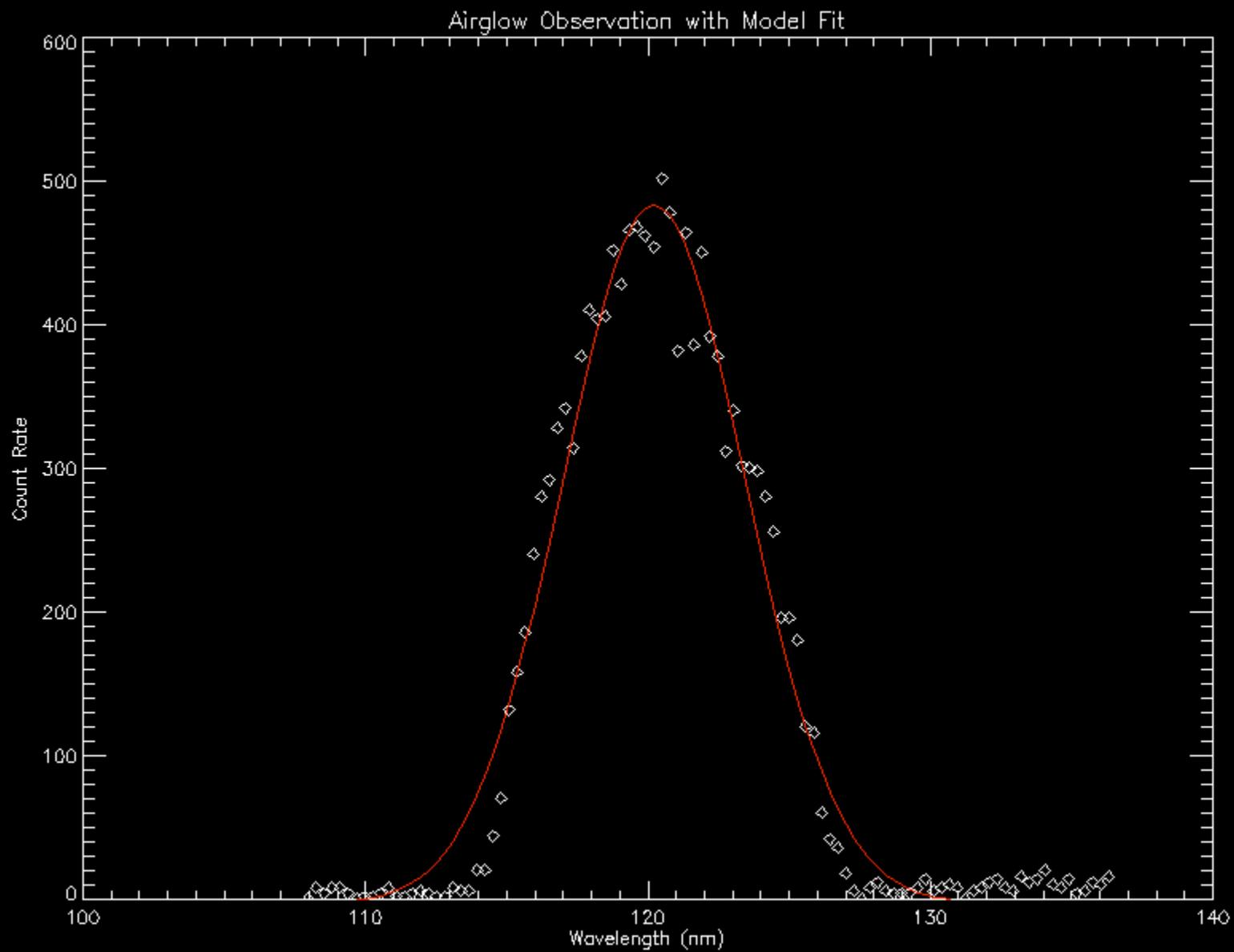


Single Dark Region Observation

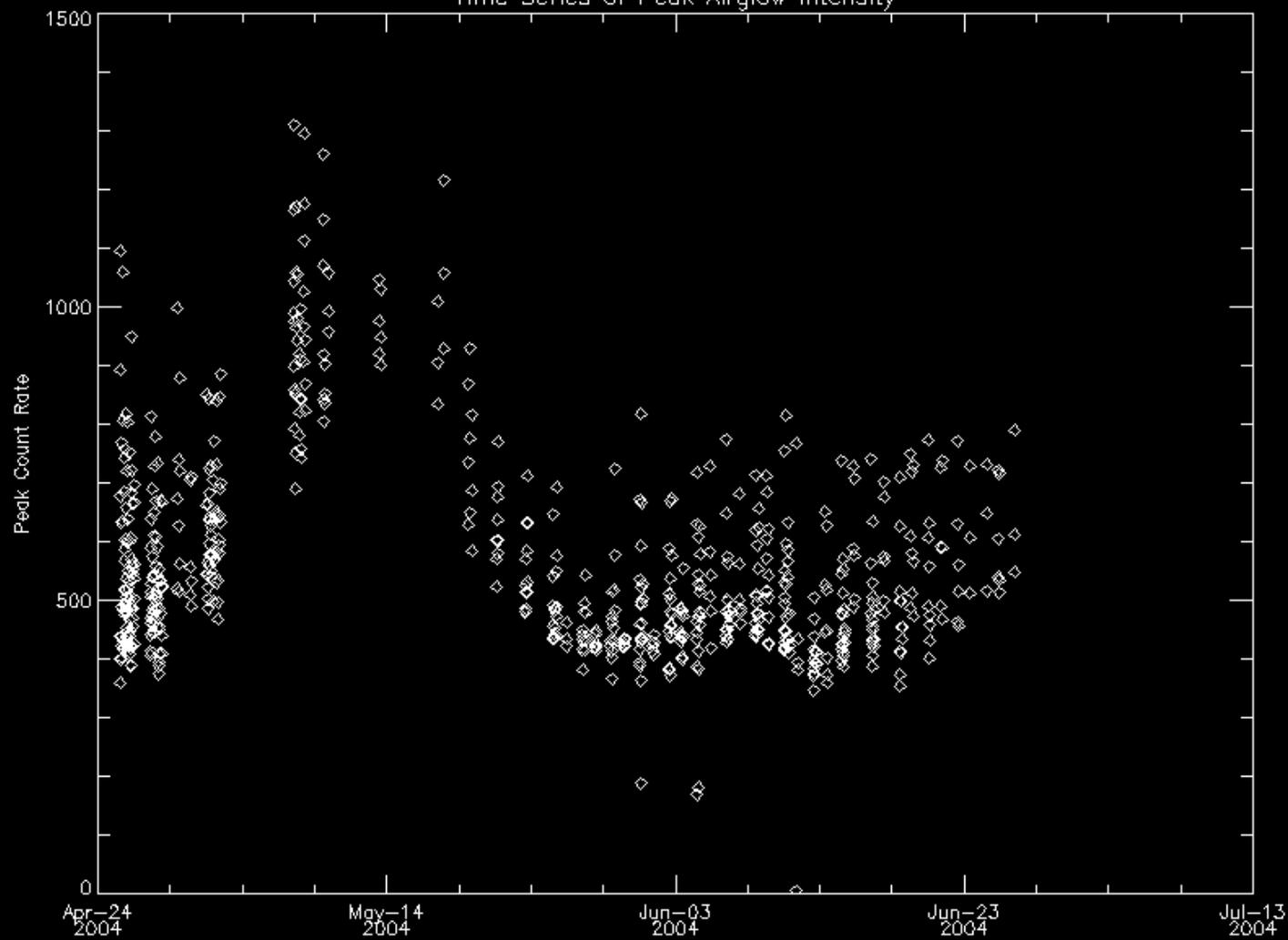


Single Spectral Scan

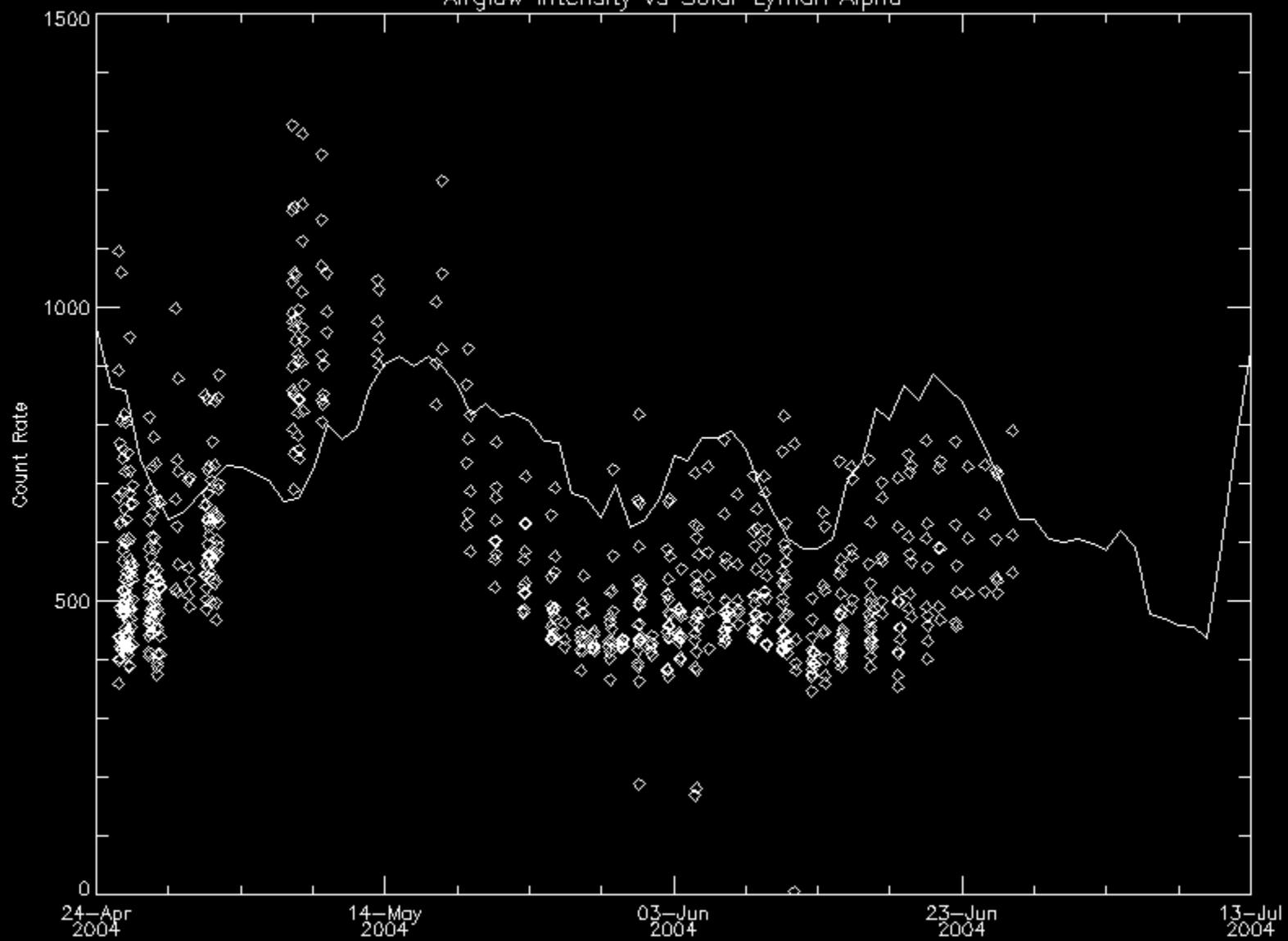


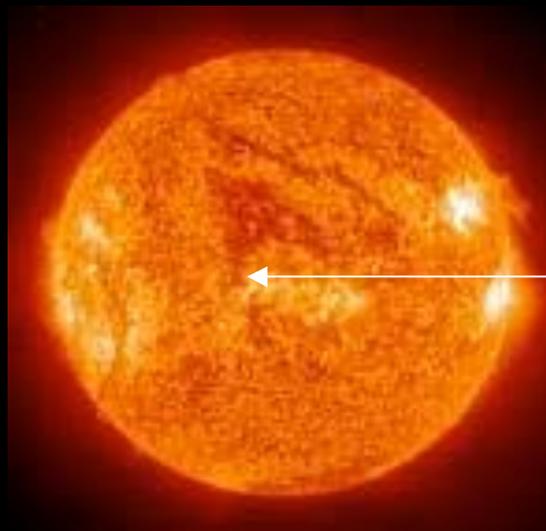


Time Series of Peak Airglow Intensity

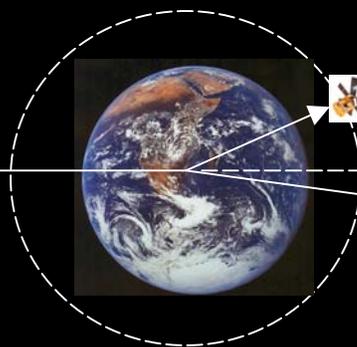


Airglow Intensity vs Solar Lyman Alpha





Sun

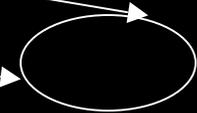


Earth

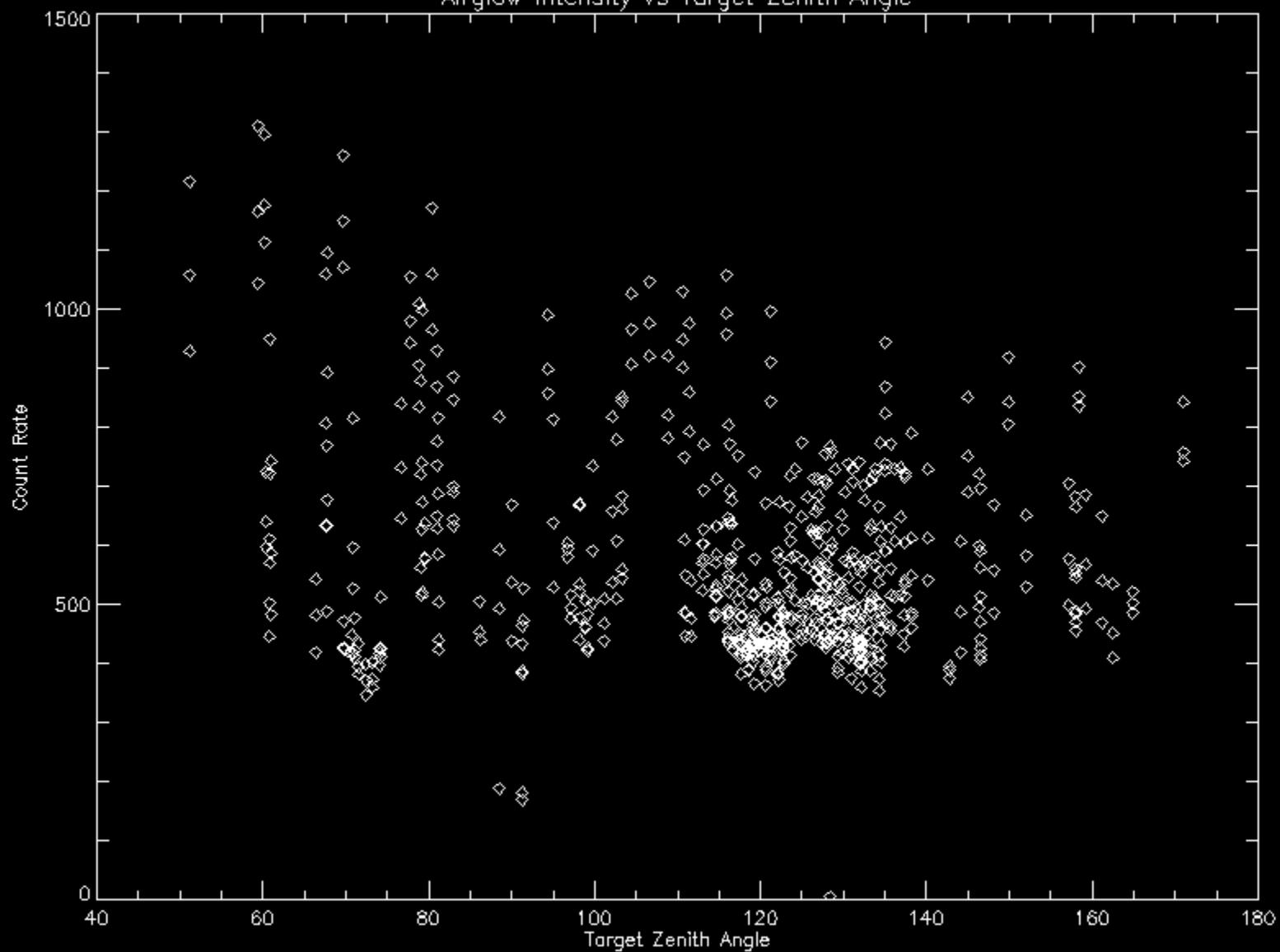
spacecraft

zenith

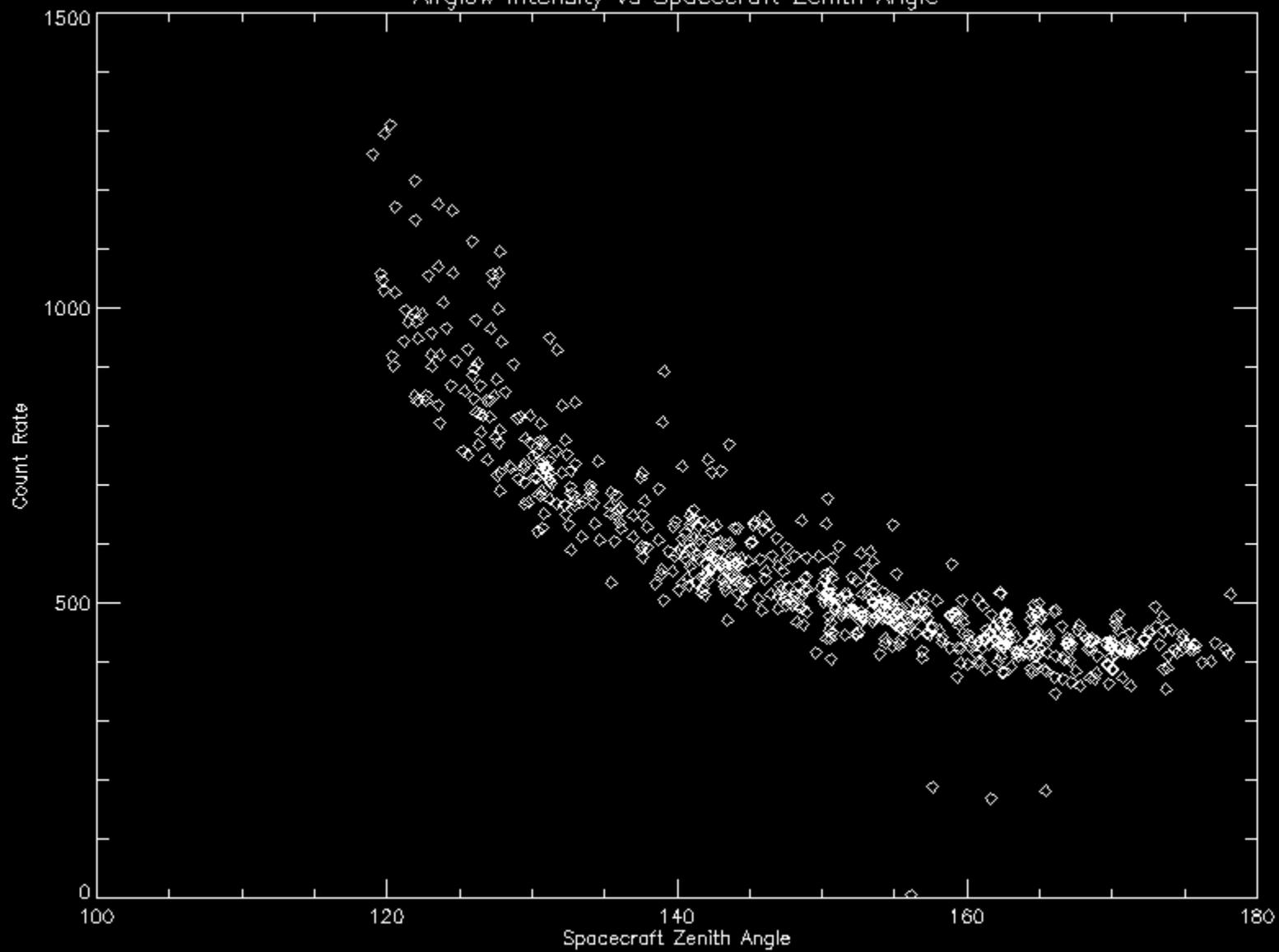
target region



Airglow Intensity vs Target Zenith Angle



Airglow Intensity vs Spacecraft Zenith Angle



# References

## Journal

- D.E. Anderson, Jr., and R.R. Meier. “Hydrogen Balmer Alpha Intensity Distribution and Line Profiles From Multiple Scattering Theory Using Realistic Geocoronal Models.” Geophysical Research, vol.92, NO. A7, pages 1619-7642, July 1, 1987

## Book

- G.J. Rottman, T.N. Woods and V.L. George. “the solar radiation and climate experiment (SORCE). Mission Description and Early results,(2005)