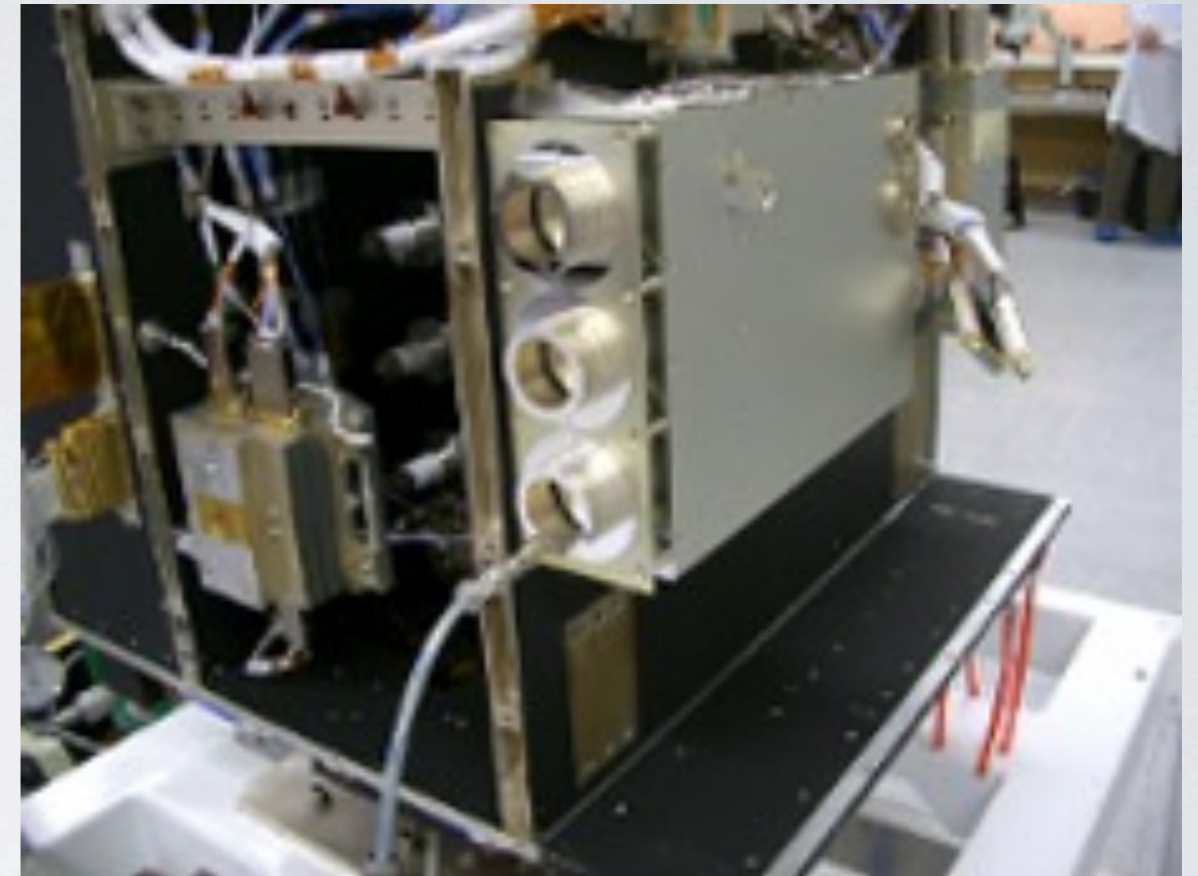


# *Signature of the rotational cycle in the LYRA observations*

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I. E. Dammasch, C. Wehrli, E. Rozanov, W. Schmutz*

2011

# LYRA/PROBA2



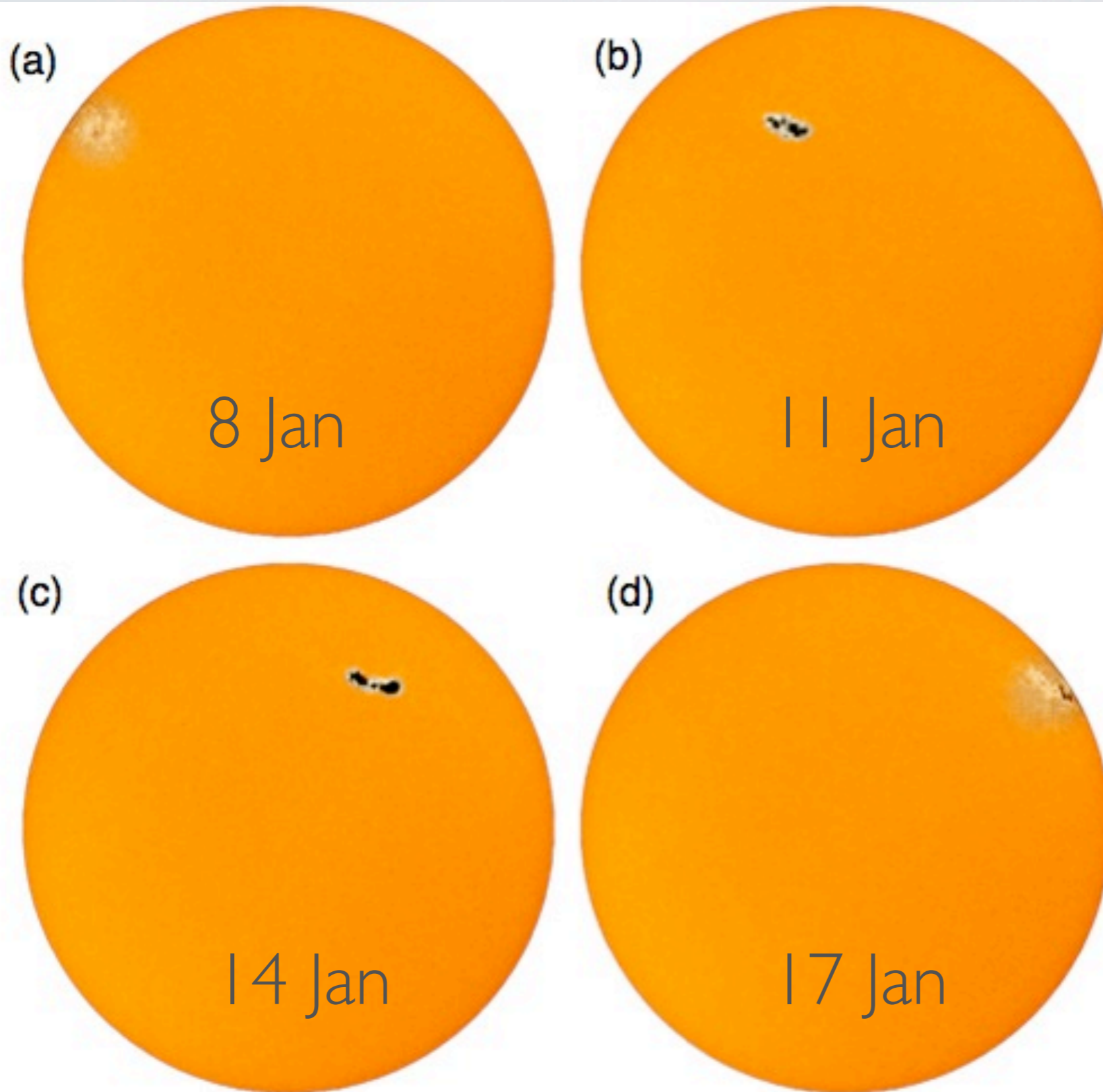
## PROBA2

November 2, 2009

- the 120-123 nm Lyman-alpha channel,
- the 190-222 nm Herzberg continuum channel,
- the Aluminium filter channel (17-80 nm + a contribution below 5 nm), including the strong He II at 30.4 nm, and
- the Zirconium filter channel (6-20 nm + a contribution below 2 nm), rejecting He II.

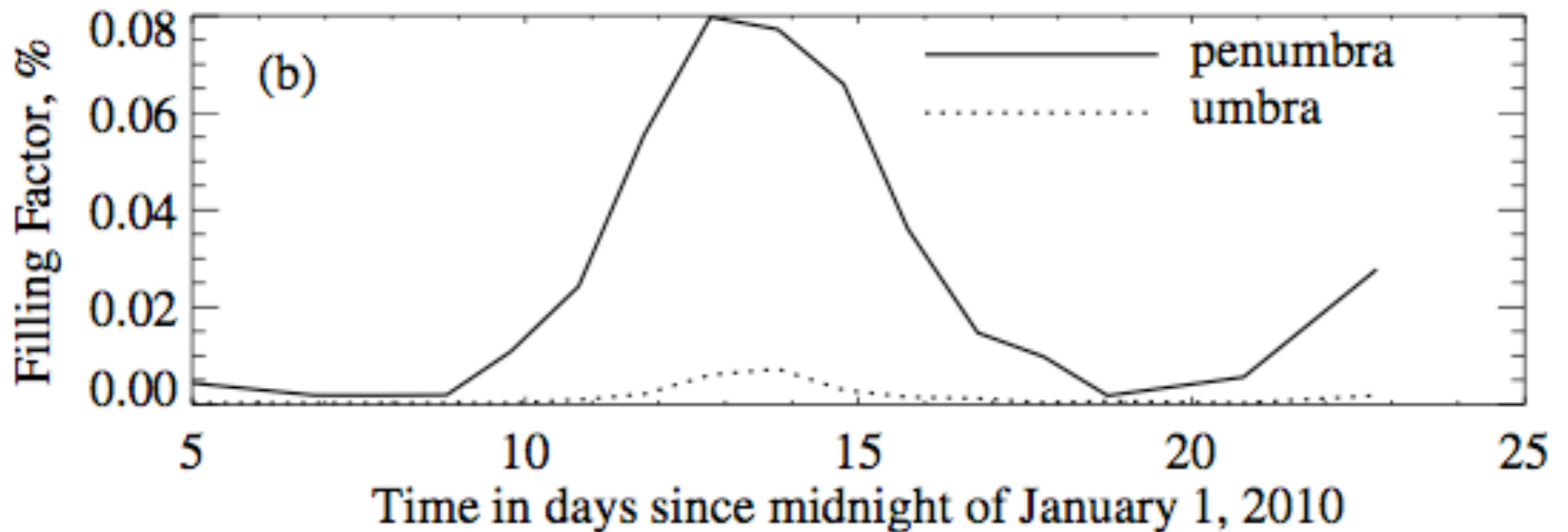
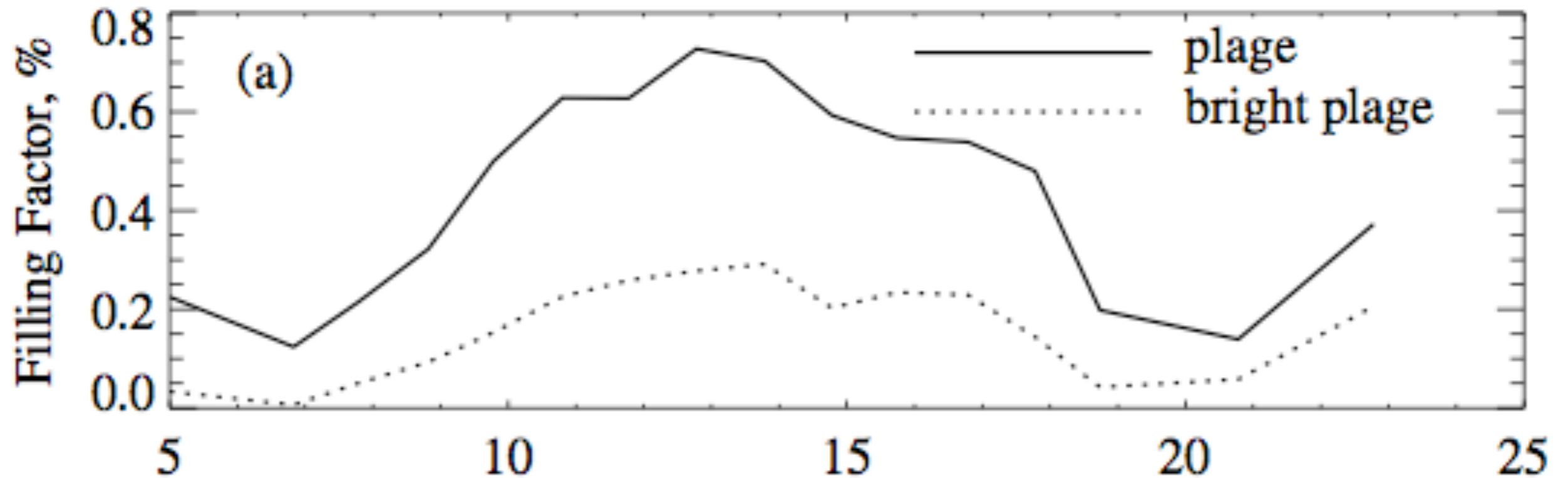
# The beginning of the mission was the period of the low solar activity

SOHO MDI continuum images



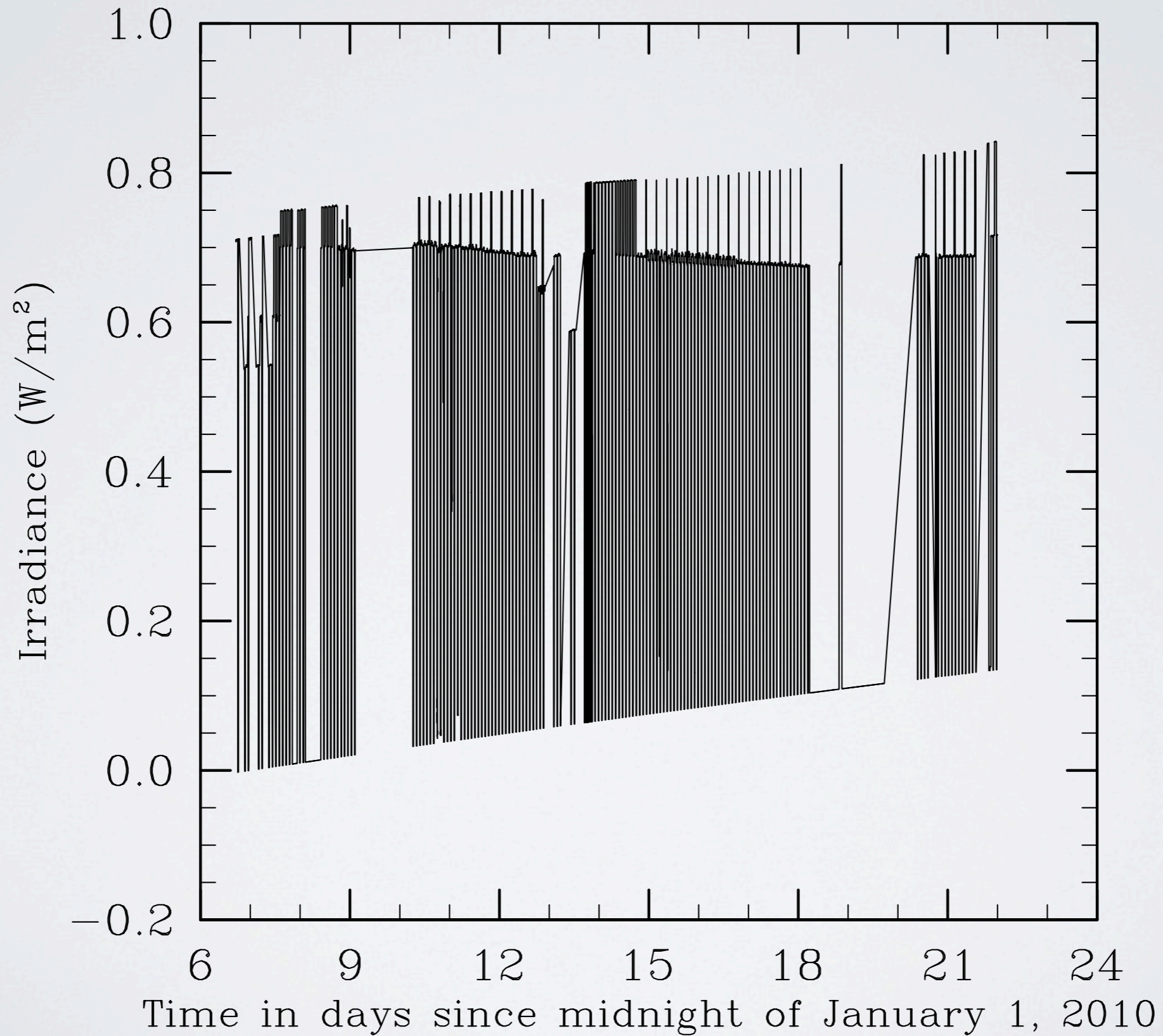
January 2010

# Filling factors



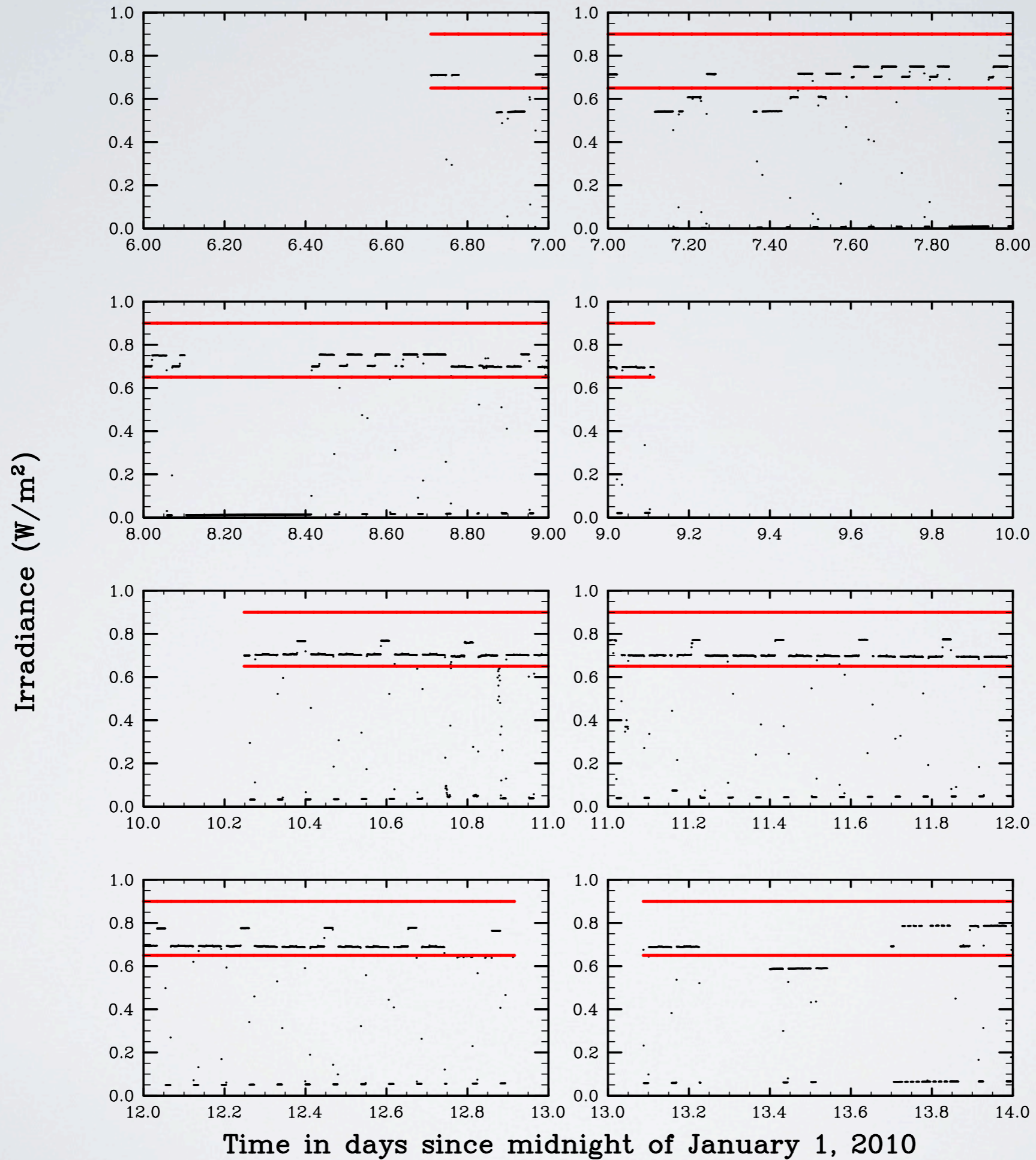
The filling factors are extracted from PSPT images.

# Level3 irradiance at Herzberg channel



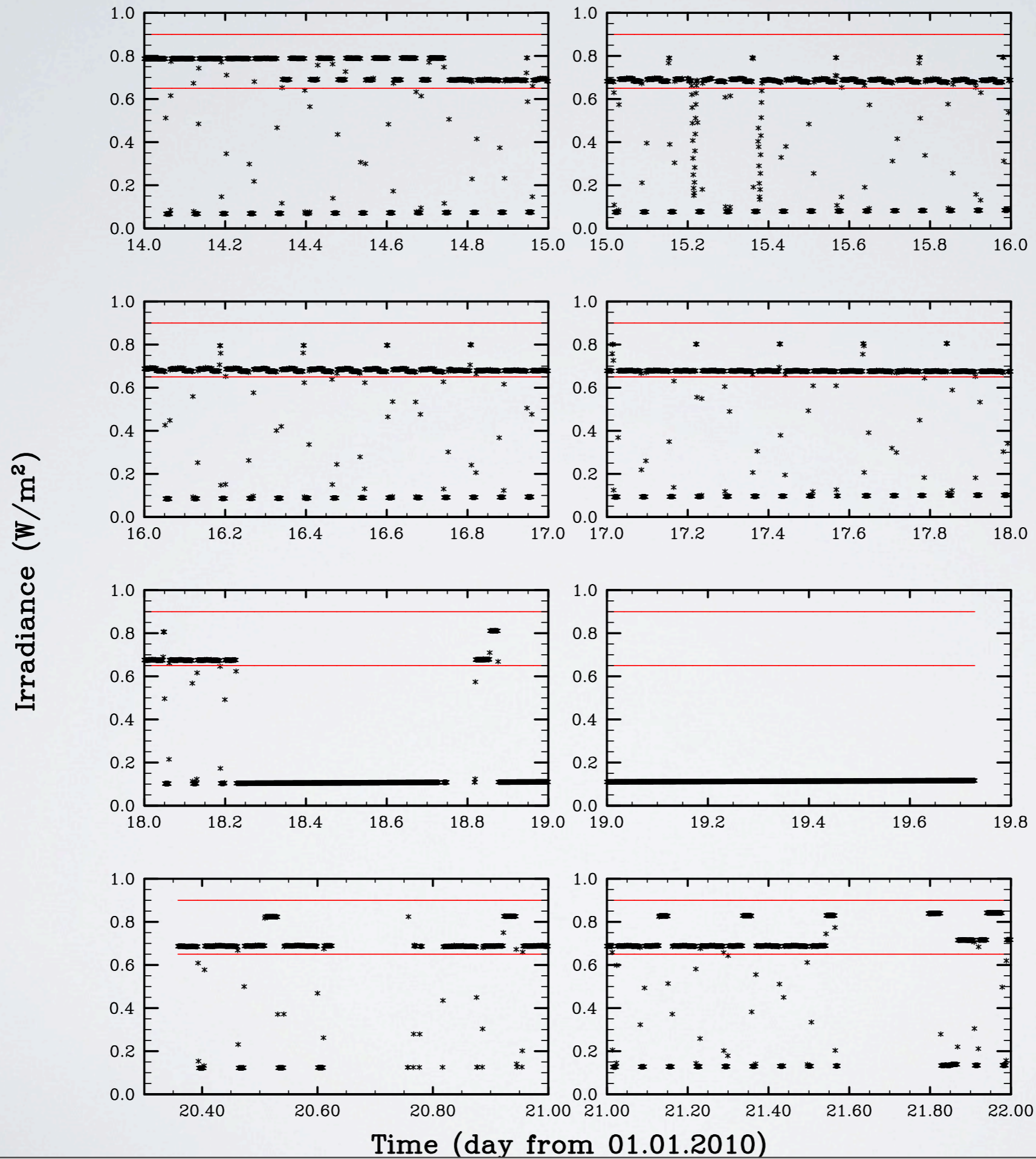
# Trustable intervals

*level3 data*



# Trustable intervals

*level3 data*



# Our analysis

- Remove the degradation constant from level3 data

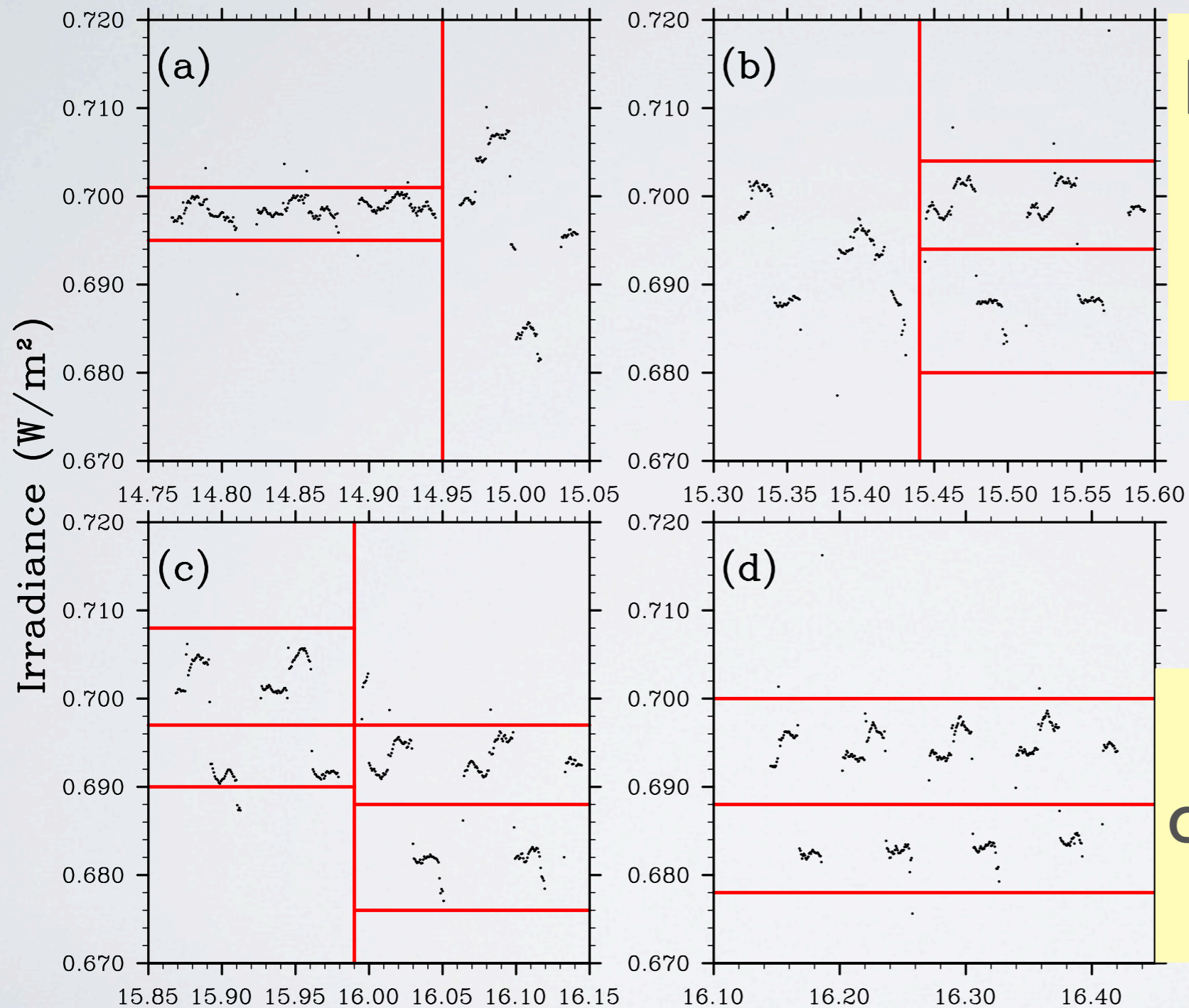
- Degradation was corrected:

- ➔ by the linear function;

- ➔ assuming that the change of the irradiance between January 7 and 18 was the same in Lyra (Herzberg channel) and SOLSTICE (convolving with the profile of the LYRA Herzberg channel) data.



# Branches



pointing fluctuations  
+  
periodical angular  
rotations



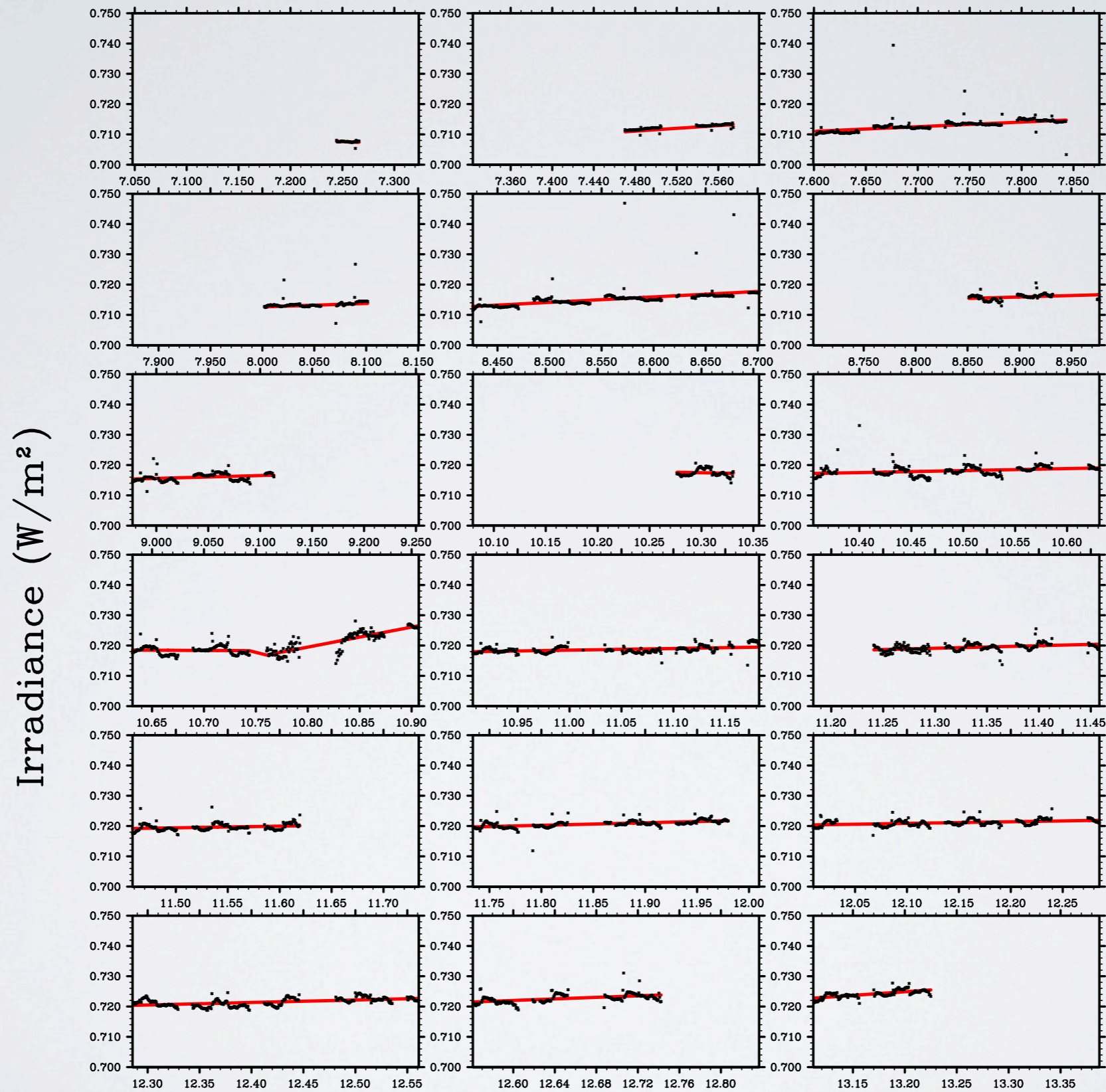
there are several  
distinctive “branches”  
of the irradiance

Time in days since midnight of January 1, 2010

# Our analysis

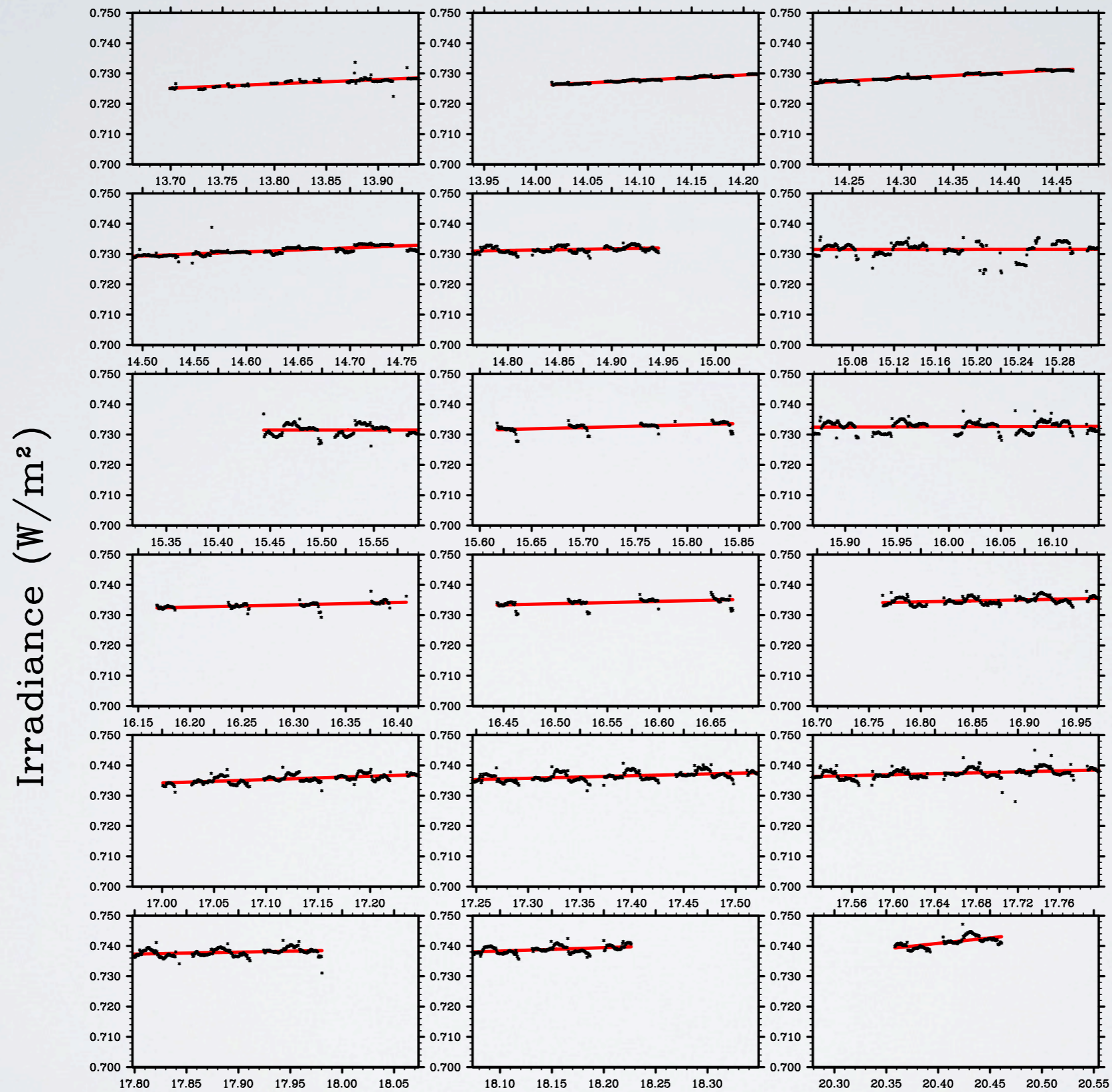
- Assume that every individual branch does have a signature of the solar variability
- The branching was corrected by shifting one branch to another

# Linear regression through the four-orbit intervals



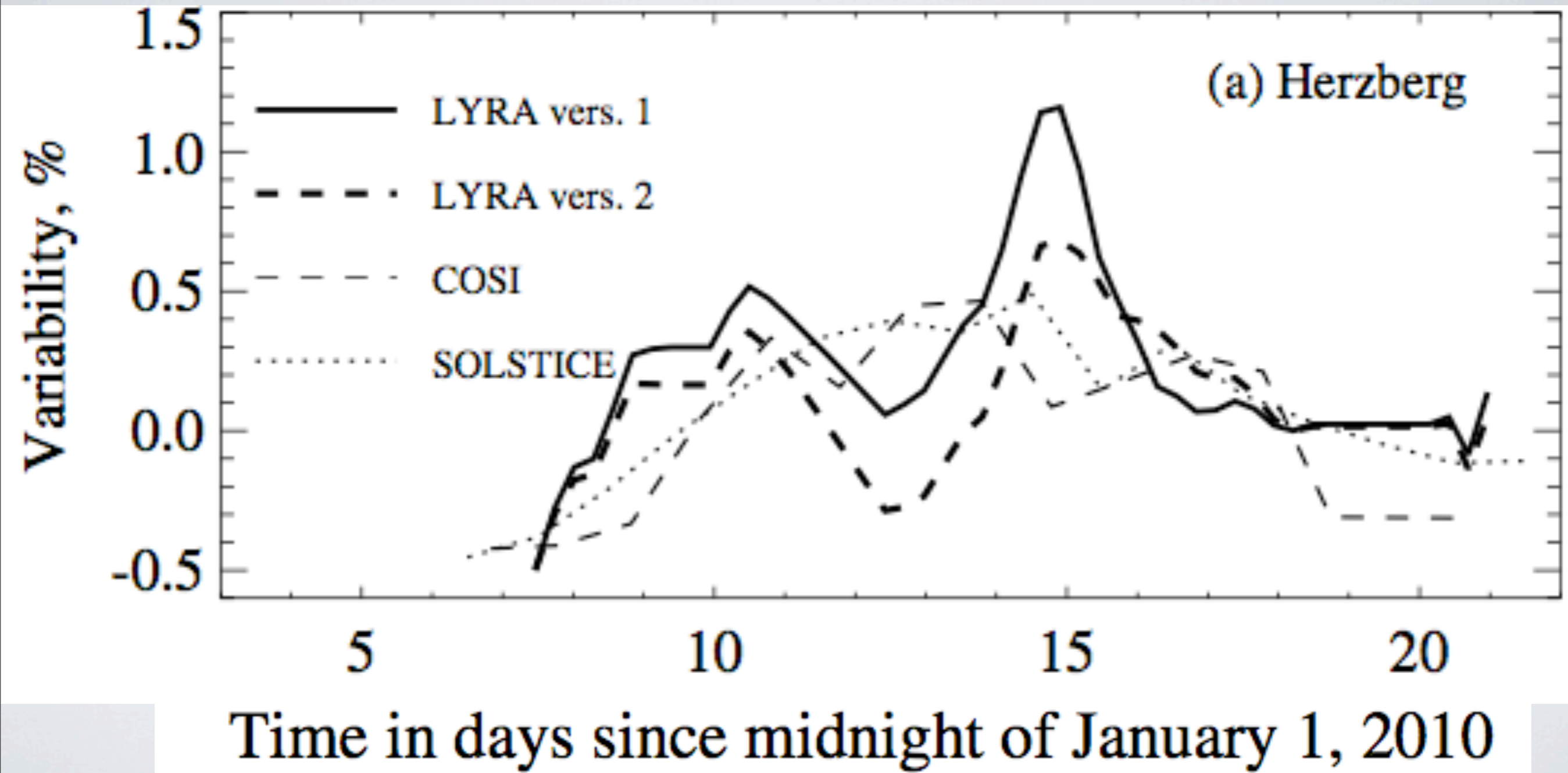
Time in days since midnight of January 1, 2010

# Linear regression through the four-orbit intervals



Time in days since midnight of January 1, 2010

# The Herzberg irradiance variability



The paper:

## **Solar rotational cycle as observed by LYRA**

**A.V. Shapiro<sup>1,2</sup> · A.I. Shapiro<sup>1</sup> ·  
M. Dominique<sup>3</sup> · I.E. Dammasch<sup>3</sup> ·  
C. Wehrli<sup>1</sup> · E. Rozanov<sup>1,2</sup> · W. Schmutz<sup>1</sup>**

was submitted to “Solar physics”

Thank you!