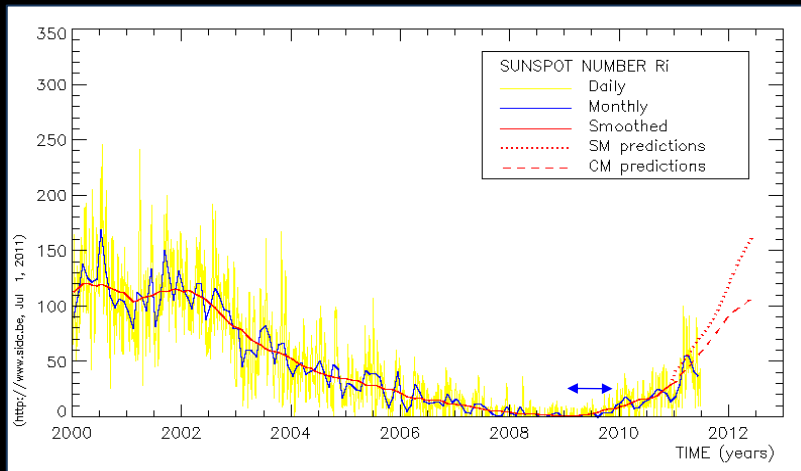# Catalogue of solar flares observed by SphinX

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SphinX spectrophotometer

| SphinX BASIC PARAMETERS	
LAUNCHED:	30 January 2009 at 13:30 UT from Plesetsk Cosmodrom
SATELLITE:	CORONAS – Photon
ORBITS PARAMETERS:	orbit duration- 96min altitude - 550km near polar orbit
MASS:	3.7 kg
POWER:	10 W
ENERGY RANGE:	1.2 keV - 15 keV in 256 energy bins
LIFESPAN OF THE MISSION:	20 February - 29 November 2009

SphinX observations

The largest flare 5th July 2009
C 2.7 GOES class flare

GOES 3.726e-09 W/m²
3.7 S
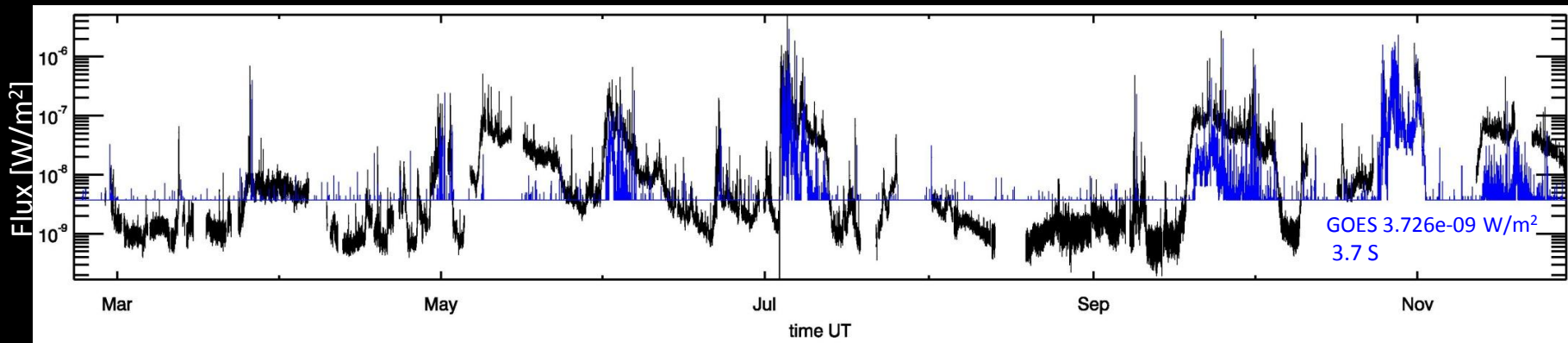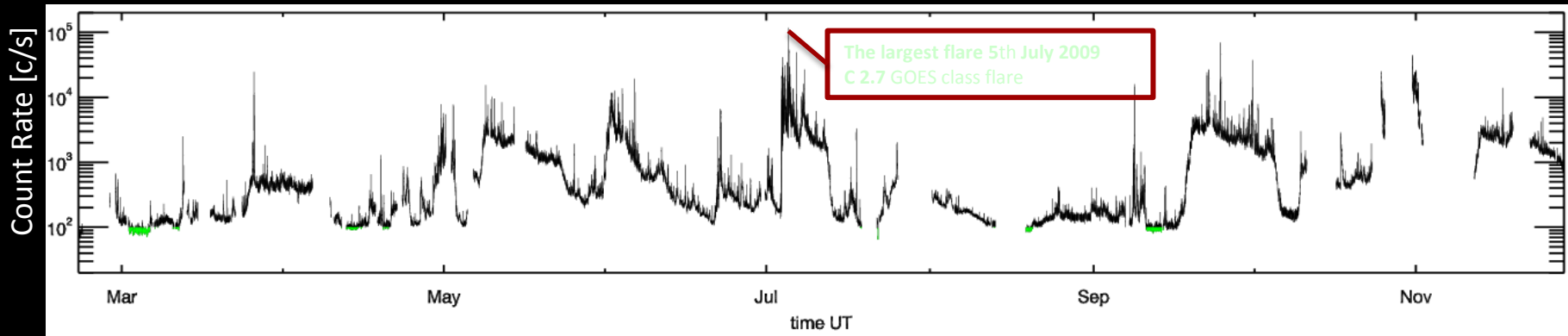
NEW SXR FLARES CLASSES
S CLASS - S1 = 1. e-09 W/m²
Q CLASS - Q1 = 1. e-10 W/m²

GOES threshold = 3.726e-09 W/m²   3.7 S
D1 minimum   = ~2.e-10 W/m²   2.0 Q

SphinX level1 data catalogue

- The catalog contains data from D1 SphinX detector
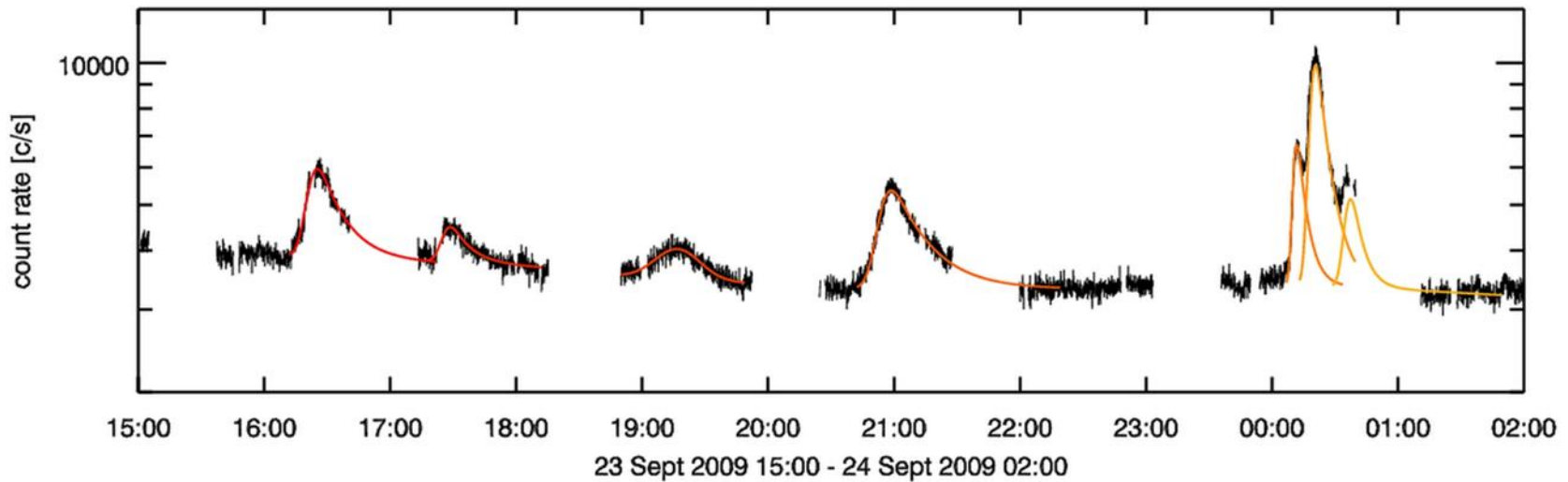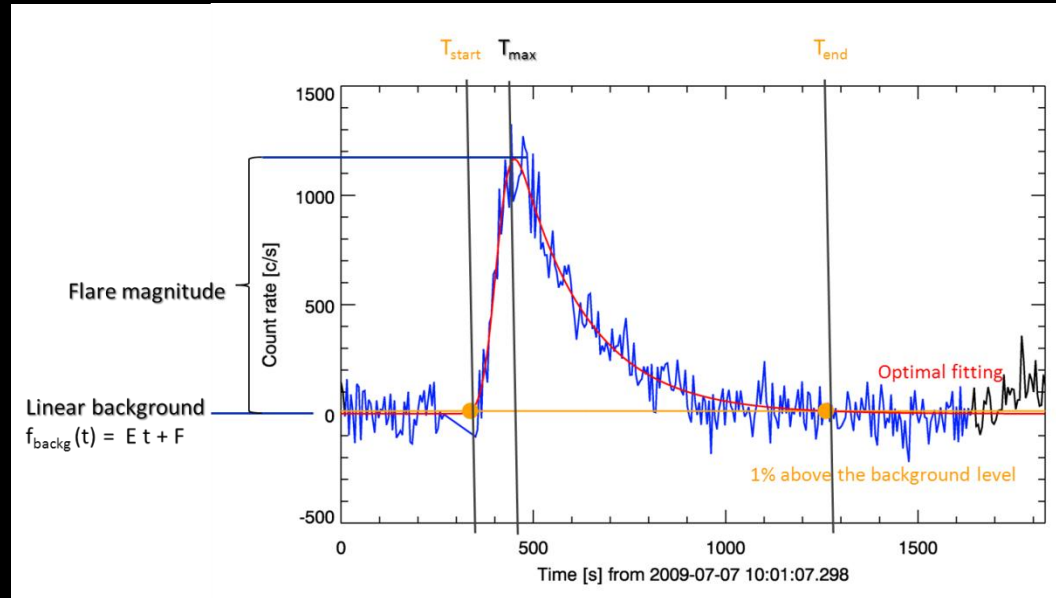- All available data files are stored in FITS format
  (OGIP-93/003 format)

SphinX Catalogue
- time parameters
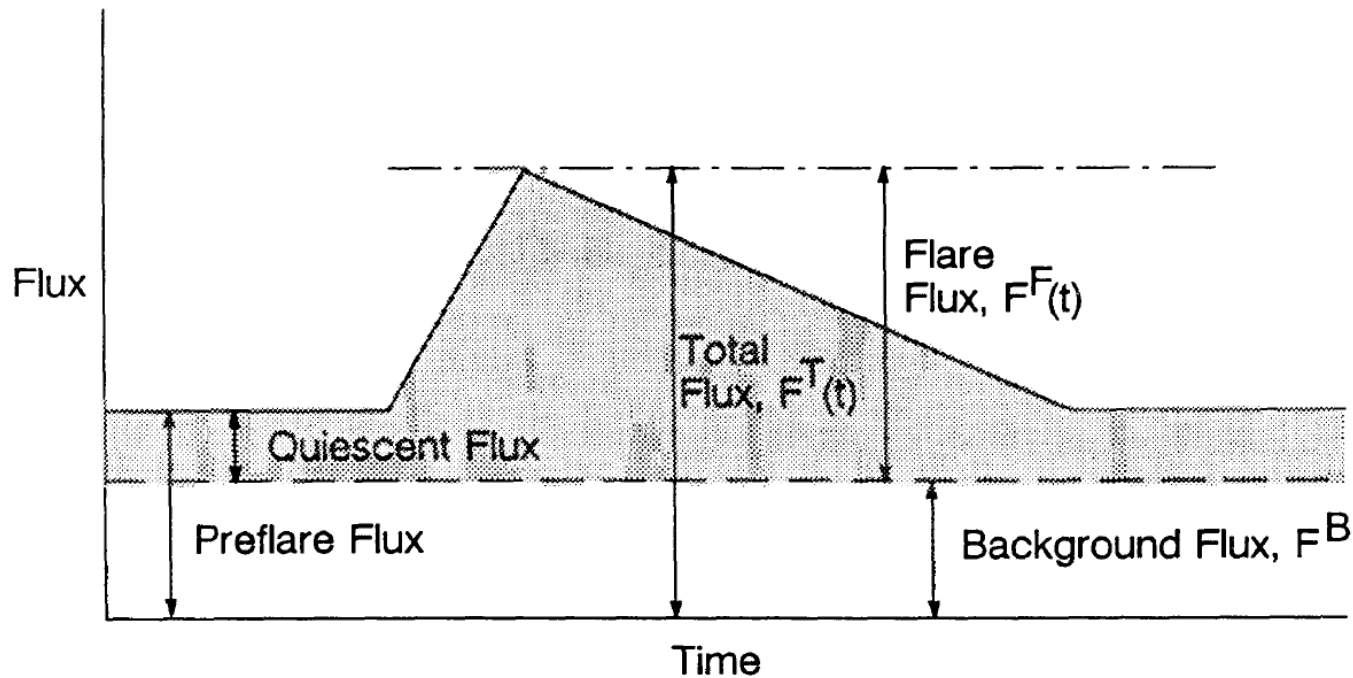
FLARE AFTER BACKGROUND SUBTRACTION

PARAMETERS:
T_{start} time of start
T_{end} time of end
T_{max} time of maximum
Flare magnitude

SphinX catalogue – plasma diagnostics

Flares Background determination

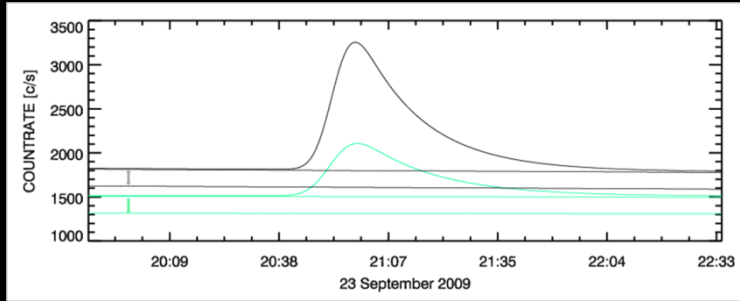**BACKGROUND LEVEL SUBTRACTION ESPECIALLY CRITICAL FOR SMALL EVENTS!**

Bornmann, P. L. 1990, ApJ, 356, 733

BACKGROUND LEVEL
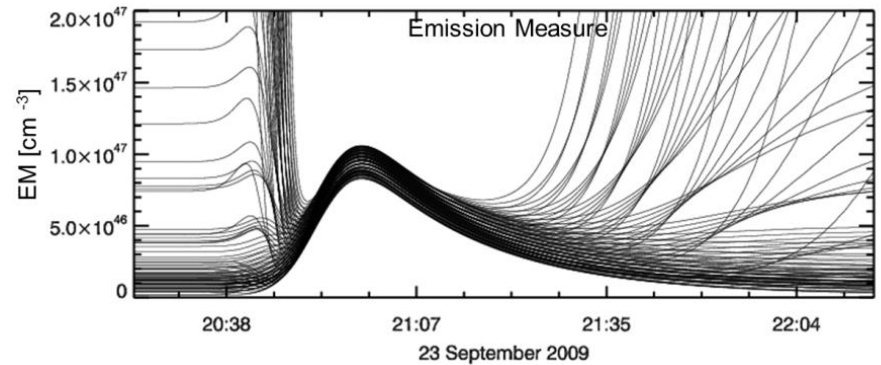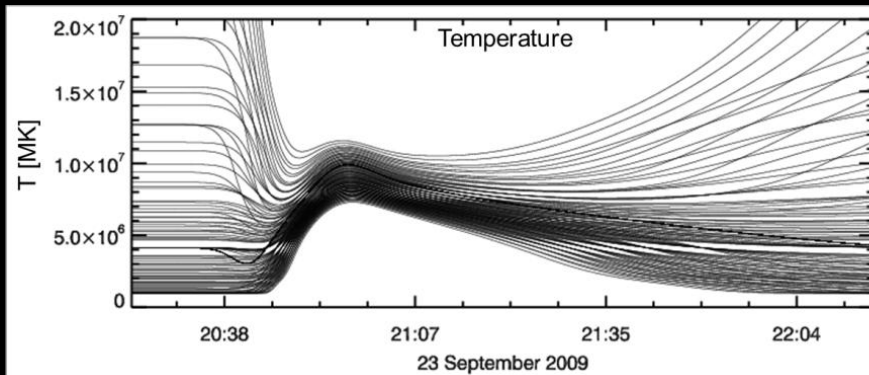
DEFINITION PROBLEM

FLARING PLASMA EMISSION

SphinX catalogue – plasma diagnostics

Background estimation
100 different background levels analysed
-> generation 100 different T and EM

T, EM CALCULATIONS

The set of one hundred *T* and *EM* estimations for tested levels of backgrounds.

The physical-like T end EM estimations acceptable are selected as optimal set. The final T and EM are calculated as mean value.

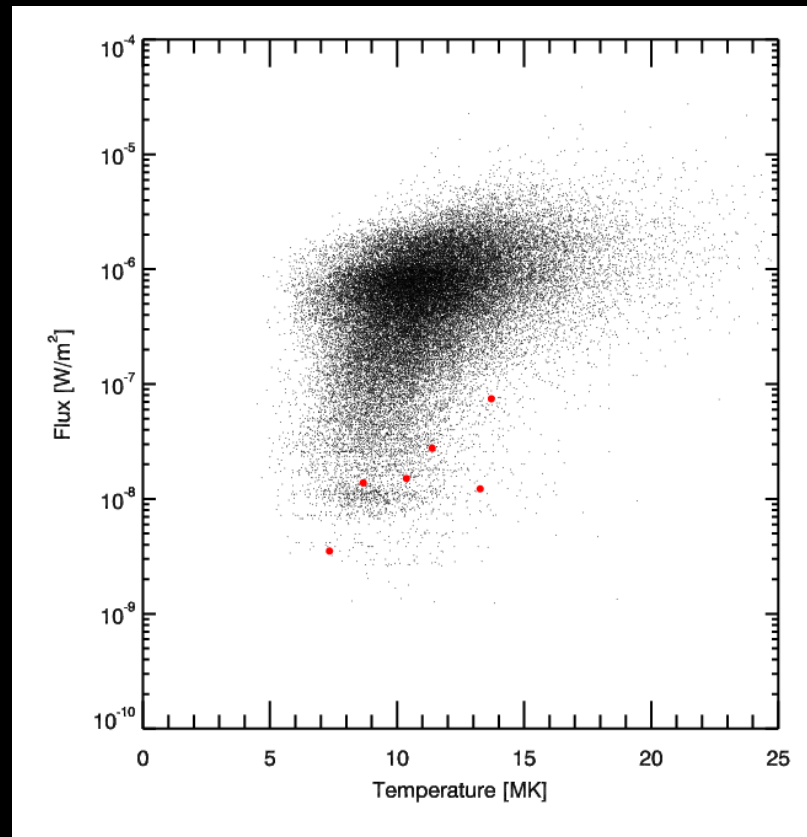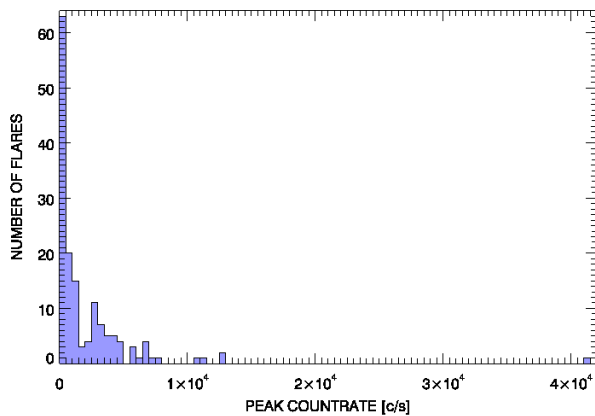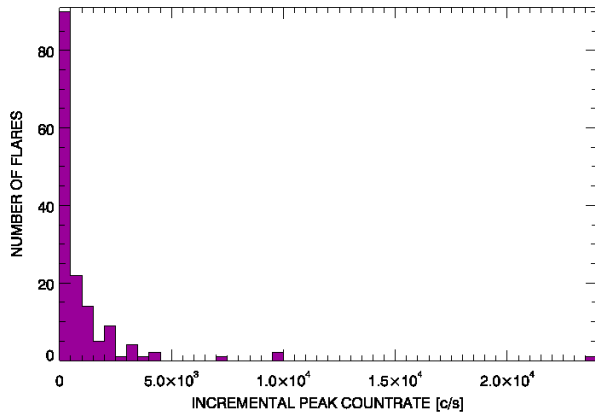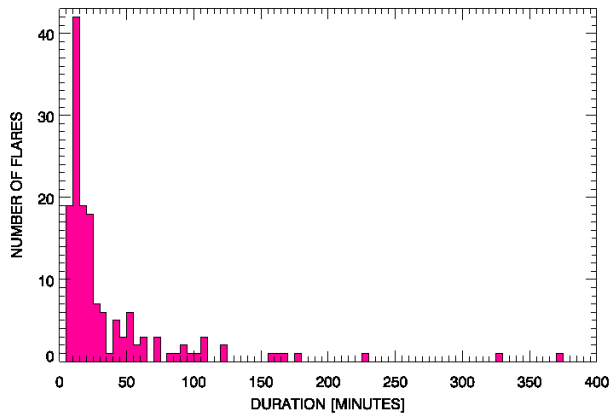Adopted method proposed by Bornmann and improved by Ryan et al. 2012

Flare parameters statistics

PROBE OF 153 EVENTS

Flares duration [min]

Maximal countrate [c/s]

Incremental maximal countrate [c/s]

(= above background level)

Thank you

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