

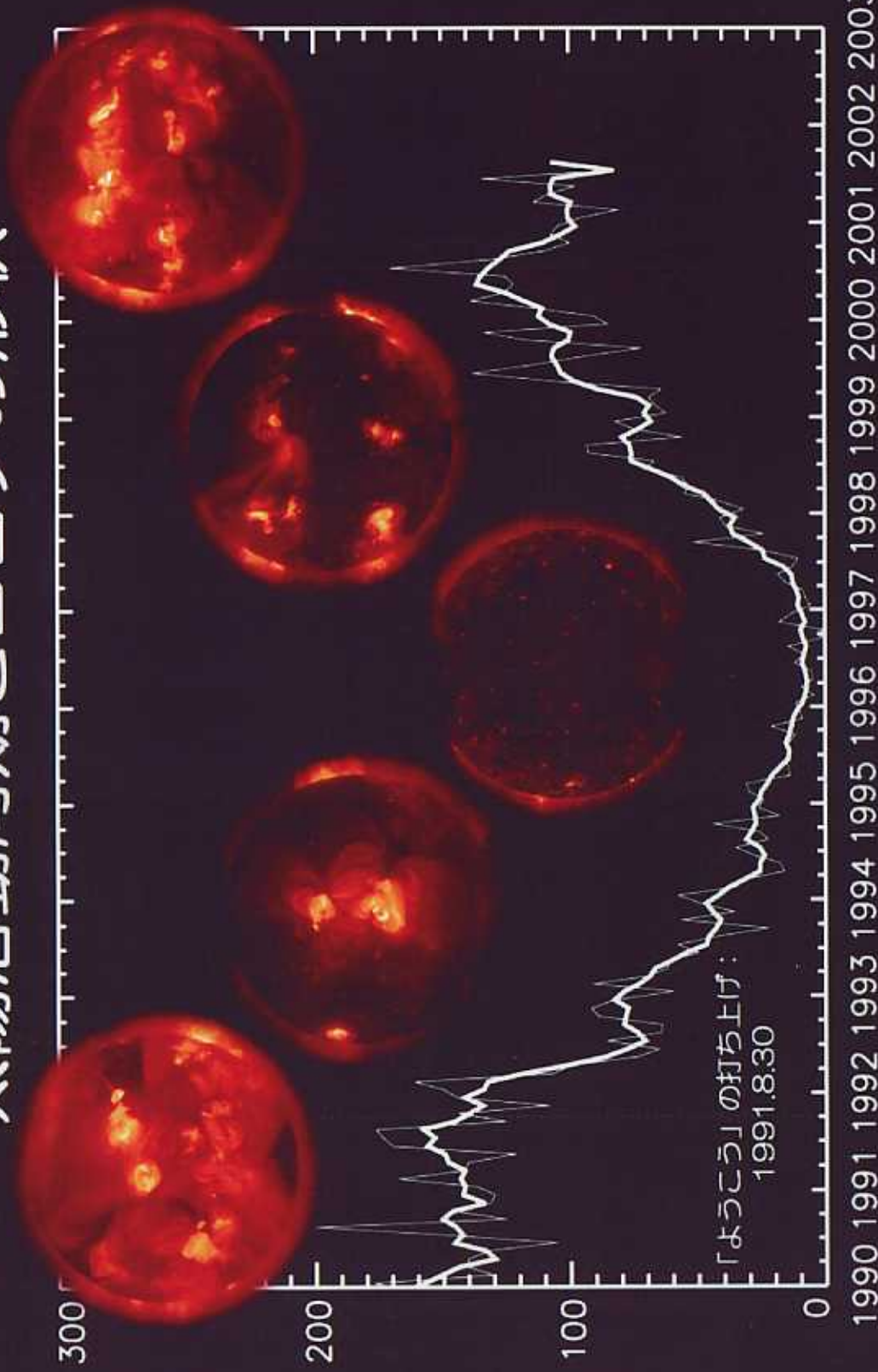
Personal View on
Important Observations for SOLAR-B XRT
—— Targets for Initial 3-Months Observations ——

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Solar-B Targets Suggested by Yohkoh Results

- Magnetic coupling of the photosphere and corona ... SOT, XRT, EIS
 - Energy transport into the corona and energy dissipation
 - Energy storage in the corona
 - Coronal heating
- Temperature structure of the corona ... XRT, EIS
- Mechanism(s) of energy release with magnetic reconnection and associated plasma motion (jets) ... EIS, XRT
- Generation/disruption processes of magnetic elements (flux tubes, sunspots, ...)
Active region evolution ... SOT, XRT, EIS
- Helioseismology and dynamo mechanism ... SOT

太陽活動周期とコロナの形状



黒点相対数

DATA:

1991.11.12

1994.01.04

1996.01.19

1998.07.25

2001.03.27

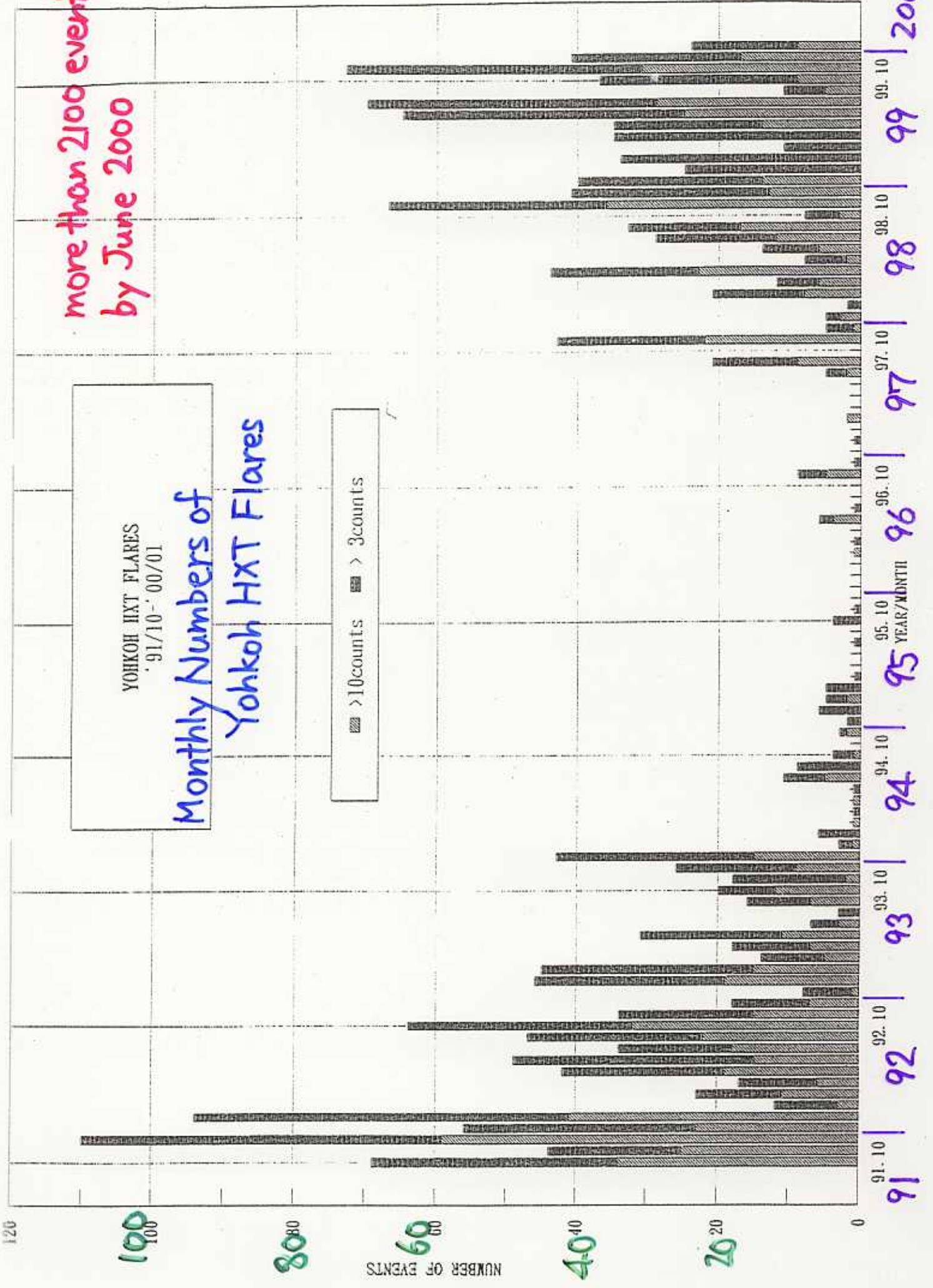
「ようこう」の打ち上げ:
1991.8.30

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003

more than 2100 events
by June 2000

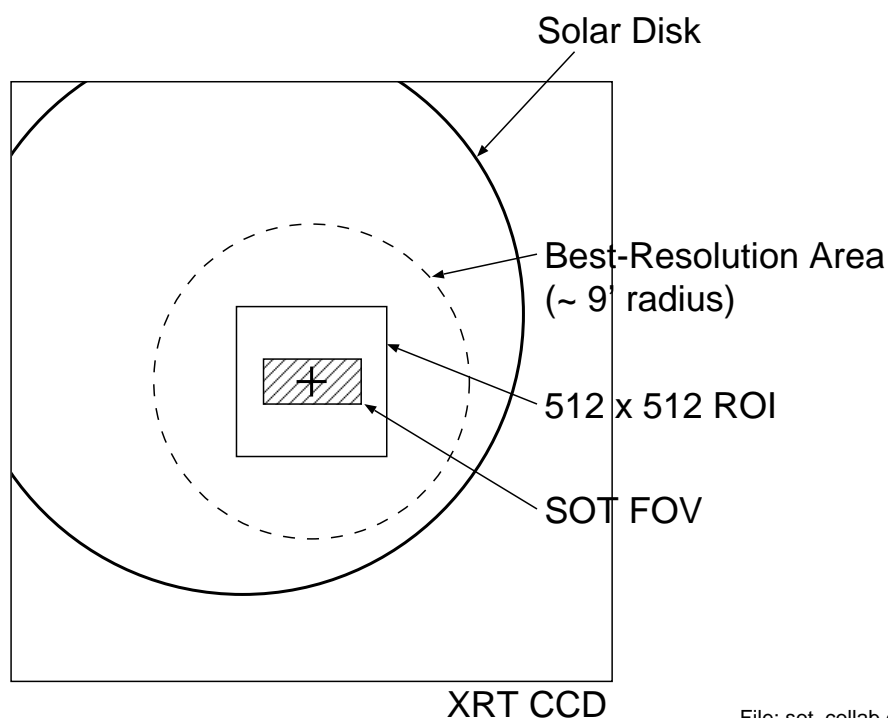
YOHKOH HXT FLARES
'91/10-'00/01
Monthly Numbers of
Yohkoh HXT Flares

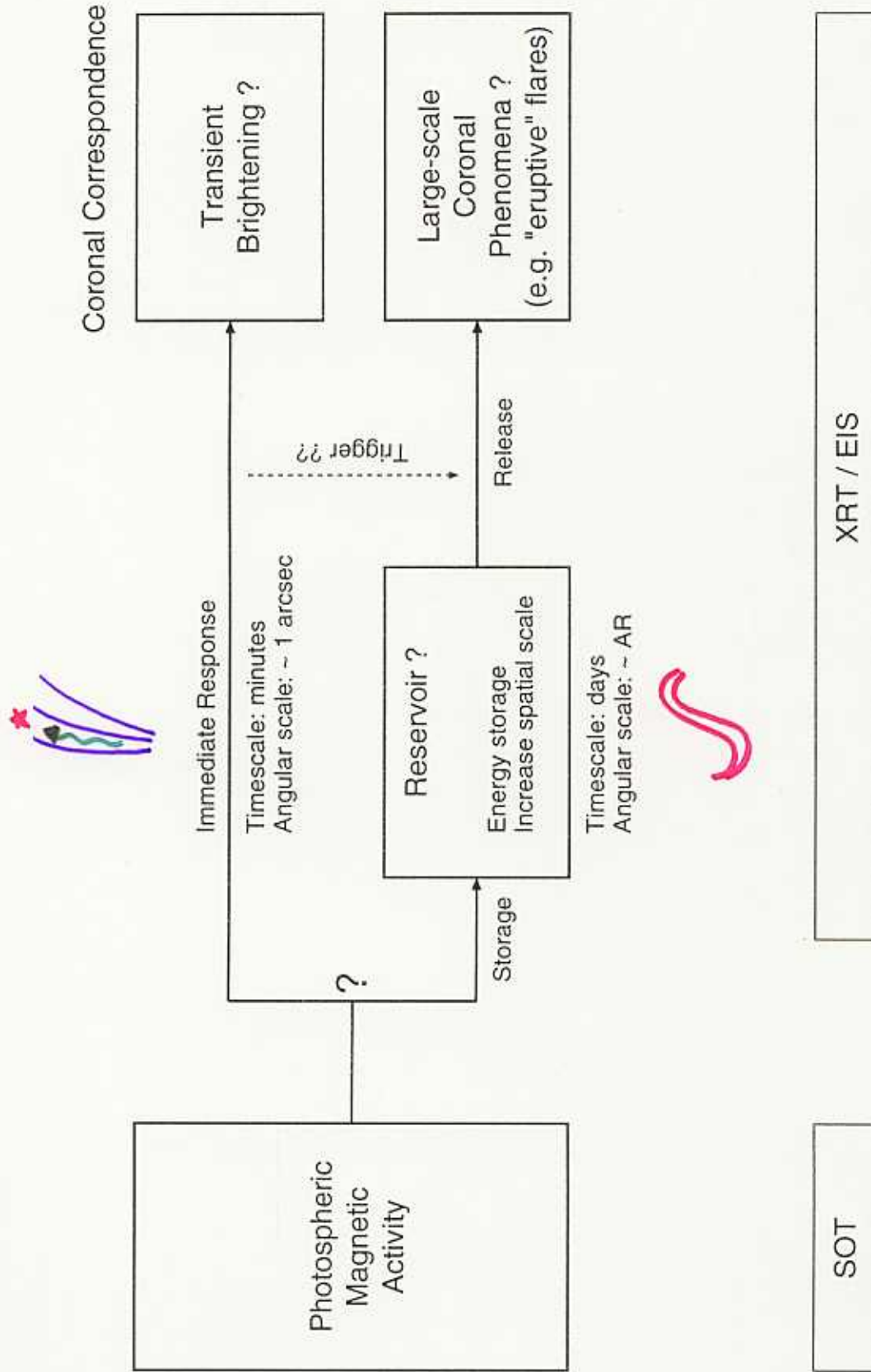
>10counts > 3counts



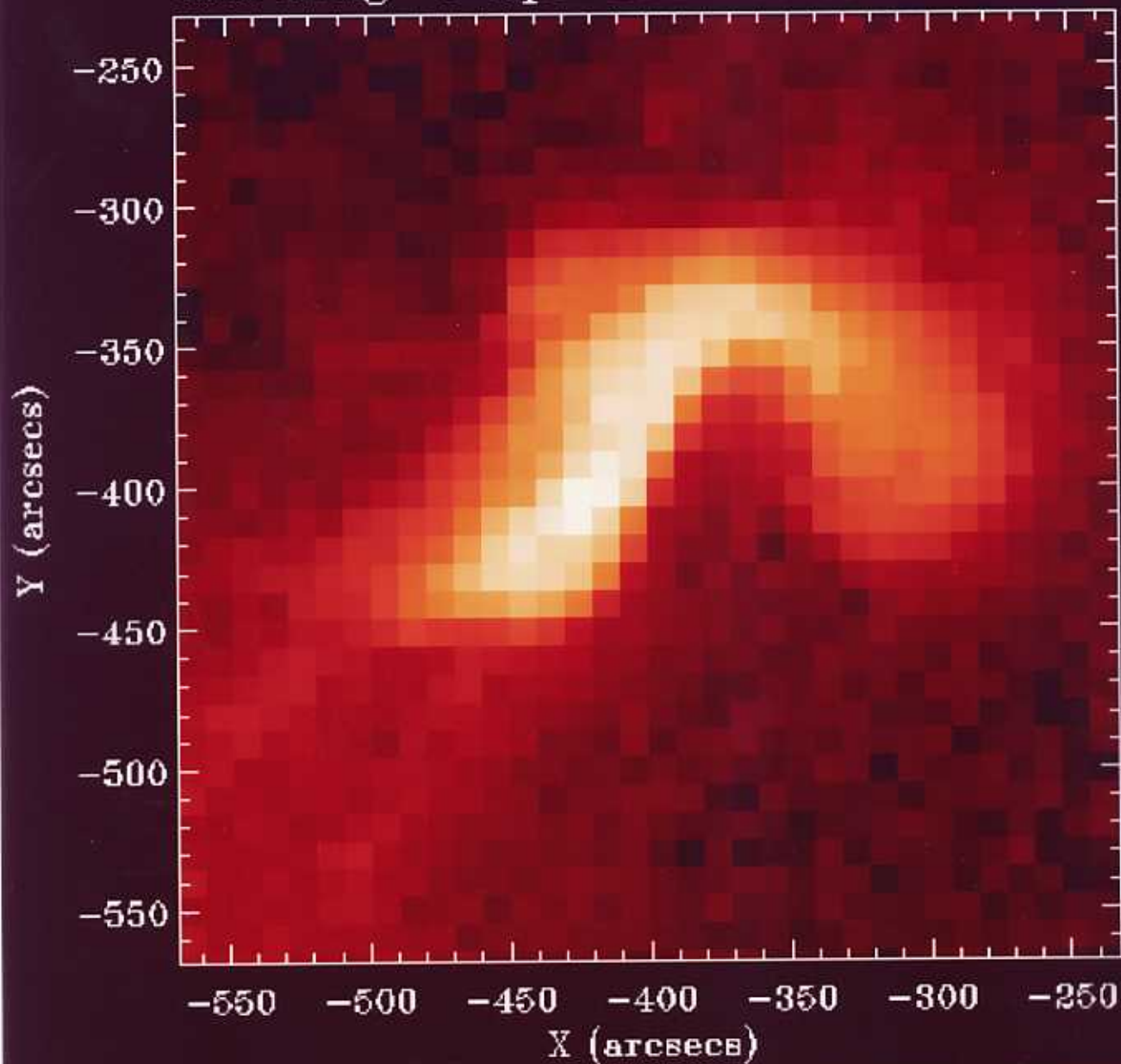
Observation Targets:

- (A) Evolution and Decay of Active Regions, in collaboration with SOT and EIS
- Magnetic/Temperature evolution of the corona in response to photospheric magnetic behavior. Energy buildup process(es).
 - Cover the SOT FOV with the “Best-Resolution Area” (~9' radius)
 - ... 512 x 512 pxl ROI (or larger) well covering an entire AR
 - ... Fixed ROI position (centered at the CCD)
 - Also ARS (Auto Region Select)-selected “bright” regions
 - 2-weeks coverage from East limb to West limb
 - ROI jump with flare occurrence?



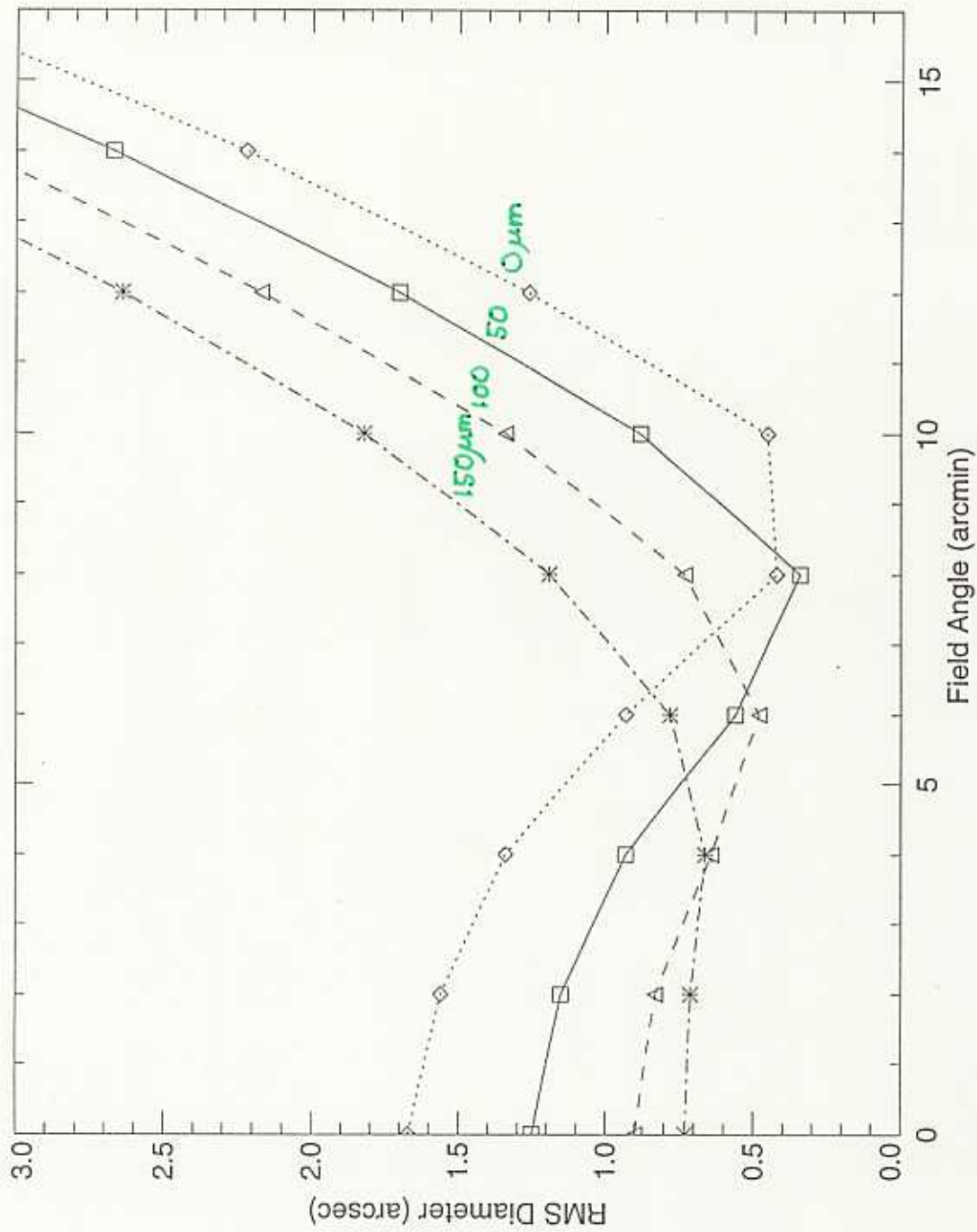


SXT AlMg 6-Apr-1997 22:36:58.455 UT

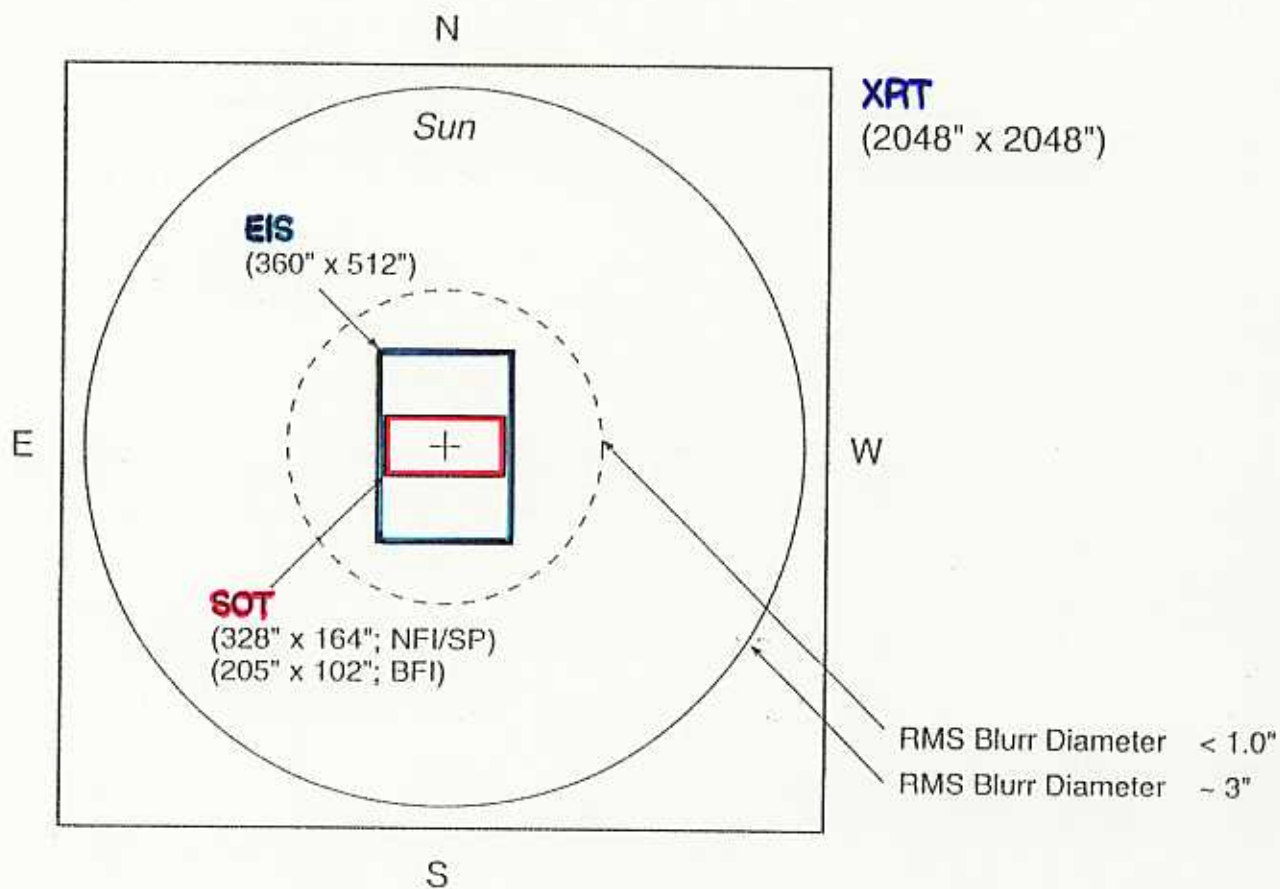


Spot Size for Various Focus Positions

calculated by R. Kano



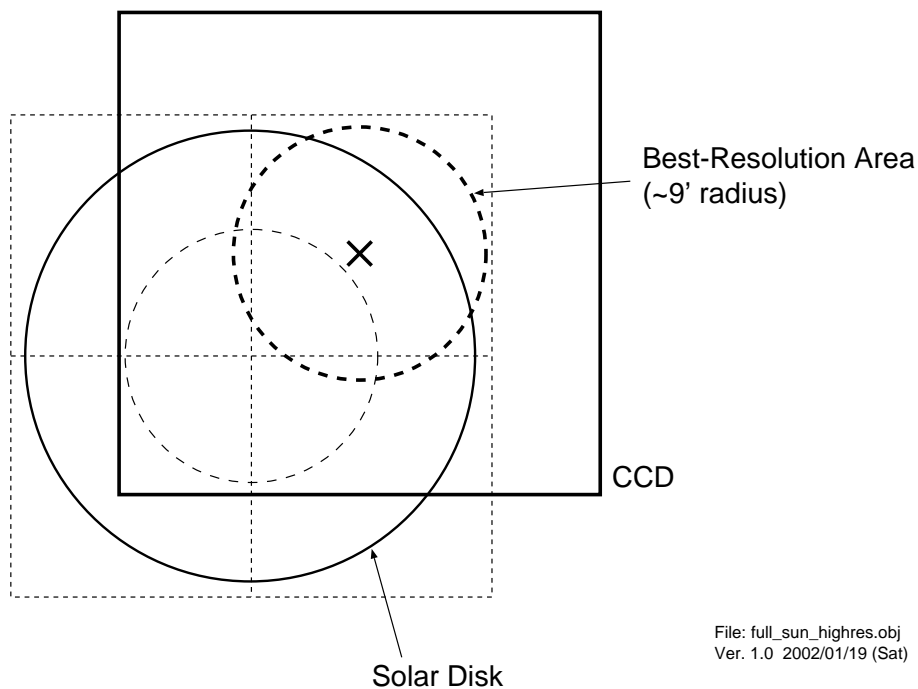
FOV Comparison of Solar-B Telescopes



File: telescopes_fov.obj
ver. 1.1 2000/08/17 (Thu)

(B) Best-Resolution Full Sun Images with All Filters

- Temperature Structure / DEM measurements for various features on the Sun (such as AR, QR, CH, etc.)
- Offpoints observation of the full Sun, covering the entire disk with Best-Resolution (1 arcsec)
- ~5 offpoints including Sun-center pointing
- Twice for “Opposite-facing” hemisphere



(C) Flare Observation

- Preflare-to-Flare observations for investigating triggering and evolutionary process(es) in solar flare energy release

- A few flares per month still expected (mostly GOES C ~ lower M)
- One or two active regions likely on the Solar disk
- Preflare observations using the Preflare Buffer capability of MDP (maybe fixed target ROI)
 - ... Brightest region of the flare identified (and ROI can be set) automatically by MDP

ROI Size	Cadence	Image Comp.	Data Rate	Data Amount
(A) Photosphere - Corona Connection				
512 x 512	12s	DPCM	262 kbps	1.6 Gbit/orbit
256 x 256	4s	"	197 kbps	1.2 Gbit/orbit
512 x 512	2s	JPEG (2bit/pxl)	262 kbps	1.6 Gbit/orbit

(B) Full Sun Observation				
2048 x 2048	200s	DPCM	245 kbps	2.5 Gbit (T = 3hr)
10 Filters	(2 EXP)			
5 Pointings				

(C-1) Preflare Observation				
384 x 384	10s (to BUF1)	DPCM	(300 kbps)	44.5 Mbit/event (T = 50s)
	1min (2)			(7.5 min)
	5min (3)			(60 min)
(C-2) Flare Observation				
384 x 384	10s	DPCM	291 kbps	175 Mbit/event (T = 10min)
192 x 192	4s			