



# Suzaku Operation and calibration status

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On behalf of Suzaku team



# 1. Operation

# Spacecraft status

- **Orbit**

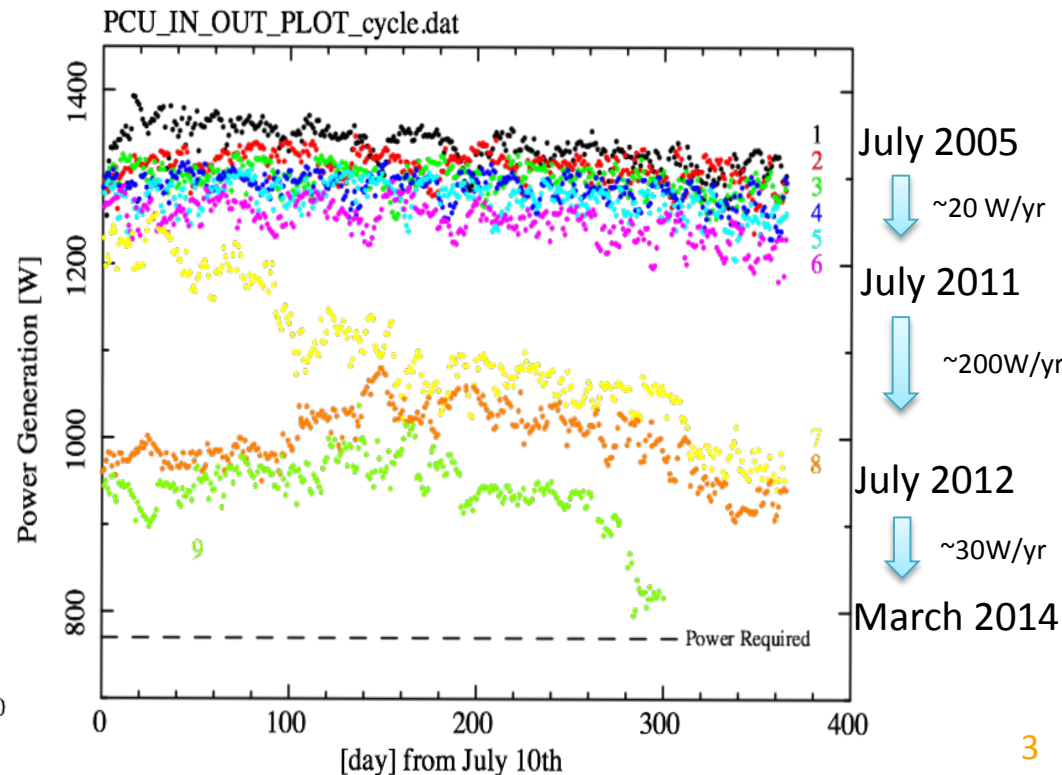
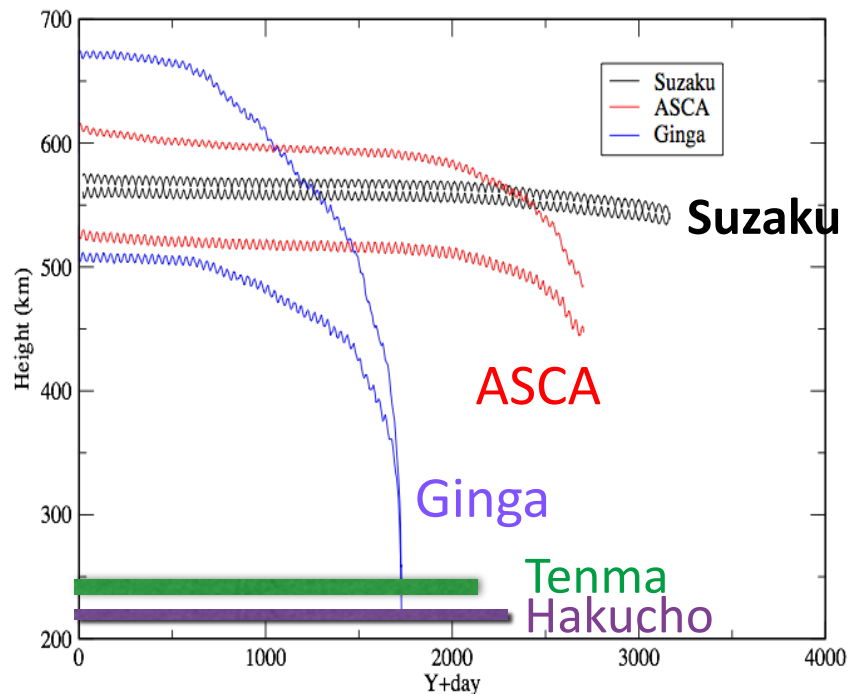
- Perigee > 530km; 3more years till it reaches < 500km
- Longest lifetime among 5 Japanese X-ray astronomy satellites at 500 km LEO !

- **Attitude control system**

- Four gyros out of five are healthy. One is noisy, but usable

- **Power system**

- A rapid degradation of  $-200\text{W}/\text{year}$  was observed in 2011-2012, but it returned steady degradation of  $-30\text{W}/\text{year}$  now. Reduction of power generation was mitigated by reducing power consumption by e.g. stopping cryocooler technical demonstration.
- Degradation in one side of battery is being mitigated by heater operation. (2014)

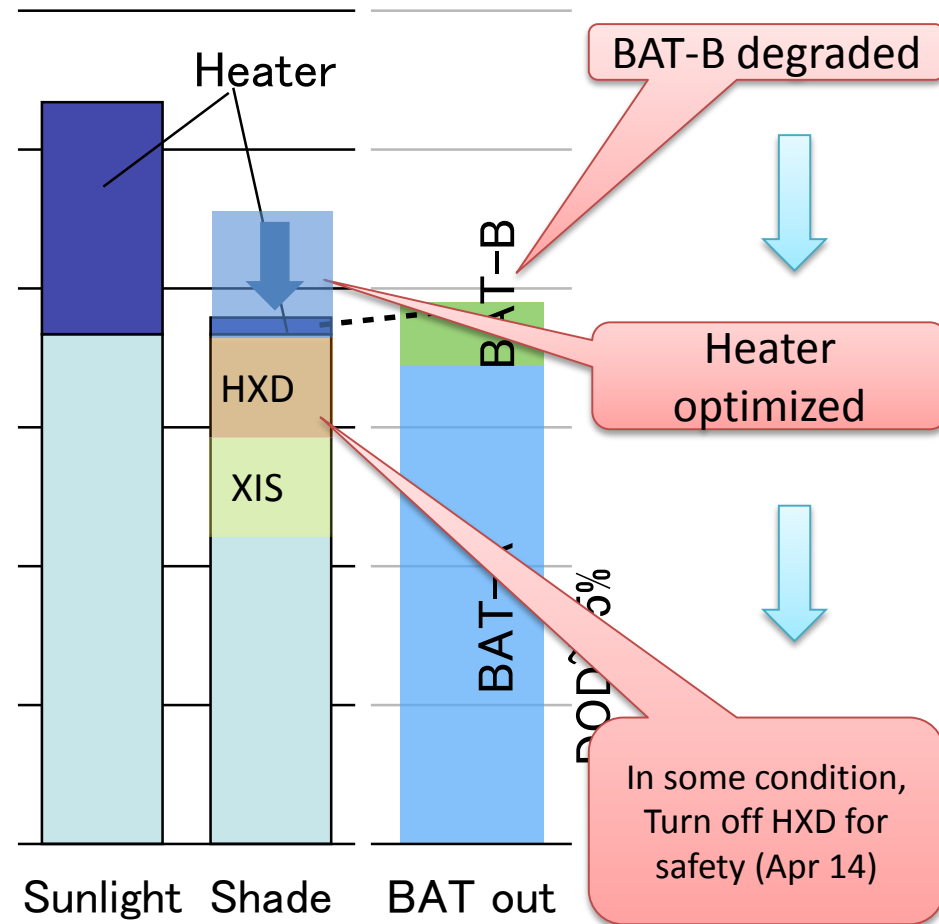




# Operation 2014

- 9 Jan 18:39:19 UVC (XIS,HXD shutdown) & Safehold
- 11 Jan 20:02:00 3 axis control
- 11 Jan 21:37:00 MNV to N132D
- 13 Jan 16:09:07 XIS recovered
- 17 Jan 01:38:56 UVC (XIS,HXD shutdown) & Safehold
- 12-18 Jan BAT-B Temp. out-of-control (many UVC)
- 22 Jan BAT-B Temp. stabilized
- 24 Jan Last UVC was occurred
- 29 Jan 11:59:00 XIS recovered
- 31 Jan 08:00:00 3-axis att. Control (Obs. restarted)
- 16 Feb 00:00:00 HXD recovered
- 18 Feb 23:23:06 HXD fully recovered
- 19-22 Feb (*Suzaku MAXI conference*)
- 15 Apr 23:27:00 HXD off to save the power
- 22 Apr 19:31:00 HXD on
- 24 Apr 18:49:00 HXD off to save the power
- 28 Apr 02:37:00 HXD on
- 12 May 10:50 HXD off (*This morning!*)

### Power consumption (Feb 2014)



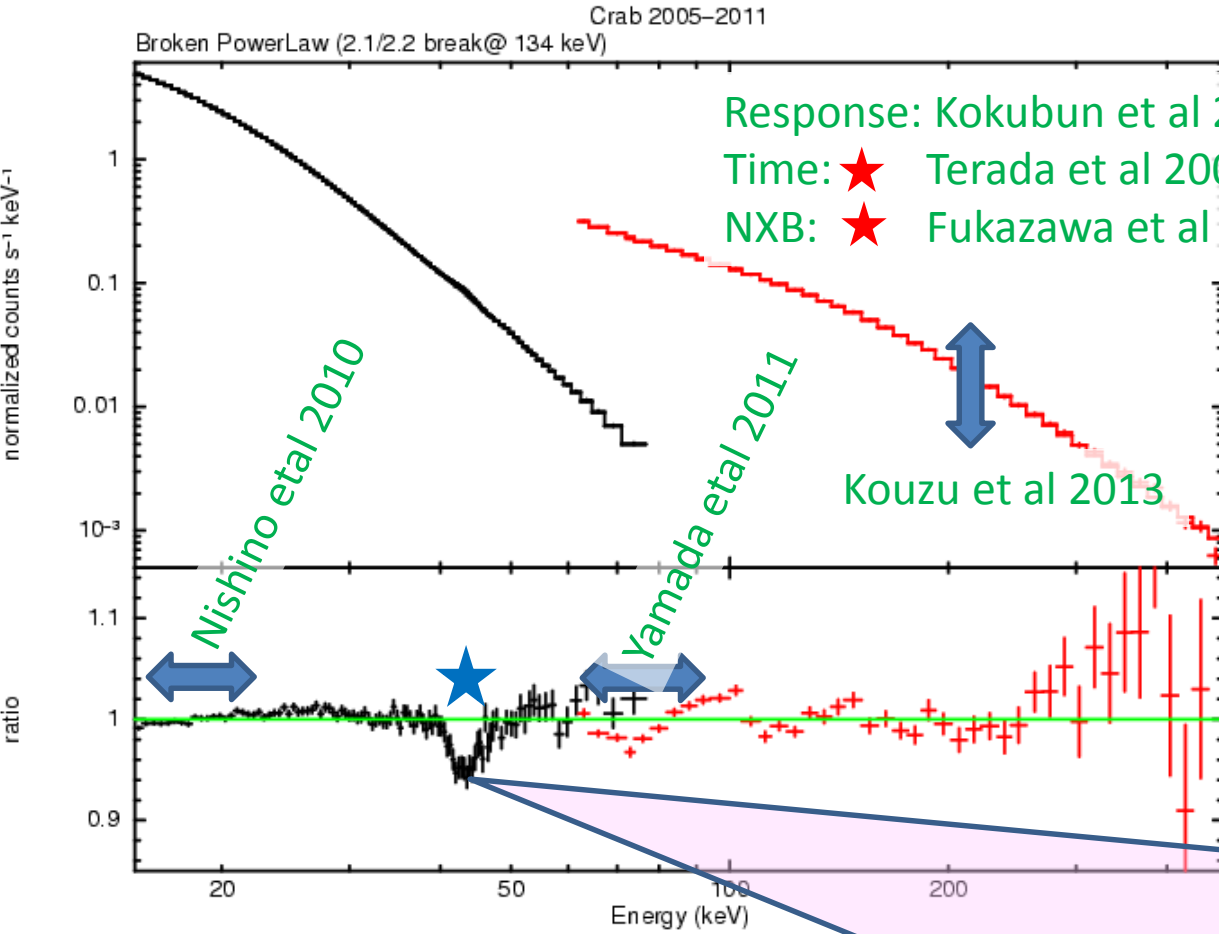
We continue observations of AO-9 targets.



## 2. HXD



# HXD calibration Status



★ Today's topic (updates from last IACHEC)

### ★ Future Work

- Line intensity depends on the incident flux.
- Tune up digitization parameters on MC simulator used for rsp gen.

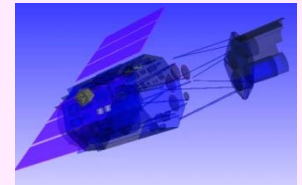
signal

PMT

BGO

PIN

GSO



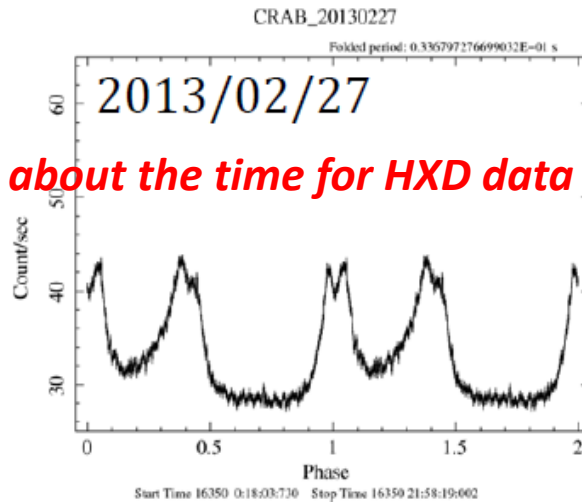


# HXD Timing problem

- Absolute timing at 270-360 us was confirmed by simultaneous Crab observation with hard X-ray instruments triggered by IACHEC members! [Terada et al 2008 PASJ]

- After 2012, we found a shift of TIME by 3 msec in maximum.

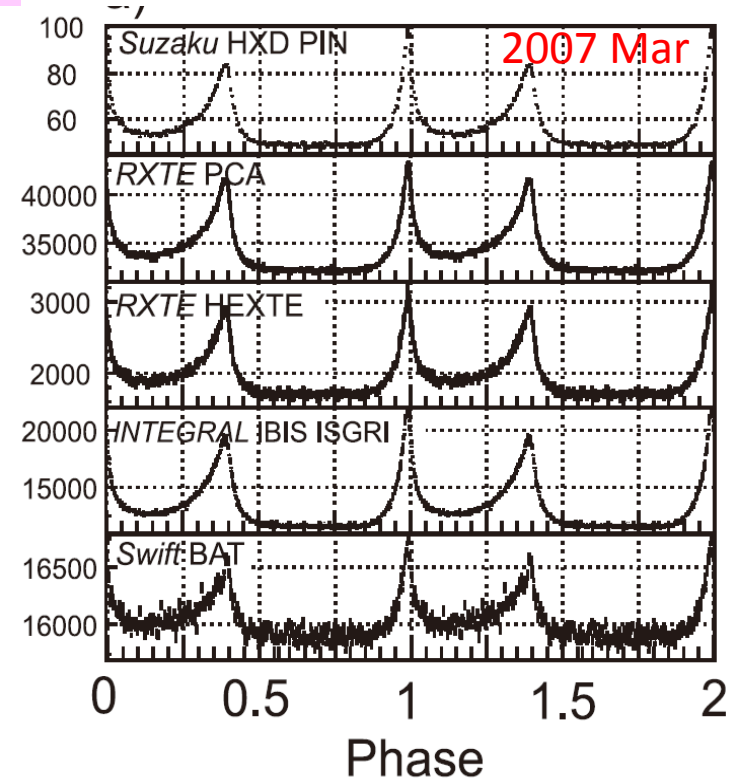
**Please be careful about the time for HXD data after 2012 Mar.**



- Fixing now:

- ✓ We have identified that the issue comes from the error in assignment of time by the ground system at the operation center (USC).
- ✓ On 1 March 2014, the ground system has been replaced (fixed), but we still have a issue. (confirmed by latest Crab calibration in March 2014) → Still working on this.

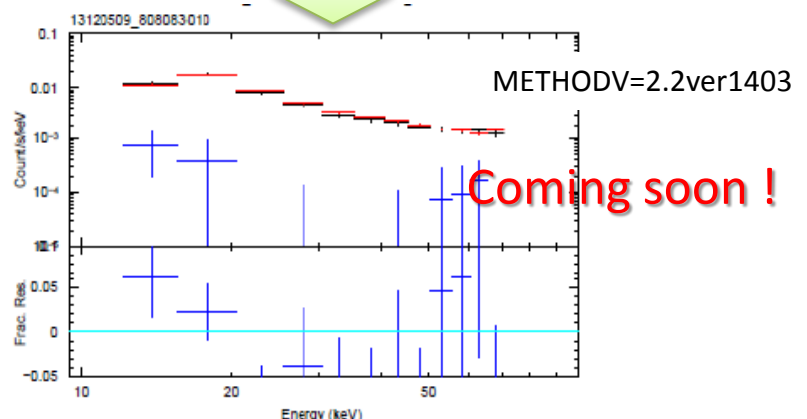
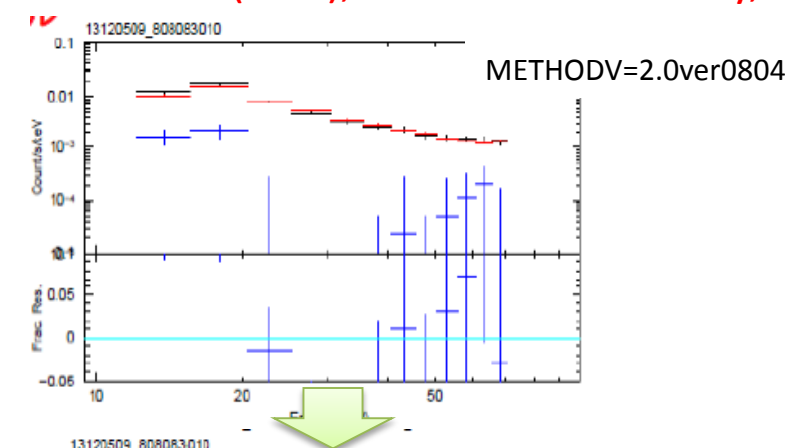
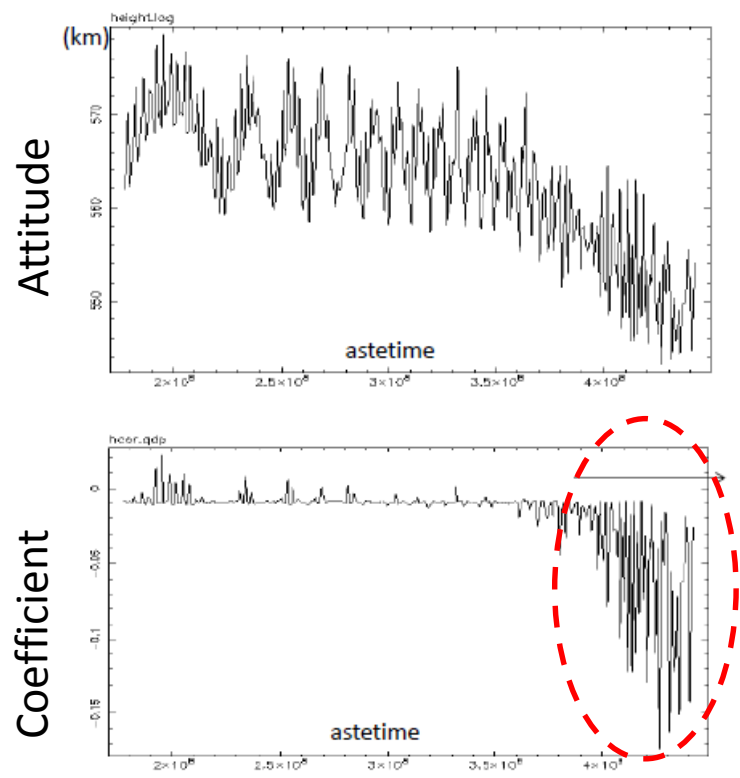
**Please come and check Koyama's talk at the Timing session**





# HXD NXB estimation Updates

- Variable Non X-ray background
  - Semi empirical modeling [Fukazawa et al 2009 PASJ]
  - Systematic errors for estimations are 3% (PIN) and 1% (GSO).
- After 2012 Aug, systematic error of 'LCFITDT' model for PIN is slightly increased (up to 3-4%) in lower energy band (below 20 keV) due to one coefficient by the attitude.  
(No problem for above 20 keV & Still valid before 2012 July.)
- The HXD team plan to release a new version of NXB model (v2.2), valid after 2012 July, soon.







## 3. XIS

→ *Eric-san's presentation from the XIS team.*