

# *Suzaku* XIS

# Contamination Status

Eric D. Miller (MIT)

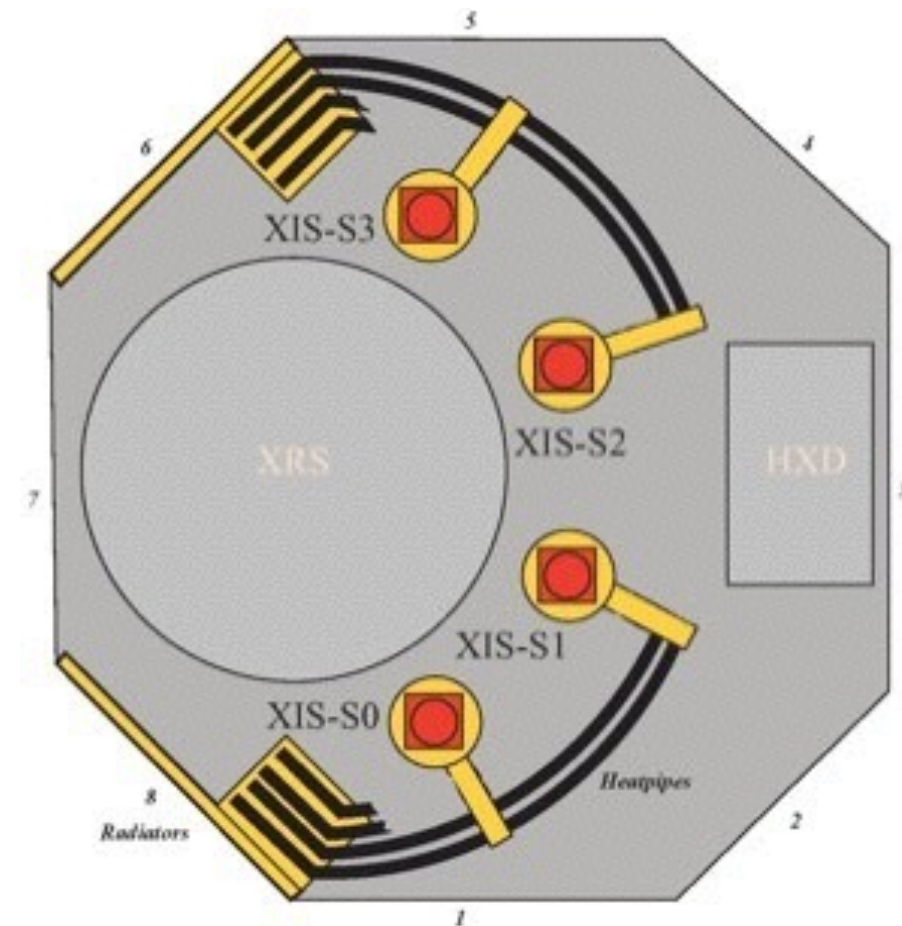
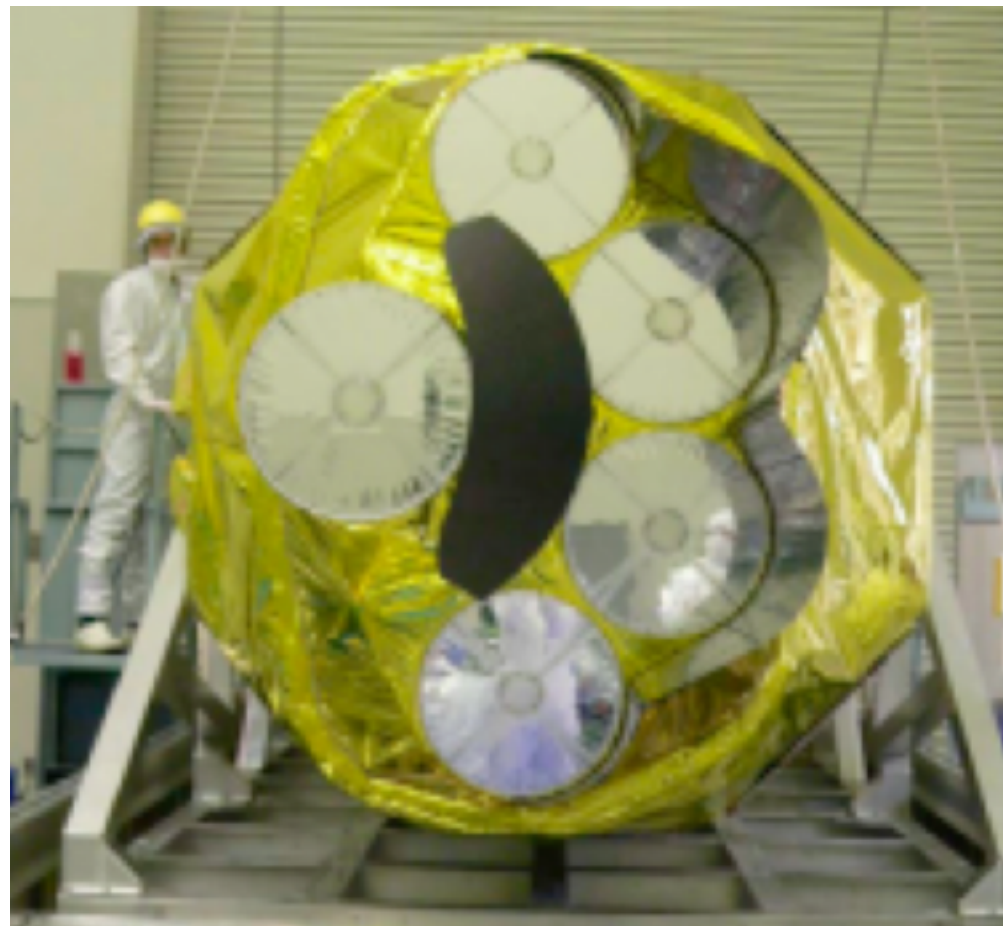
Bev LaMarr (MIT), M. Tsujimoto, K. Wada (ISAS/JAXA)

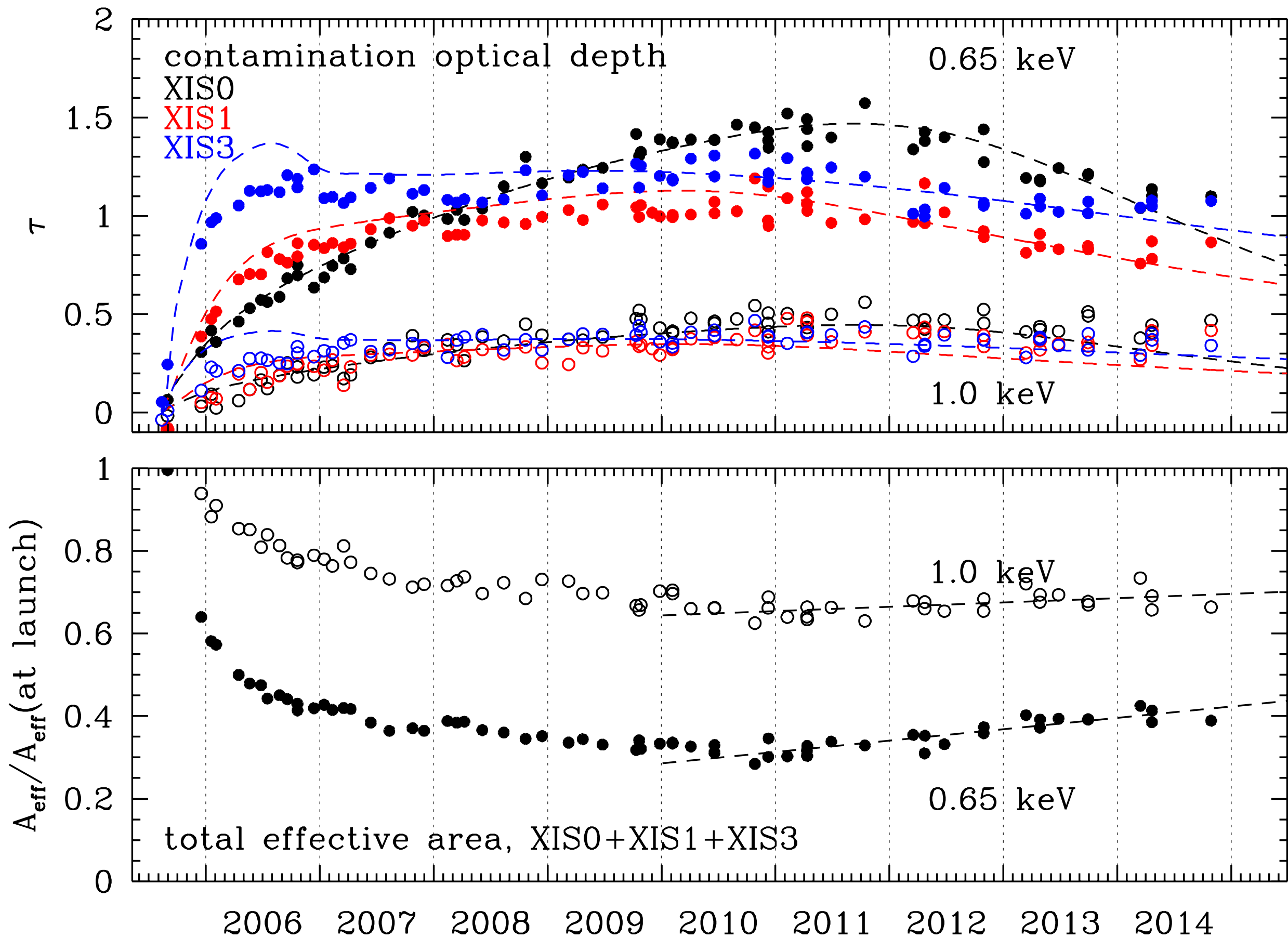
IACHEC 2015

<http://space.mit.edu/XIS/monitor/contam>

# Outline

- updates since 2015
- method for determining composition, time dependence, spatial dependence





# Key Objects

|                     | Stable<br>(Incident<br>Spectrum<br>known) | Extended<br>over FOV | Always<br>Observable<br>? | Energy<br>Range    | Target of the<br>contaminant<br>study |
|---------------------|-------------------------------------------|----------------------|---------------------------|--------------------|---------------------------------------|
| RXJ1856             | Yes<br>(maybe)                            | No                   | No                        | 0.2-1keV           | Composition                           |
| E0102               | Yes                                       | No                   | Yes                       | 0.4-3keV           | Evolution                             |
| Cygnus Loop         | Yes at<br>somelevel                       | Yes                  | No                        | 0.2-3keV           | Uniformity                            |
| PK2155              | No but<br>Smooth                          | No                   | No                        | 0.2-12keV          | Composition                           |
| Atmospheric<br>F.L. | No                                        | Yes                  | Yes                       | 0.39keV<br>0.52keV | Uniformity<br>Evolution               |

# Caveats for *Suzaku* from 2007

- **above 0.6 keV**
  - contamination well-modeled for XIS1,2,3, ~10% sys. error
  - contamination on XIS0 is underestimated for mid-2006 onward, fixed in June 2007 CALDB release
- **between 0.3-0.6 keV**
  - C/O ratio is not well constrained (C/O > 6?)
  - changes  $A_{\text{eff}}$  from the C edge (0.28 keV) to just above the O edge (0.53 keV)
  - could introduce spurious features near the O edge
- **below 0.3 keV (the “C-band”)**
  - decrease in  $A_{\text{eff}}$  with time is seen in some soft sources, e.g. RXJ1856 (shown)
  - C+O insufficient, additional elements required
  - composition may be time dependent
  - C-band calibration is uncertain at this stage
- **extended sources**
  - spatial distribution is modeled from BI chip only
  - FI chips might have different distributions

