

Contamination WG Summary

Eric D. Miller (MIT)

IACHEC 2016 – IUCAA

Membership

Eric Miller (chair, Suzaku, Astro-H)

Andy Beardmore (Swift)

Vadim Burwitz (eROSITA)

Larry David (Chandra)

Tadayasu Dotani (Astro-H)

Megan Eckart (Astro-H SXS)

Michael Freyberg (eROSITA)

Terry Gaetz (Chandra)

Catherine Grant (Chandra)

Kenji Hamaguchi (Suzaku)

Maurice Leutenegger (Astro-H SXS)

Herman Marshall (Chandra)

Kallol Mukerjee (ASTROSAT SXT)

Steve O'Dell (Chandra)

Paul Plucinsky (Chandra)

Steve Sembay (XMM-Newton EPIC)

Doug Swartz (Chandra)

Masahiro Tsujimoto (Suzaku, Astro-H)

Cor de Vries (XMM-Newton RGS)

Qazuya Wada (Suzaku)

2014: 12 out of 19 members present

2015: 6 out of 20 members present

2016: 5 out of 20 members present

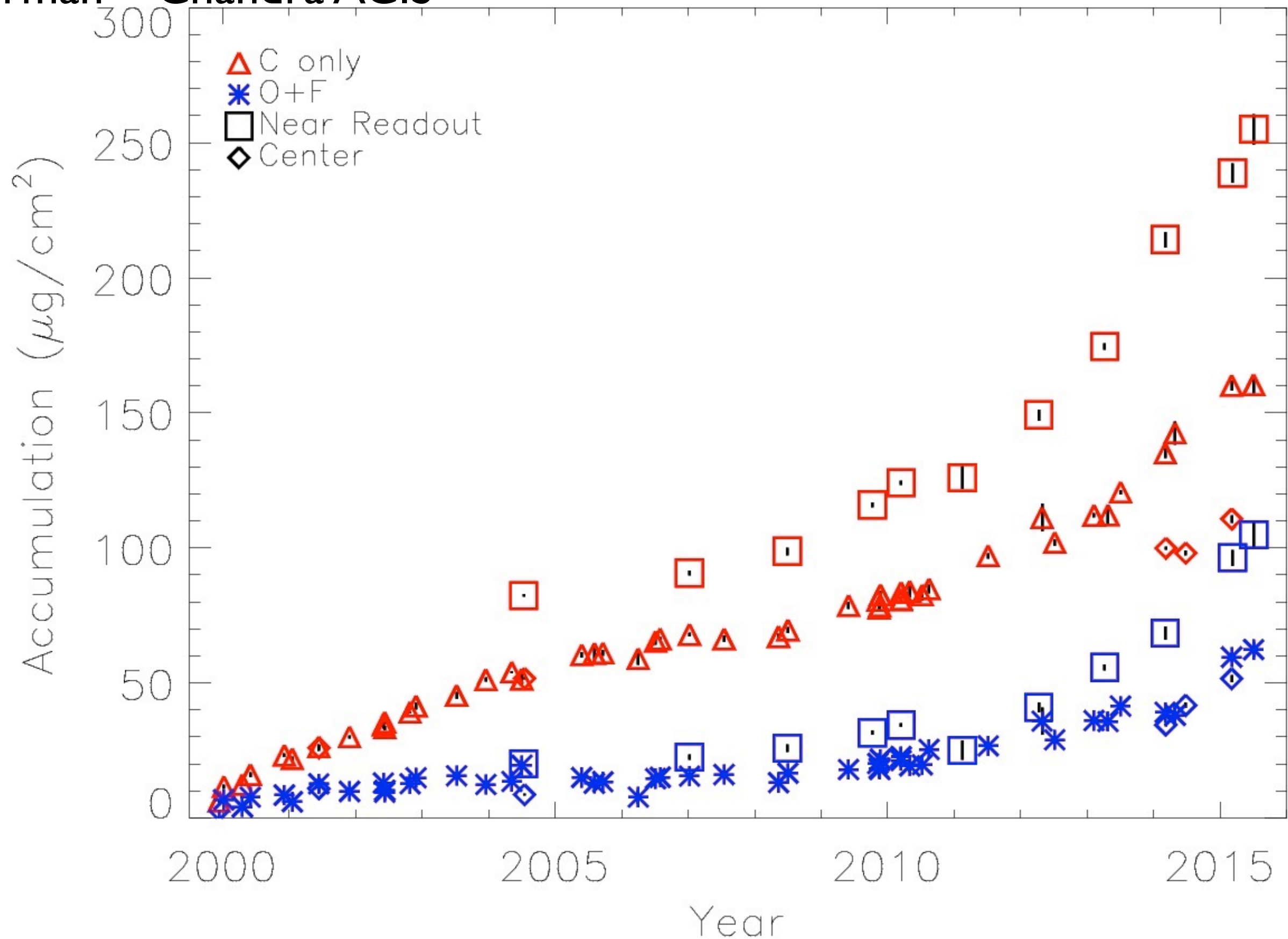
Topics

- comparison among instruments and missions
 - chemical composition
 - time dependence
 - spatial dependence (micron to cm scales)
 - temperature dependence (where is the coldest surface?)
 - environmental dependence (orbit)
- mitigation for current instruments
 - celestial monitoring targets
 - effects on calibration and science results
 - "bake-out" procedures
- mitigation for future instruments
 - design (cold traps, contamination blocking filters)
 - procurement
 - ground procedures
 - ground testing and calibration
 - on-orbit monitoring

Contamination WG Agenda

- summary by Eric (~ 5 min)
- presentations (~ 60 min)
 - Paul (for Doug Swartz and Steve O'Dell):
“Modeling contamination migration on the Chandra X-ray Observatory: III”
 - Herman:
“Update on Chandra ACIS contamination modeling”
 - Eric:
“Suzaku XIS Contamination Update”
 - Steve:
“XMM EPIC-MOS Contamination Update”

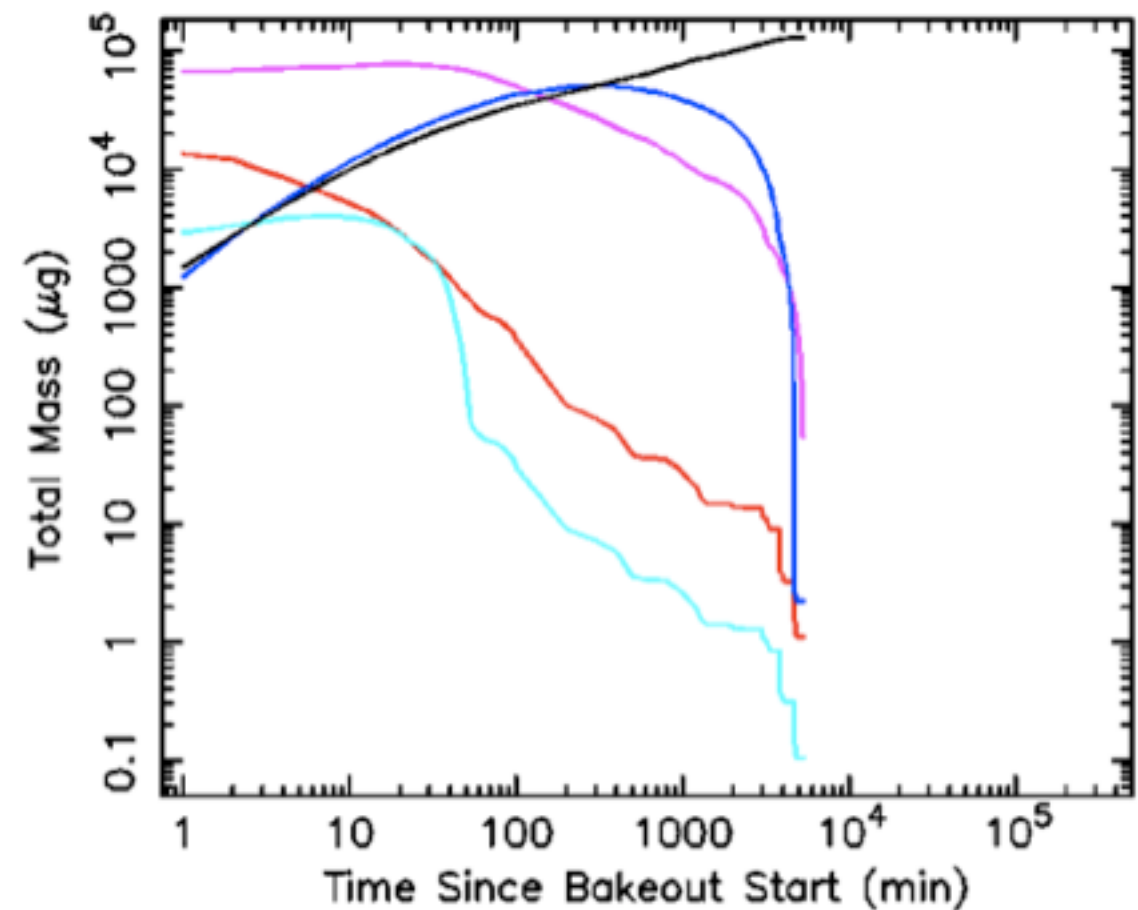
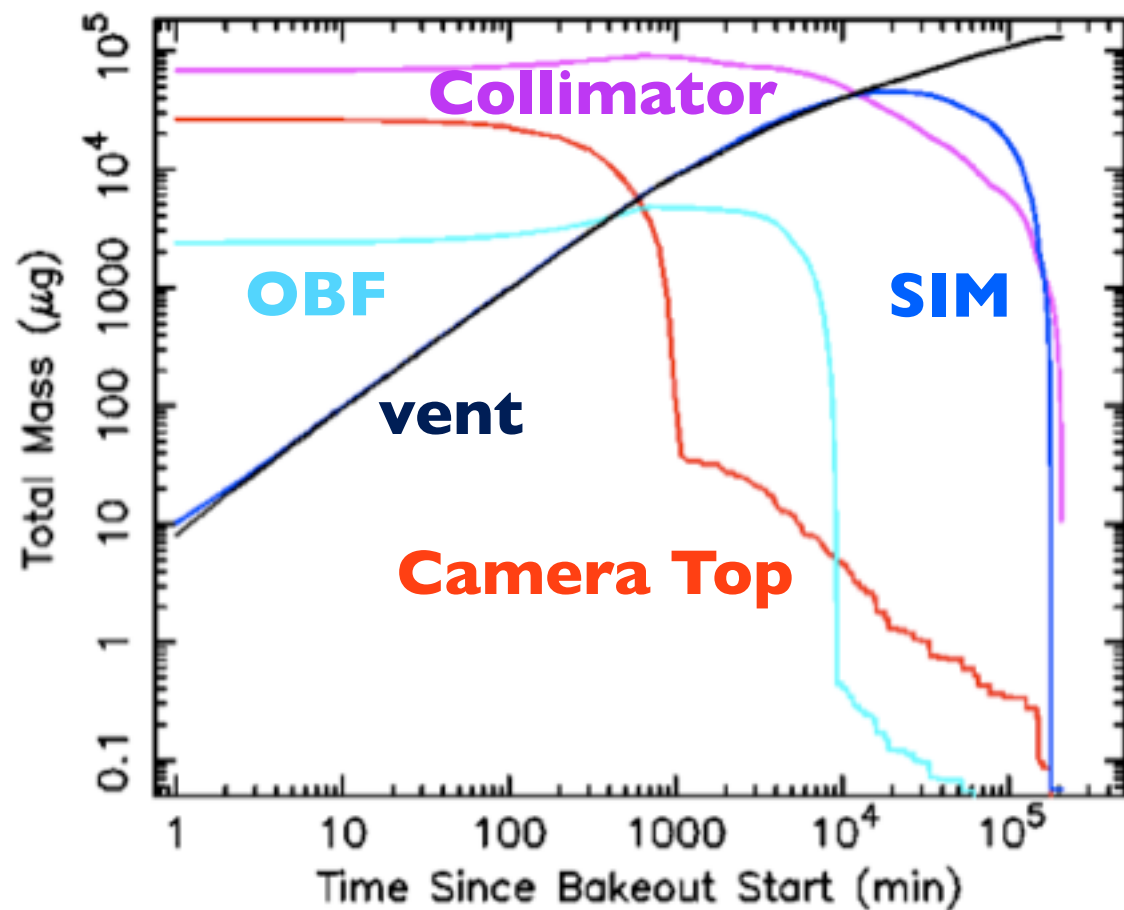
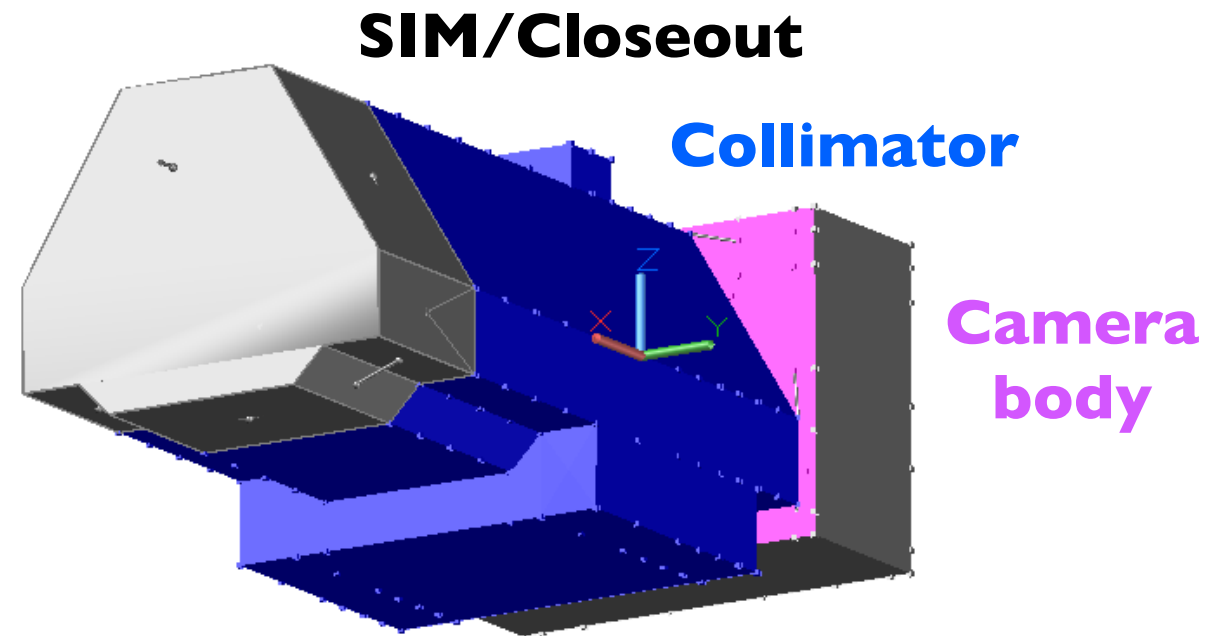
Herman – Chandra ACIS



Paul (for Doug Swartz and Steve O'Dell)

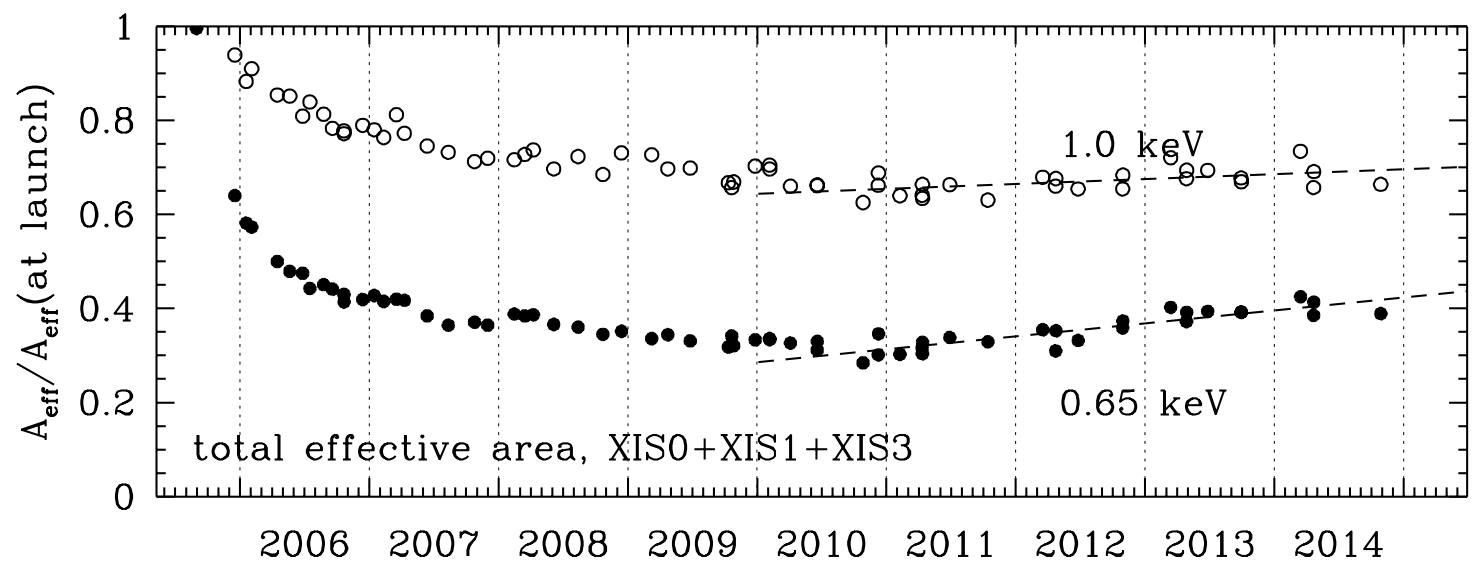
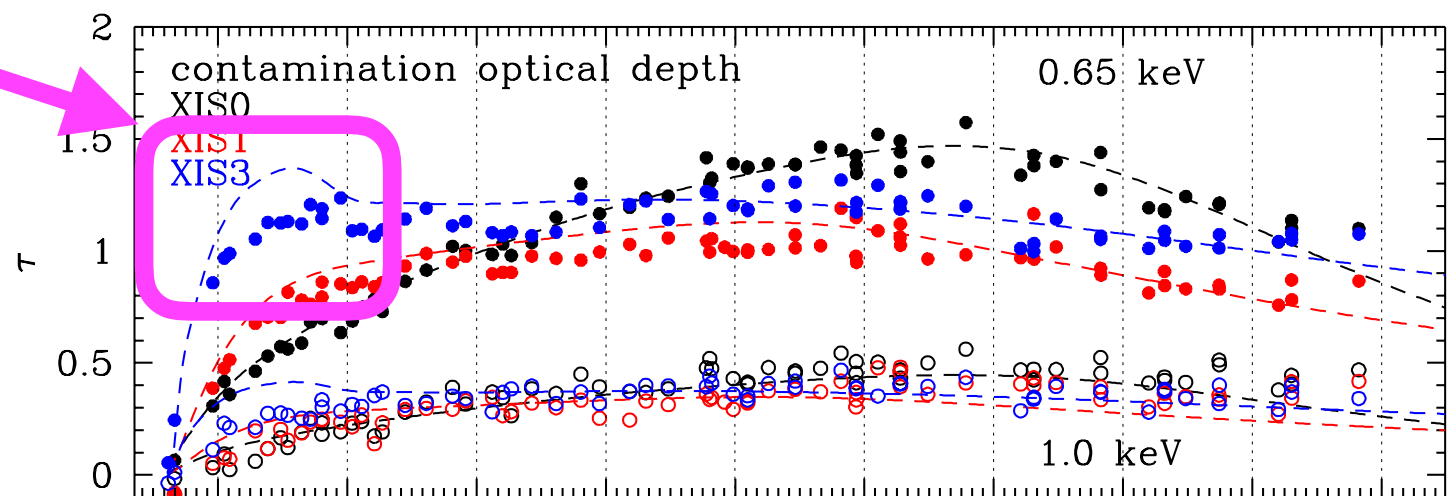
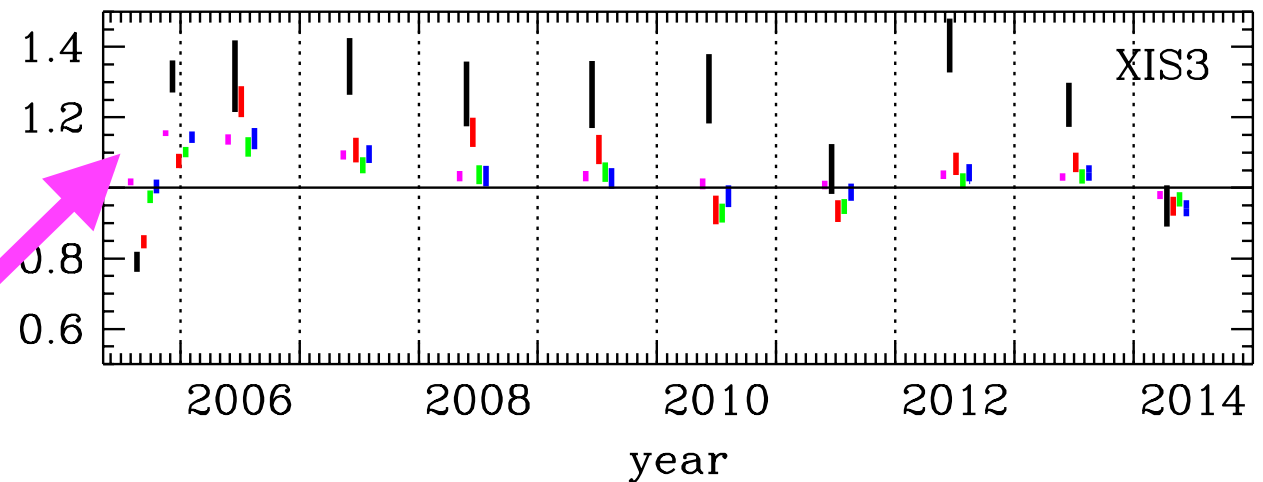
Chandra Contaminant Migration Model

Bake-out simulations using standard geometry/thermal model with closeout at top of collimator/SIM:
(left) low-volatility DOP (DEHP)
(right) moderate-volatility (octadecane)

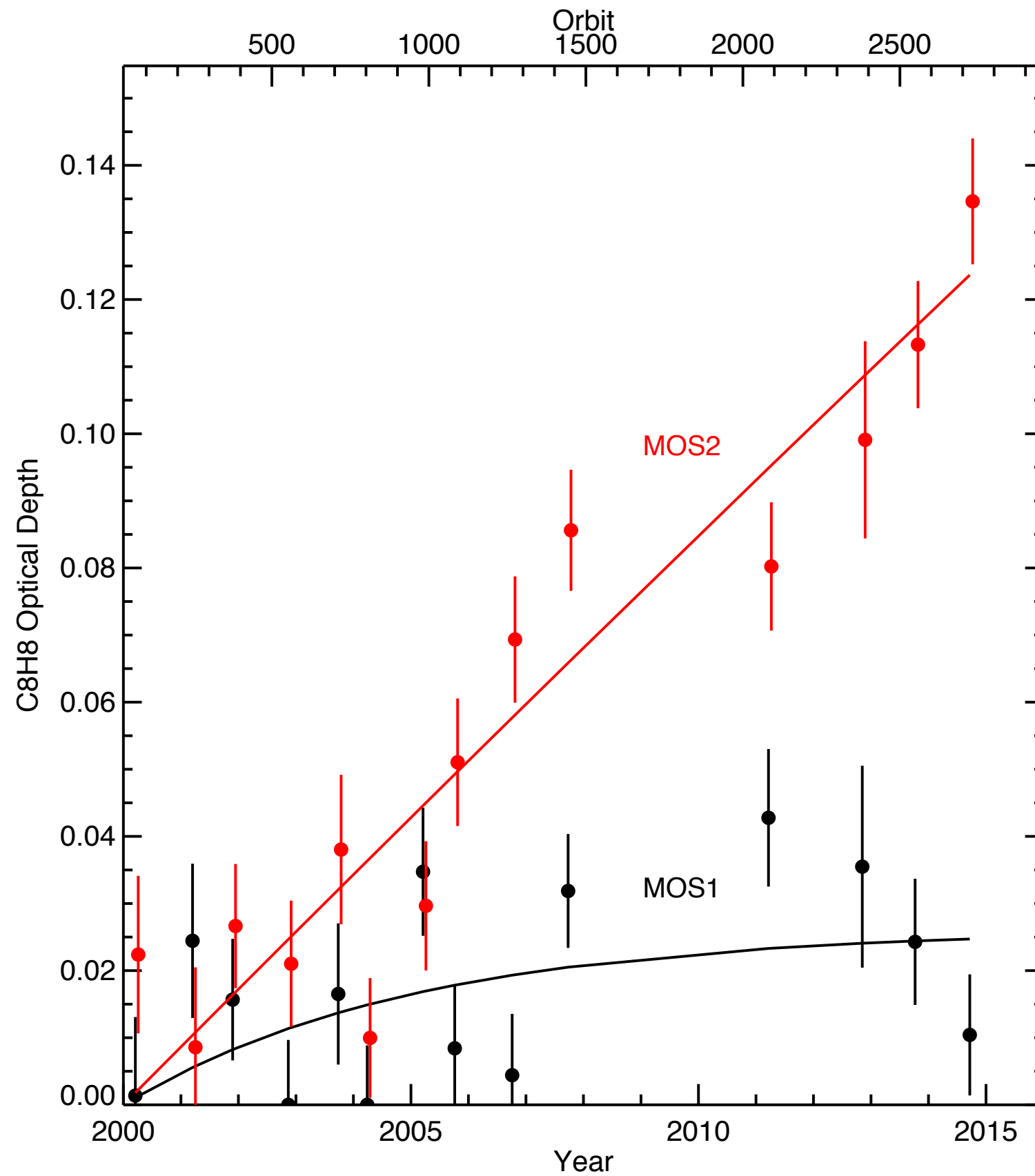


XIS Contamination TODO

- E0102 OVII line norm is 20–40% from IACHEC model; why?
- investigate 2005–2006 XIS3 “funky bump”
- investigate dependence on gain, response
- constrain (and publish) systematic error vs. CCD vs. time vs. radius



Steve S. – XMM EPIC-MOS



Contamination WG Plan (2015)

- legacy/heritage WG white paper
- lessons learned for design and ground mitigation
- lessons learned for first light targets, “zero-contamination” baseline
- targets and observing strategies to detect and monitor contamination
- primary role of this working group!
- Eric & Herman will discuss this at MIT, prepare a skeleton manuscript with example text for *Suzaku* XIS (A/I Eric due 2015 August 30)



Contamination WG Plan (2016)

- legacy/heritage WG white paper
- ~~lessons learned for design and ground mitigation~~
- ~~lessons learned for first light targets, “zero-contamination” baseline~~
- targets and observing strategies to detect and monitor contamination
- *Suzaku vs. Chandra vs. XMM comparison paper*
- Eric & Herman will start this at MIT
(A/I Eric due 2016 August 30)
- *12th IACHEC will be a working session*

