

# Contamination WG

# Summary

Eric D. Miller (MIT)

# Membership

Eric Miller (chair, Suzaku, Hitomi)

Andy Beardmore (Swift)

Akos Bogdan (Chandra)

Dave Burrows (Swift)

Vadim Burwitz (eROSITA)

Sunil Chandra (Astrosat)

Larry David (Chandra)

Tadayasu Dotani (Hitomi)

Megan Eckart (Hitomi SXS)

Michael Freyberg (eROSITA)

Terry Gaetz (Chandra)

Catherine Grant (Chandra)

Kenji Hamaguchi (Suzaku)

Beverly LaMarr (Suzaku, NICER)

Maurice Leutenegger (Hitomi SXS)

Herman Marshall (Chandra)

Kallol Mukerjee (Astrosat)

Koji Mori (Suzaku, Hitomi)

Steve O'Dell (Chandra)

Paul Plucinsky (Chandra)

Steve Sembay (XMM-Newton EPIC)

Doug Swartz (Chandra)

Masahiro Tsujimoto (Suzaku, Hitomi)

Cor de Vries (XMM-Newton RGS)

# Objectives (Revised 2017)

Optics WG Contamination WG

- 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 Plan (2017)

- instrument-specific refereed papers (e.g JATIS)
- Chandra/ACIS monitoring, modeling (Herman et al.)  
currently: a few SPIE papers
- Suzaku/XIS observational paper (Eric, XIS team)  
currently: Koyama+2007, Tech. Description, web pages
- XMM EPIC-MOS? RGS?  
currently: CCF documentation
- first step toward legacy white paper via Optics WG

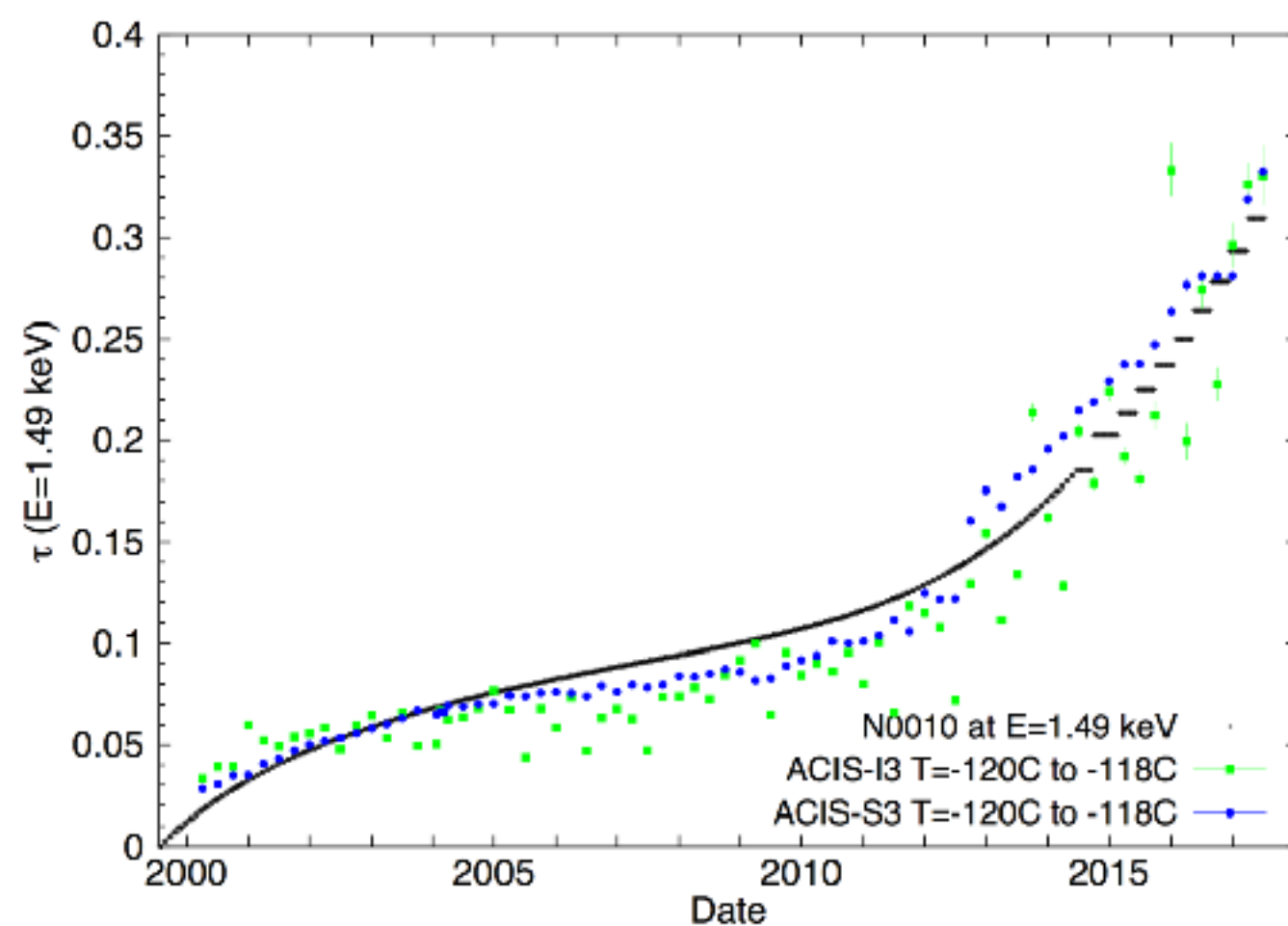
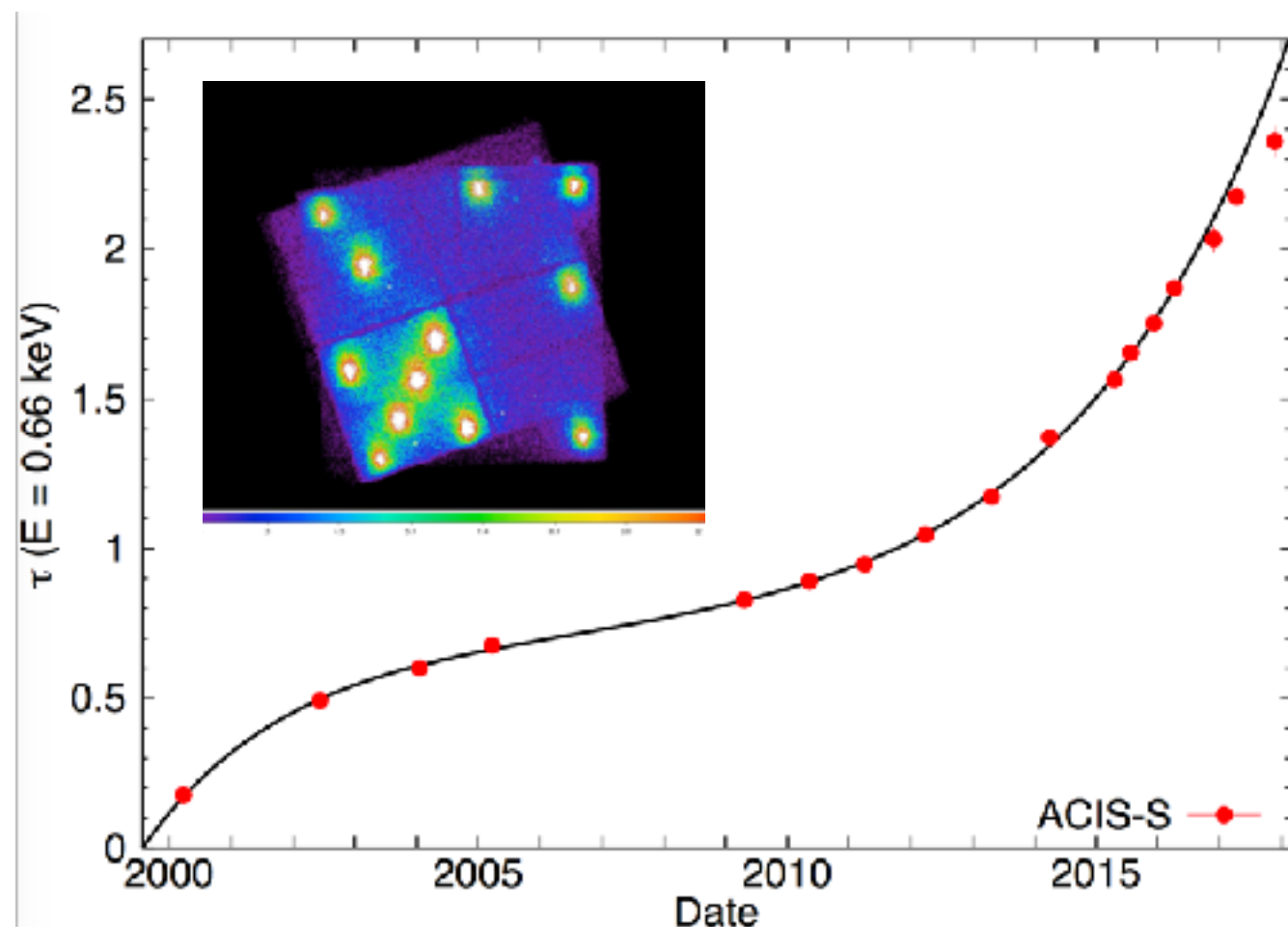


# Contamination WG Agenda

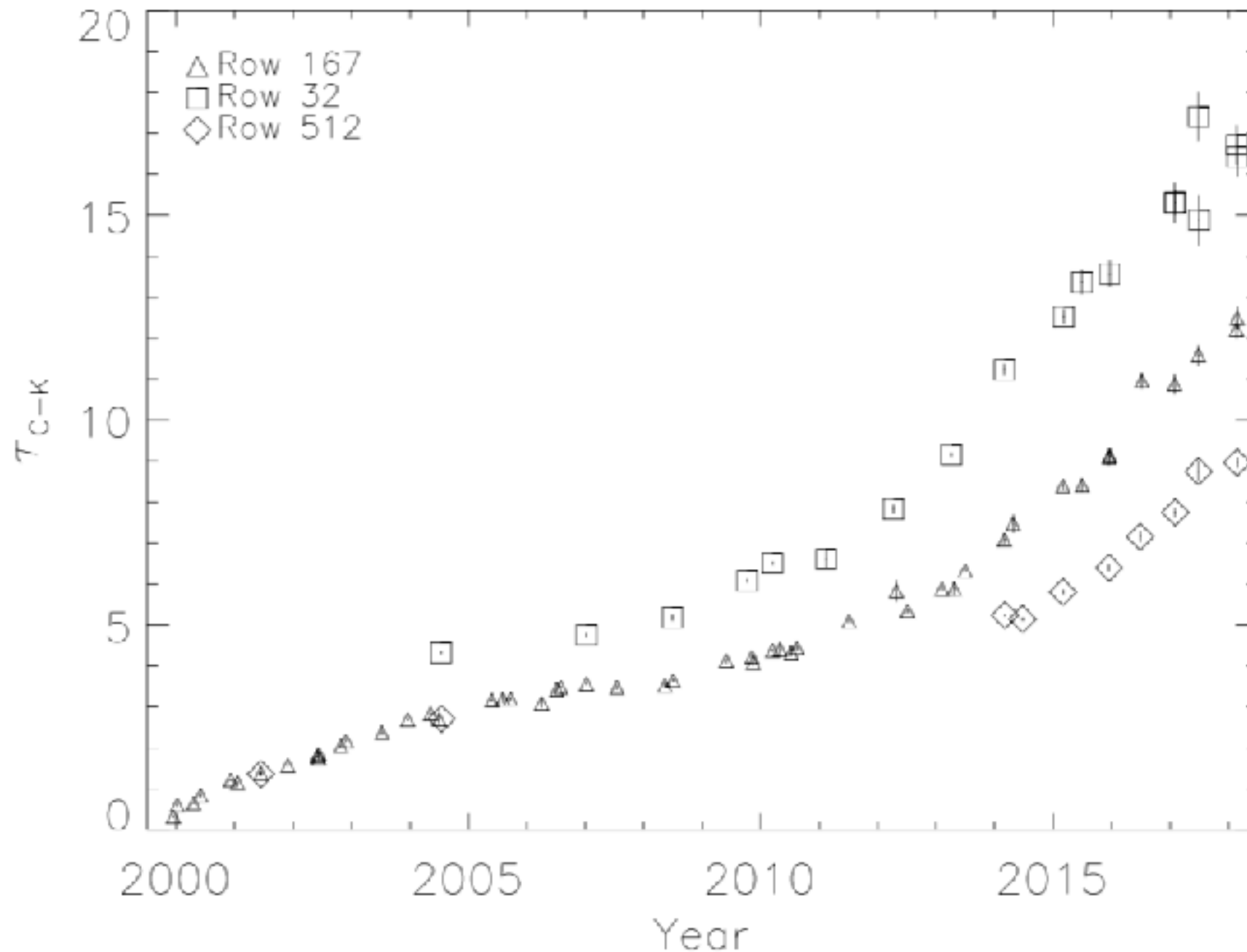
- 09:30-09:50 (15+5 min)  
H. Marshall, "Updating the Chandra ACIS Contamination Model"
- 09:50-10:10 (15+5 min)  
P. Plucinsky, "Monitoring the ACIS contamination layer with the IACHEC model for IE0102.2-7219"
- 10:10-10:30 (15+5 min)  
A. Bogdan, "Monitoring the build-up of contaminant on the Chandra ACIS OBF"

# Chandra/ACIS with Al 795 and ECS (Akos)

- Contamination rate may be slowing on ACIS-I and -S.
- Contamination is so bad that Al K line in ECS can now be used to track spatial structure (Al K to Mn K ratio).
- New contaminant is less sensitive to center/edge temp. difference.



# Chandra/ACIS Big Dither (Herman)



- Two components with different growth times  $T = \tau(2018) / d\tau/dt$   
Uniform: 6-9 yr (building up now)  
Spatial: 10-15 yr (leveled off?)

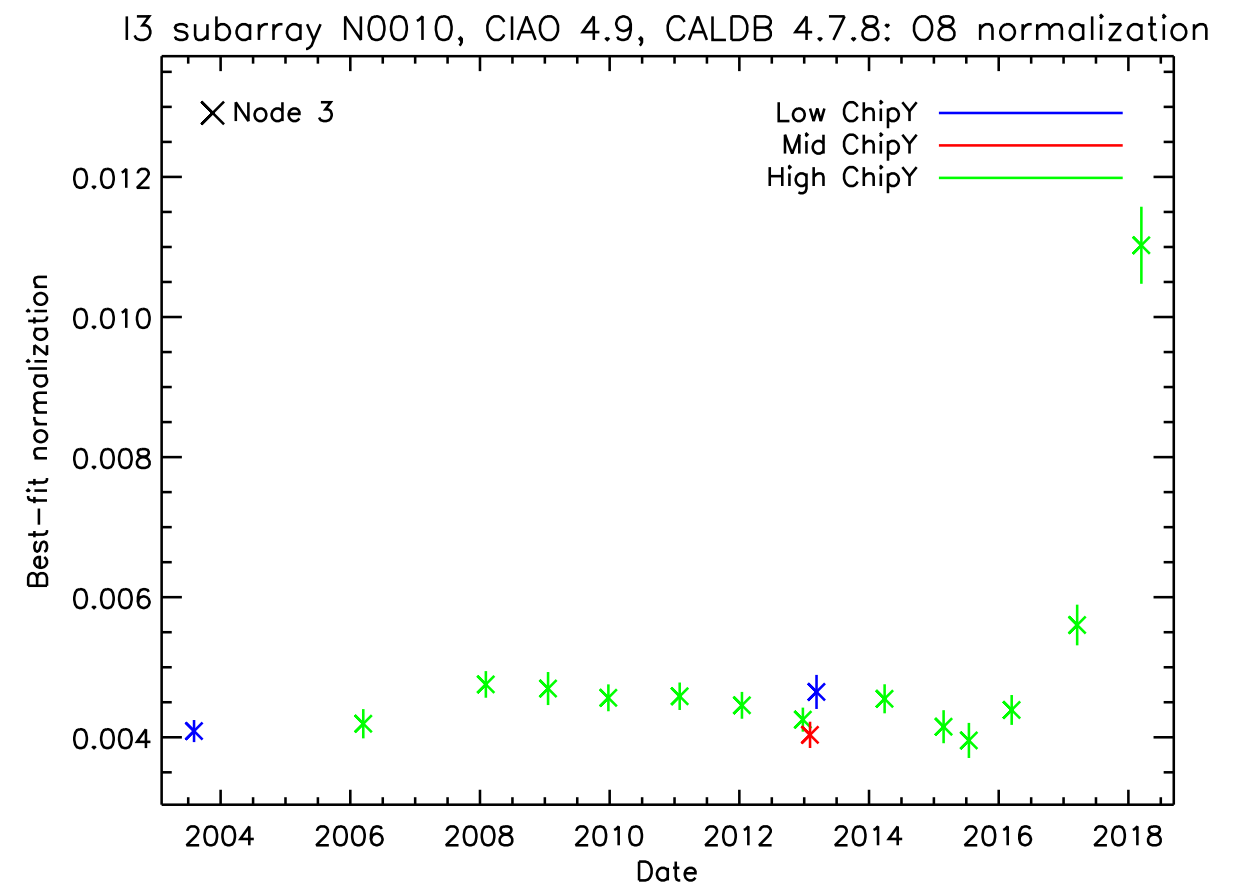
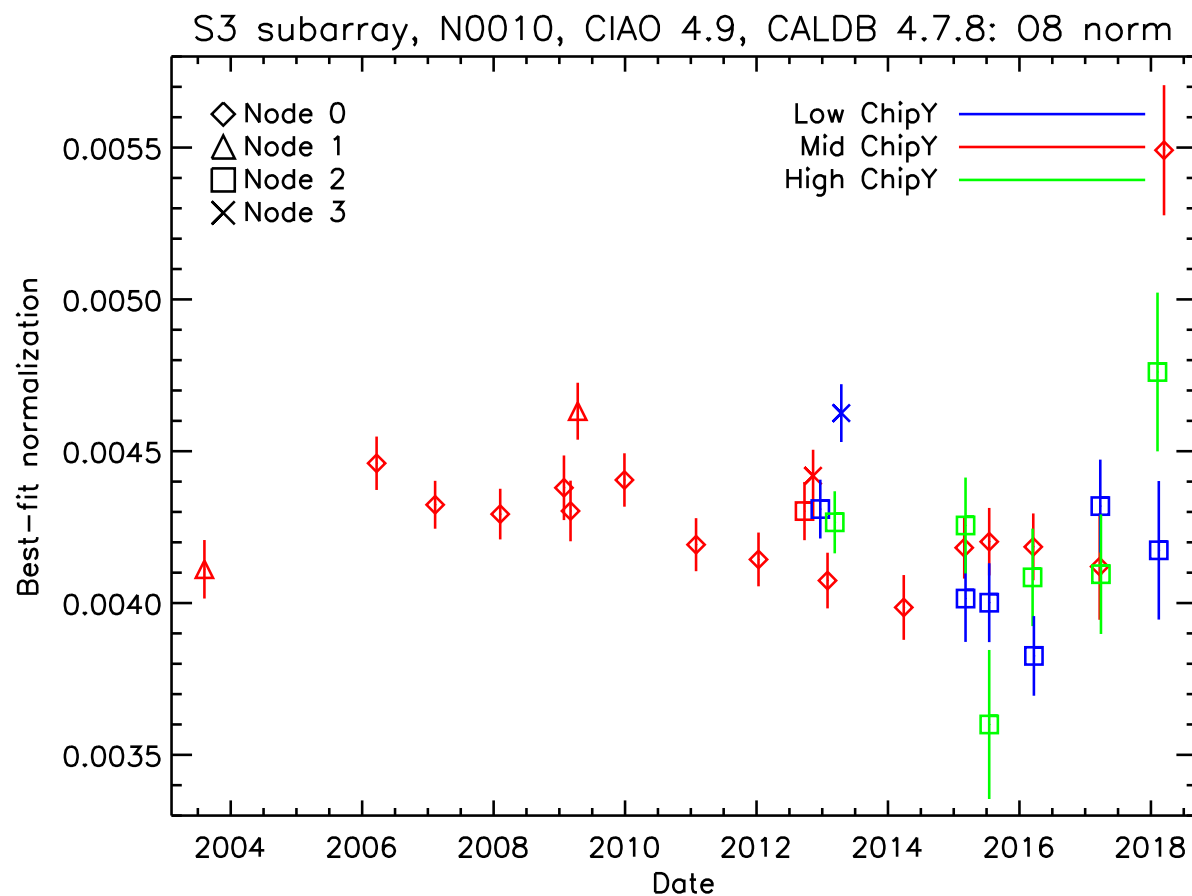
# Chandra/ACIS with E0102 (Paul)

## *E0102 O VIII Line Normalizations*

- **S3** shows an increase in the apparent normalization in 2018, largest effect in the middle of the CCD, bottom of the CCD is consistent with previous measurements
- **I3** shows an increase in the apparent normalization in 2017-2018

Contamination rate is slowing down?

**S3** What will A1795 see? Stayed tuned! **I3**





# Contamination WG Plan (2018)

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