



# How to join the google group email list

1. Email [kkm@caltech.edu](mailto:kkm@caltech.edu) to join - OR
2. Log in to : [groups.google.com](https://groups.google.com)
3. Search for "IACHEC"
4. Hit "apply" or "join"
5. Now you can send
6. To post to this group, send email to [iachec@googlegroups.com](mailto:iachec@googlegroups.com).  
Visit this group at <https://groups.google.com/group/iachec>.



## 14<sup>th</sup> Closing remarks



# I A C H E C

International Astronomical Consortium for High Energy Calibration



# IACHEC

International Astronomical Consortium for High Energy Calibration





# Evolution of Attendance

IACHEC year	Number of participants	Number of talks
2006 (Iceland)	36	26
2007 (California)	35	30
2008 (Germany)	36	26
2009 (Japan)	35	34
2010 (Massachusetts)	45	50
2011 (Italy)	44	38
2012 (California)	40	29
2013 (UK)	36 (+6 seq.ed)	48 (20 plenary)
2014 (Virginia)	51	54 (24 plenary)
2015 (RPC)	57 + 37 students	45 (25 plenary)
<b>2018 (Italy)</b>	<b>52</b>	<b>50 (30 plenary)</b>



# Evolution of Attendance

IACHEC year	Number of participants	Number of talks
2006 (Iceland)	36	26
2007 (California)	35	30
2008 (Germany)	36	26
2019 (Japan)	65	70! (36 plenary)
2011 (Italy)	44	38
2012 (California)	40	29
2013 (UK)	36 (+6 seq.ed)	48 (20 plenary)
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## New participants



# IACHEC

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I'M NOT  
GETTING  
OLD



I'M  
GETTING  
BETTER





Thermal aging...



"Listen Buddy! After the hot flushes I've been having this is like a resort!"



Thermal aging...



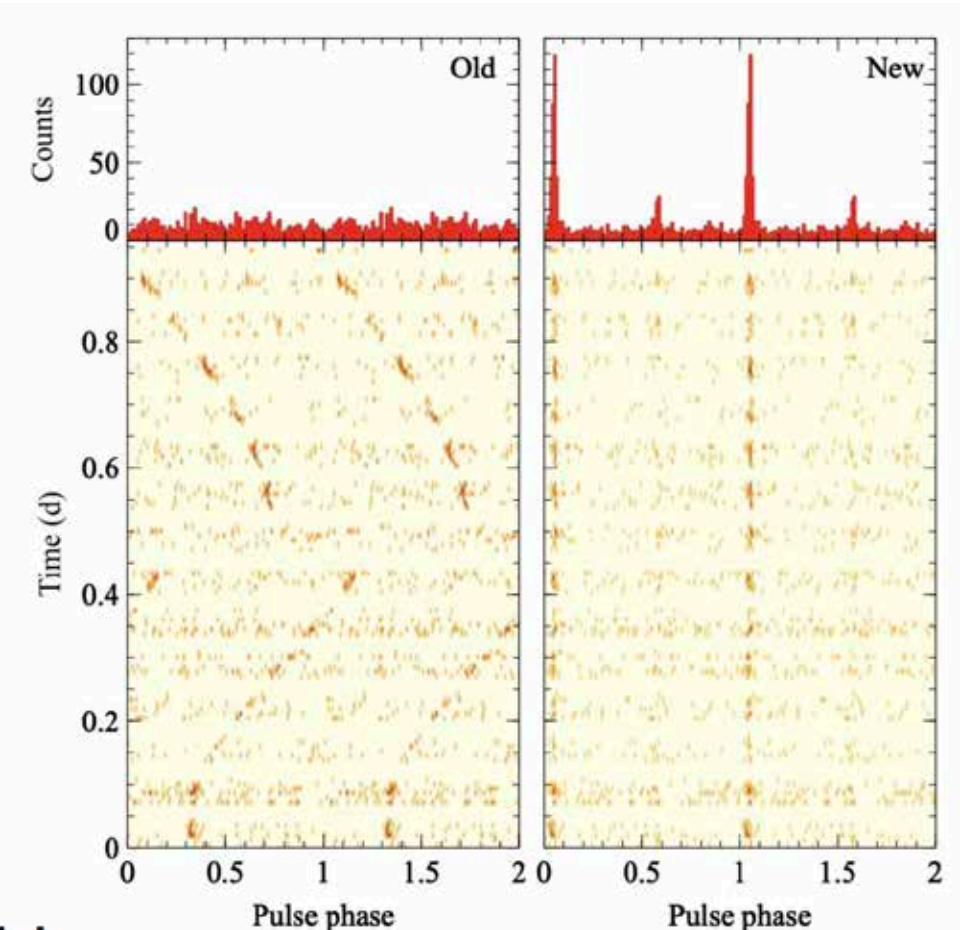
"Listen Buddy! After the hot flushes I've been having this is like a resort!"

Contamination ...





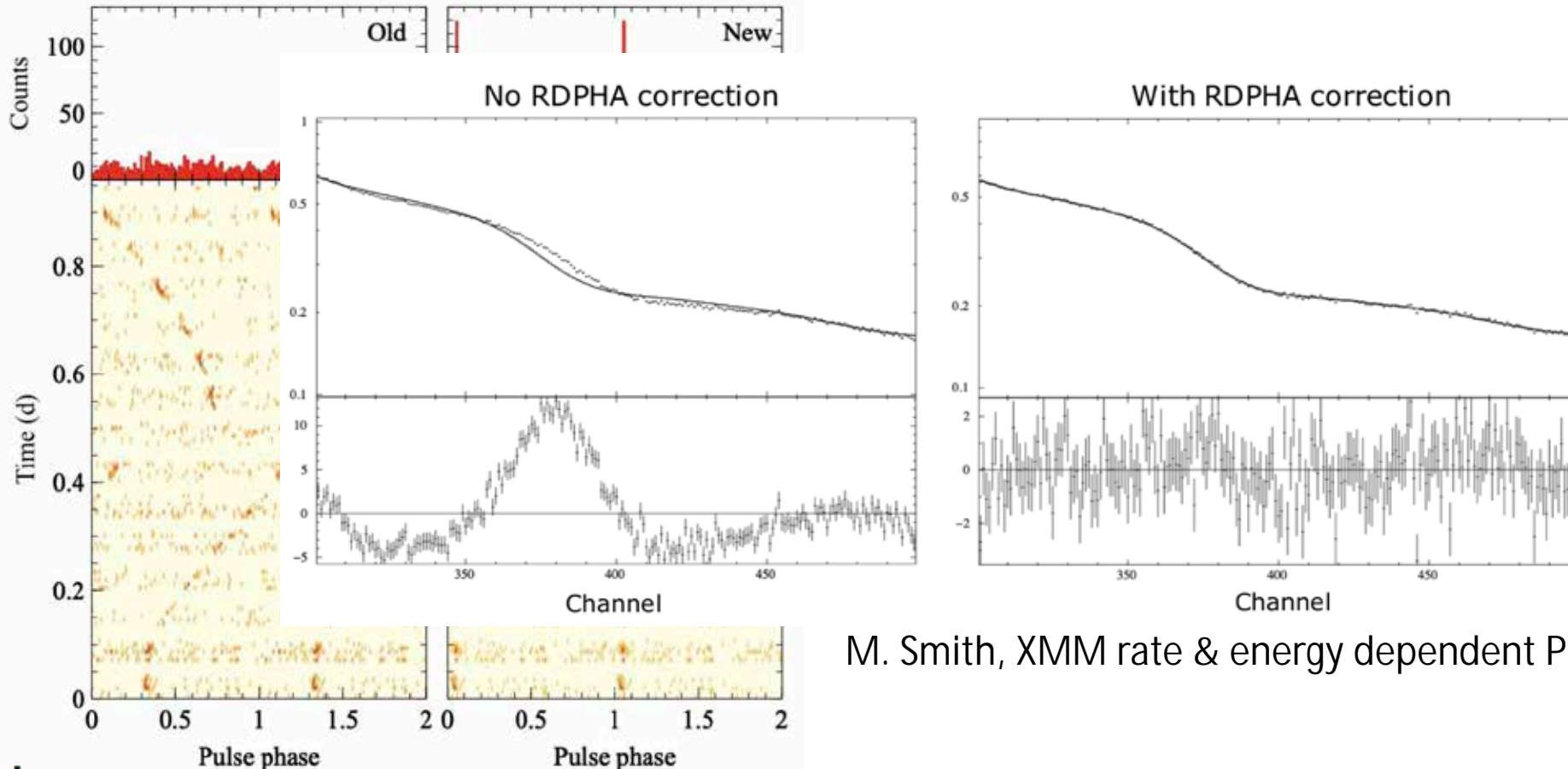
# Understanding has improved



M. Bachetti, NuSTAR timing



## Understanding has improved

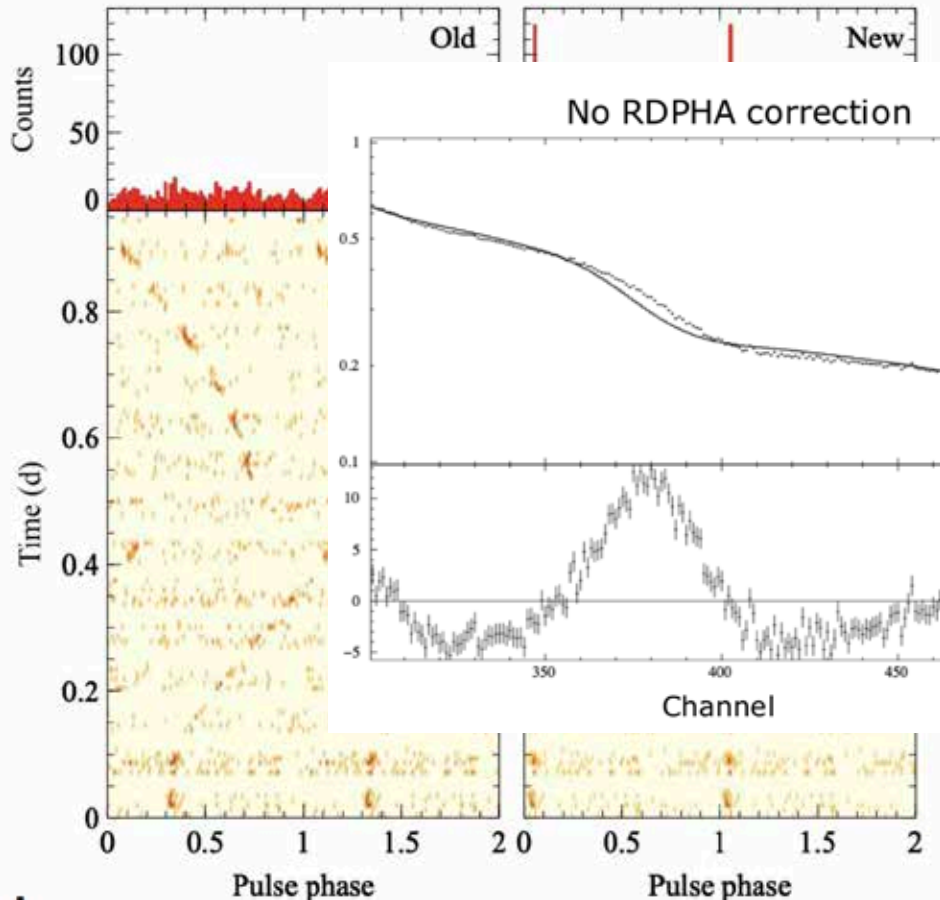


M. Smith, XMM rate & energy dependent PHA correction

M. Bachetti, NuSTAR timing

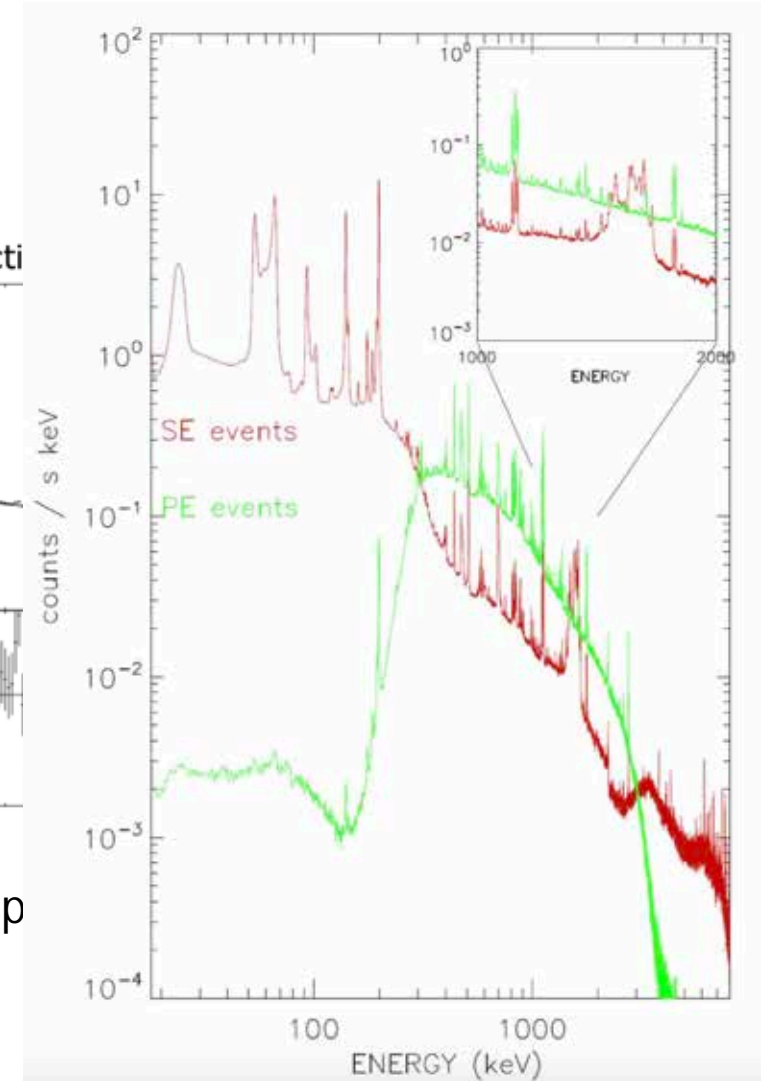


## Understanding has improved



M. Smith, XMM rate & energy dep

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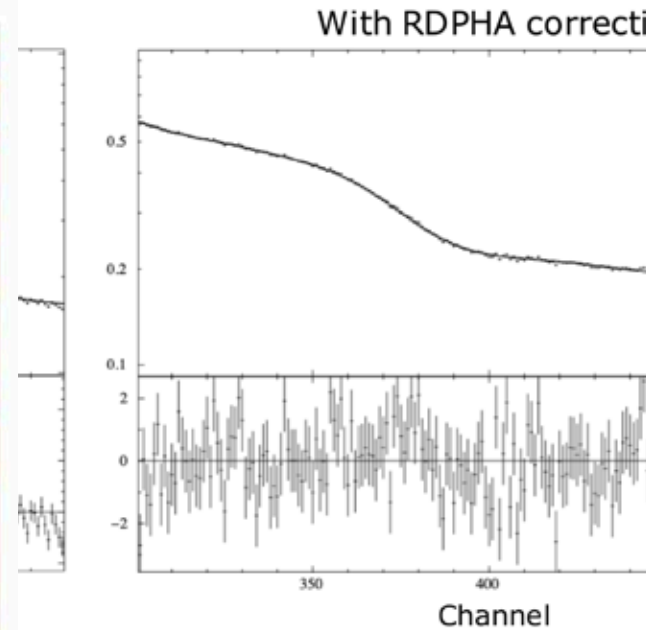
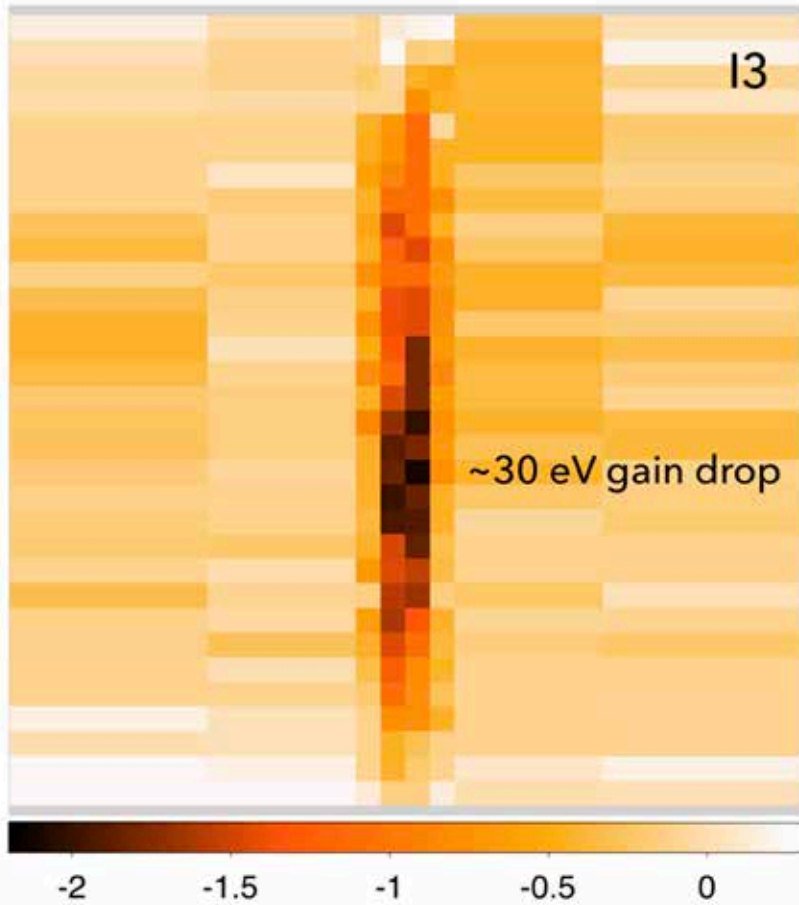
J. Roques, Integral/SPI event selection



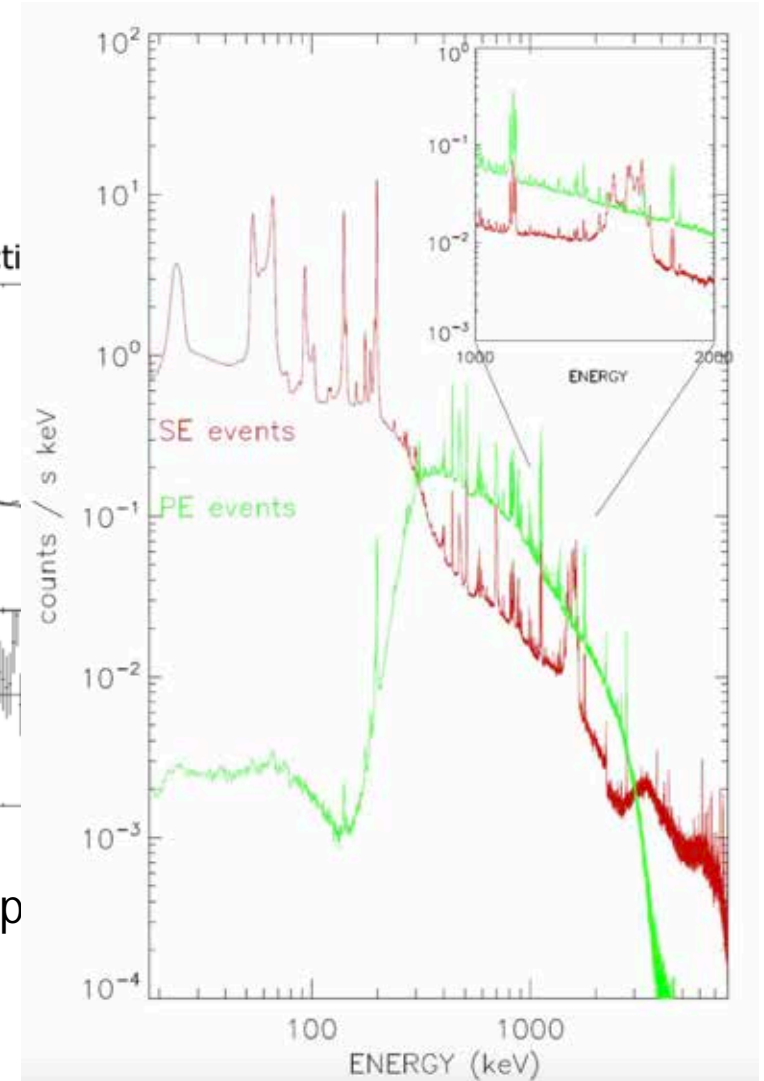
## Understanding has improved

### MID-CHIP GAIN DROOP FIX (T. GAETZ)

Al K



I. Smith, XMM rate & energy dep

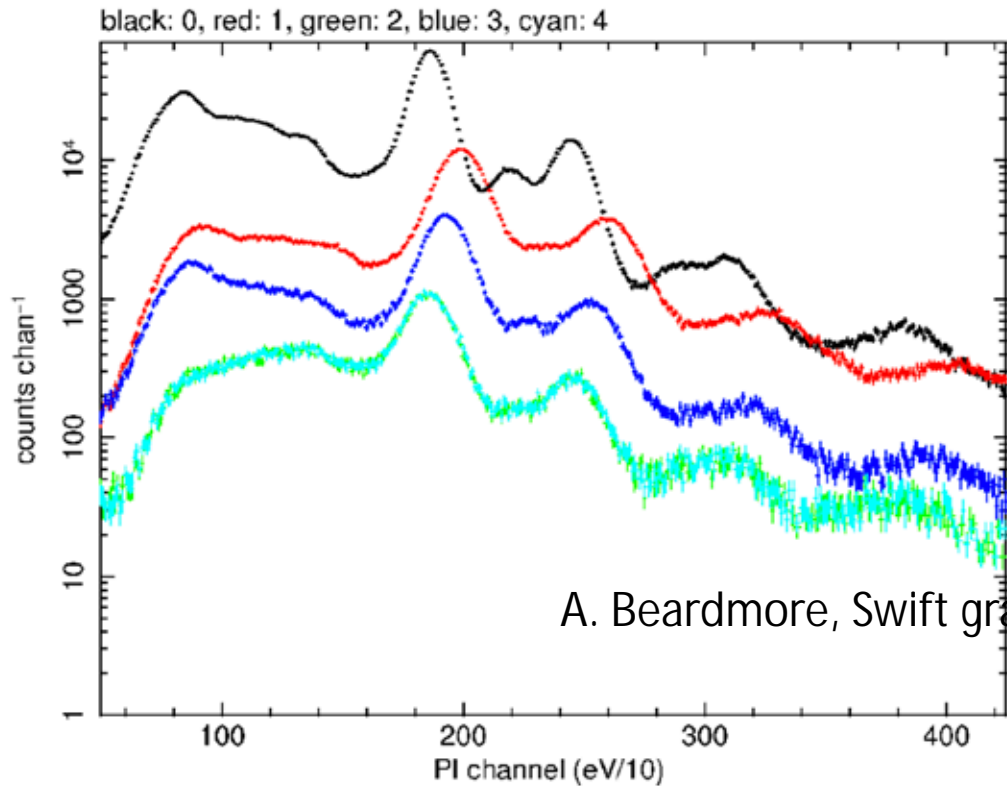


J. Roques, Integral/SPI event selection



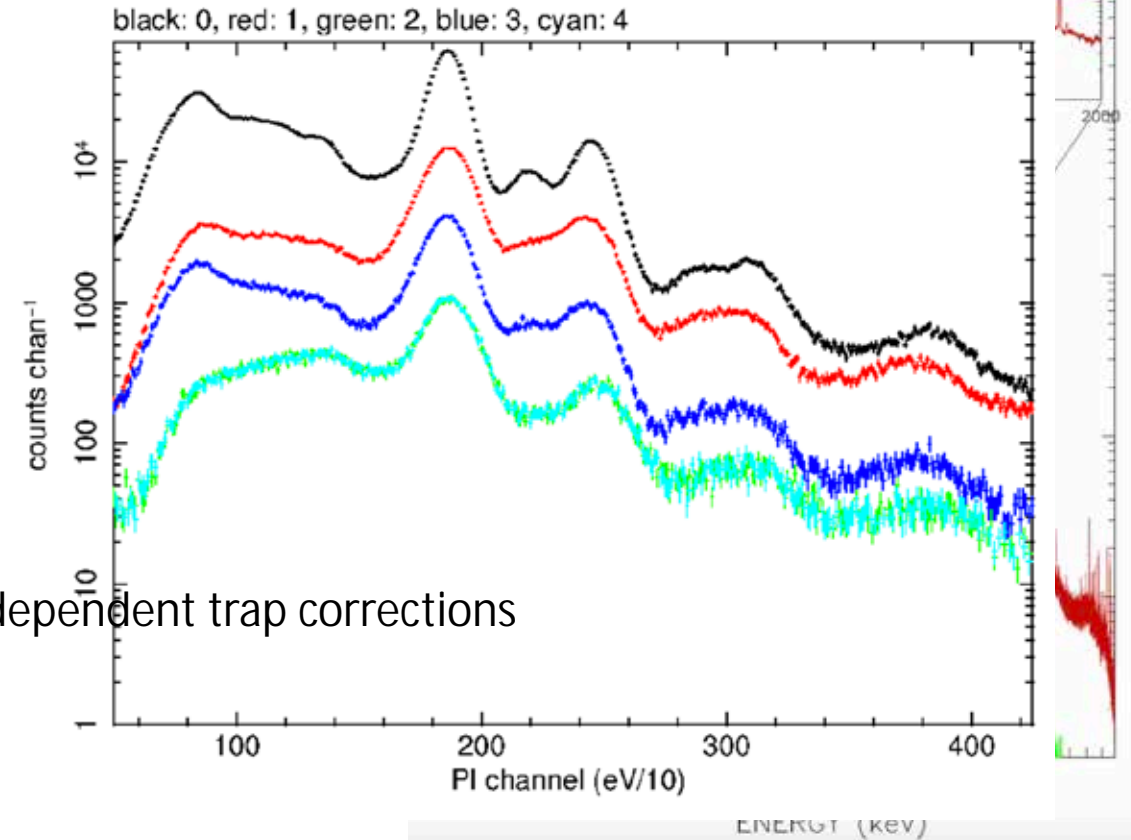
## Understanding has improved!

**MID-** ● Same trap offsets all grades



A. Beardmore, Swift grade dependent trap corrections

● Grade dependent trap offsets

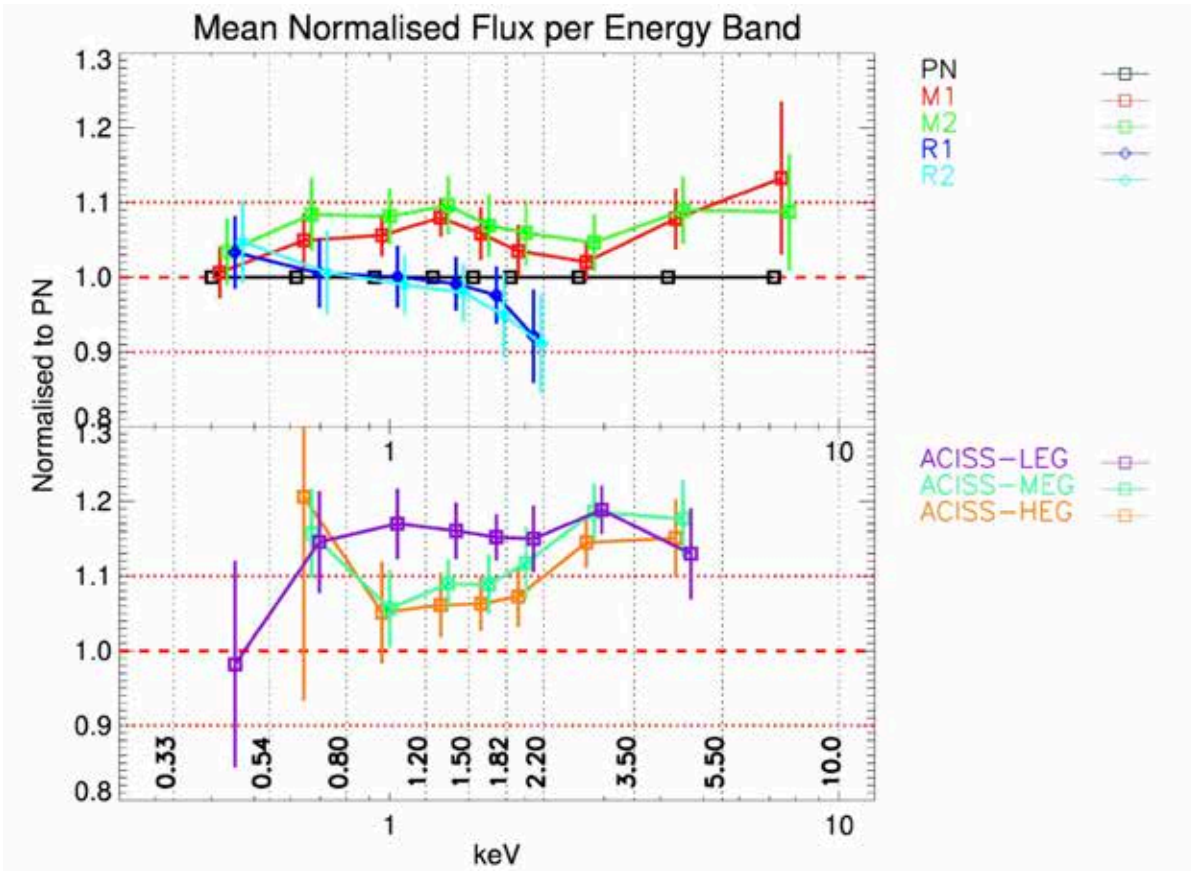


J. Roques, Integral/SPI event selection

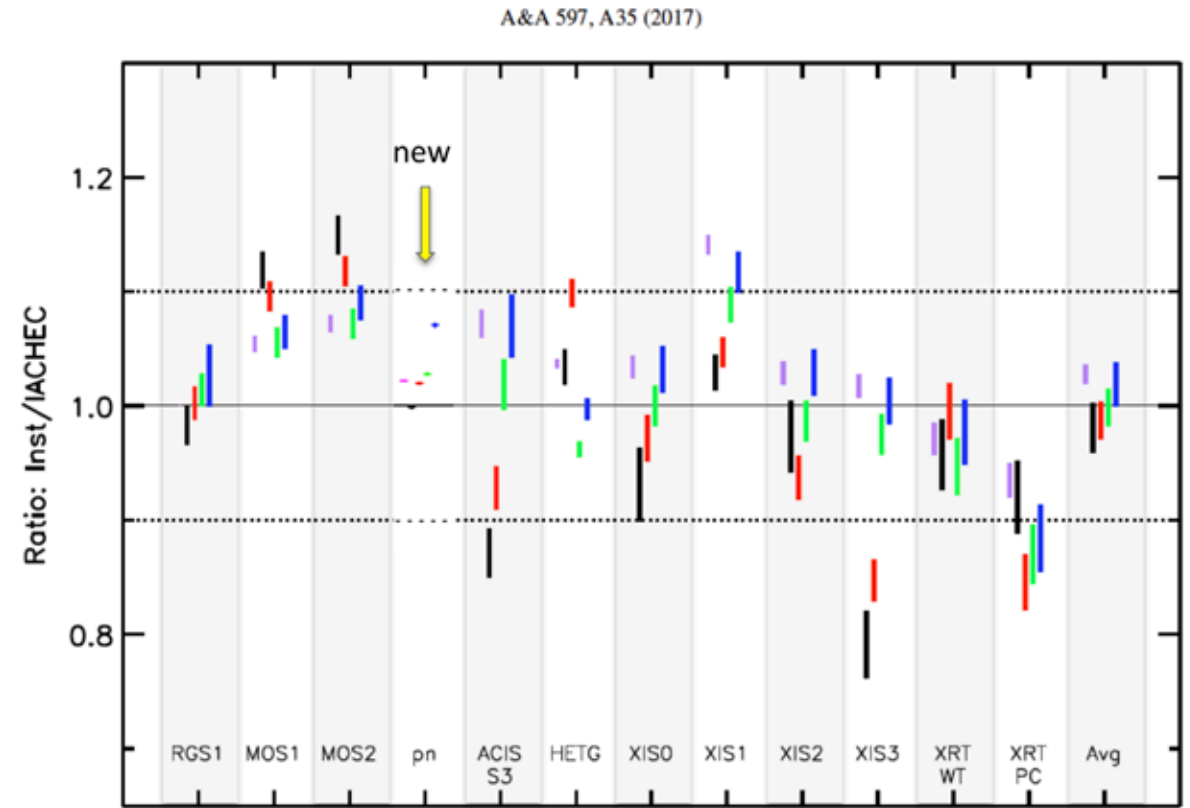




## Cross calibration has improved too!



M. Smith, Blazar study



K Dennerl, Empirical XMM RMF method





## Paper status

Paper	Status last year	Status this year
C/X blazar sample	wrapping up	wrapping up
Crab	advanced draft	in preparation
3C273 (INTEGRAL)	-	to be started
3C273 (NICER)	-	to be started
3C273 (NuSTAR)	-	to be started
G21.5-0.9	-	to be started
N132D	not discussed	in preparation
Concordance Project	-	submitted/in preparation
MMS (galaxy clusters)	to be started	in preparation
RXJ1856-3754	-	under consideration
Timing (Crab)	-	under consideration
Crab phase-resolved	-	under consideration

Astro-oriented

Contamination (Miller)	To be started	Draft
Background	To be started	TBC

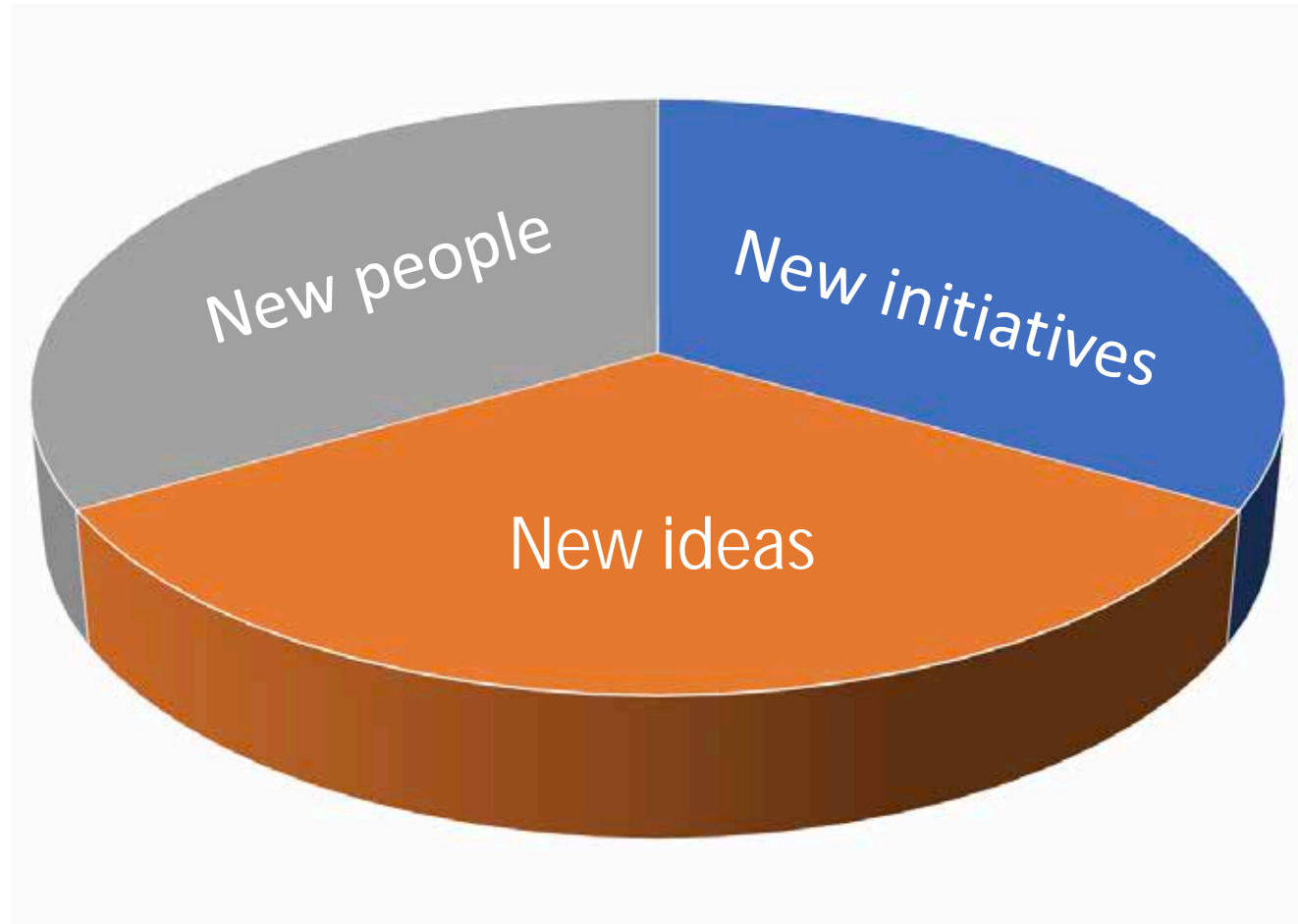


But... rejuvenation is necessary





## How to ensure progress and rejuvenation





# New Initiatives

- Communications group (started 2018)
  - Increase exposure to the science community
  - Increase feed back from the science community
- Optics calibration special session in 15<sup>th</sup> meeting – to become a WG?
- Spread the cross-calibration vision through ASTRO2020 decadal WP
- Apply for ADAP and APRA funding for specific cross-calibration tasks
- Pursue HEASARC involvement
- Reusable calibration workflows
- Restructure the IACHEC webpage (please send suggestions to me directly: [kkm@caltech.edu](mailto:kkm@caltech.edu))
- Growing workshop attendance -> restructure workshop meeting
  - Increase working group time
  - Introduce poster options
  - Optionally tag on an additional day just for “work”



# Revisit IACHEC procedures

- Setting yearly goals
  - Starts here and now
- Pursue the yearly goals in a timely fashion
  - WG management
- Write IACHEC report early!
- Inform community of progress
- Feedback from community
  - Involve members



# Revisit IACHEC procedures

- Setting yearly goals
  - Starts here and now
- Pursue the yearly goals in timely fashion
  - WG management
  - Deputy chairs?
- Write IACHEC report early!
- Inform community of progress
- Feedback from community
  - Involve members

## HERDING CATS:

“A futile attempt to control that which is inherently uncontrollable.”



# IACHEC

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# Special Thanks to



## LOC members

Yukikatsu Terada (Saitama U),  
Masahiro Tsujimoto (ISAS/JAXA),  
Koji Mori (Miyazaki U),  
Hiroshi Nakajima (Kanto Gakuin U)  
Tatehiro Mihara (RIKEN),  
Mutsumi Sugisaki (TITECH)