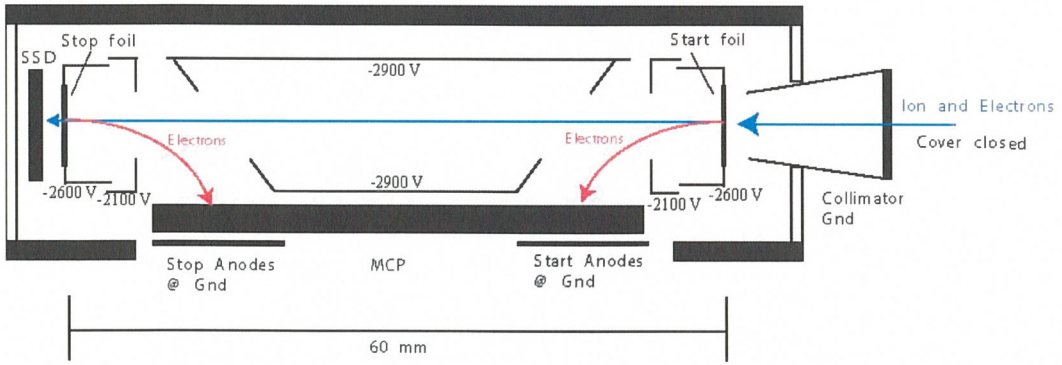
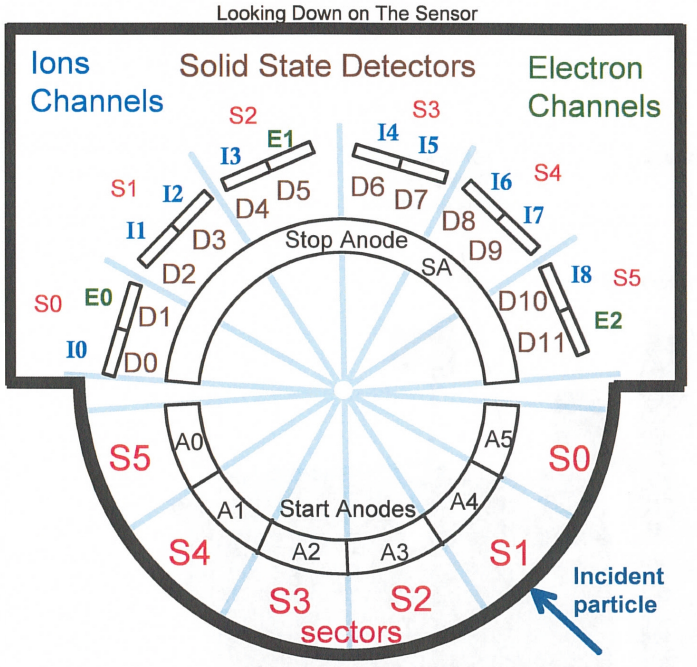
New Horizons
Pluto Energetic Particle Spectrometer Science Investigation (PEPSSI)

PRINCIPAL INVESTIGATOR: Ralph McNutt, APL
DESCRIPTION: Medium Energy Particle Spectrometer
ENERGY RANGE: 25-1000 keV (protons)
60-1000 keV (atomic ions)
25-500 keV (electrons)

FIELD OF VIEW: 160 deg x 12 deg
ANGULAR RESOLUTION: 25 deg x 12 deg
ENERGY RESOLUTION: 0.25 keV
SENSOR SIZE: 7.6 cm dia. x 2.5 cm thick
POWER: 1.4 watt
MASS: 1.5 kg





New Horizons PEPSSI Data Sets

RAW Data Sets:
nh-p-pepssi-2-pluto-v3.0

CALIBRATED Data Sets:
nh-p-pepssi-3-pluto-v3.0

New Horizons PEPSSI Data Set Evaluation Tools

Staging and Evaluation -

Machine: Dell Precision T3400

Operating System: Fedora 18 linux

Data Processing -

Machine: Sun Ultra-350

Operating System: Sun Solaris OS 5.9

Staging and Minor Diagnostics -

Machine: IBM lenovo T60p ThinkPad

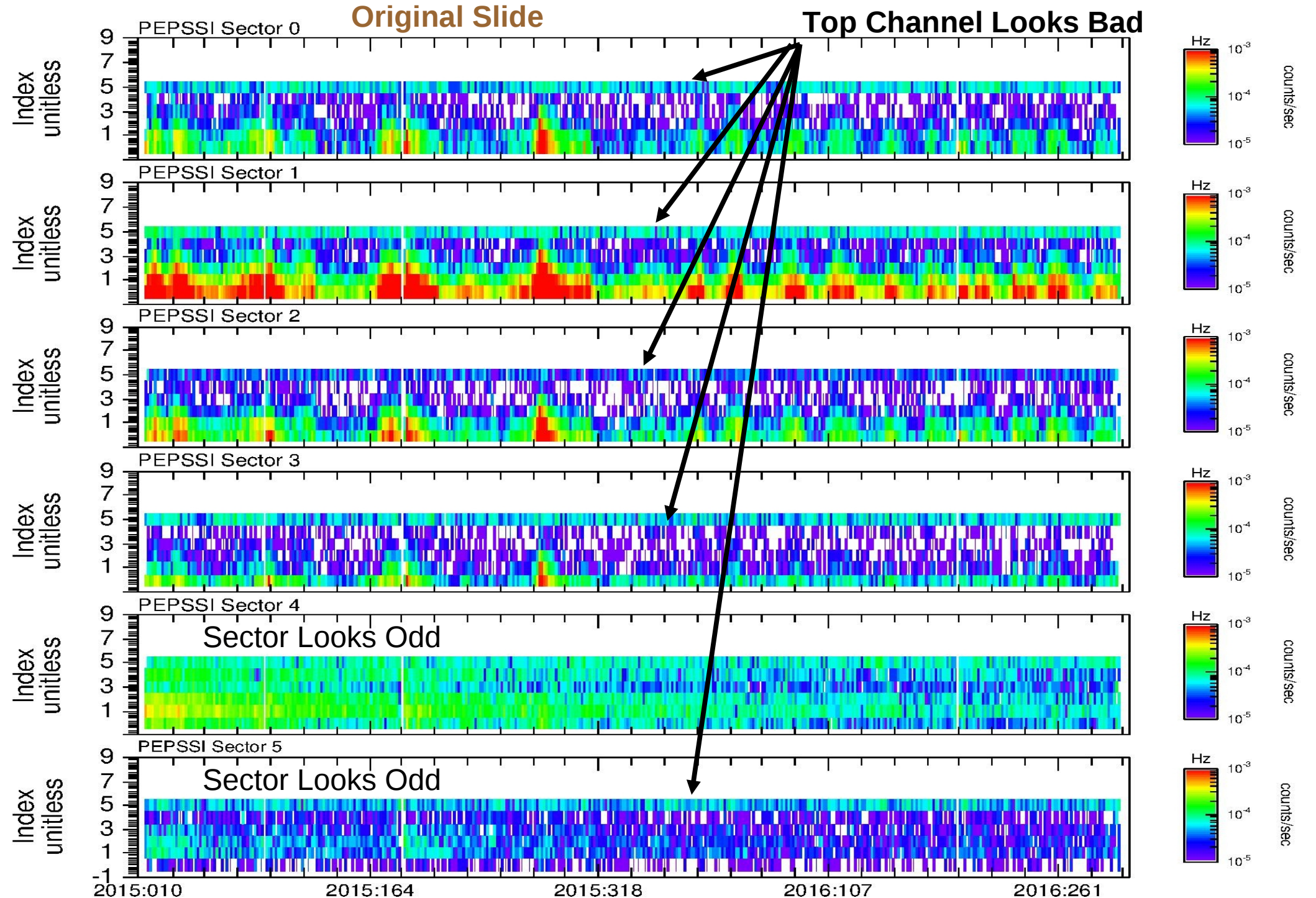
Operating System: Fedora 25 linux

Data Evaluation Supplement

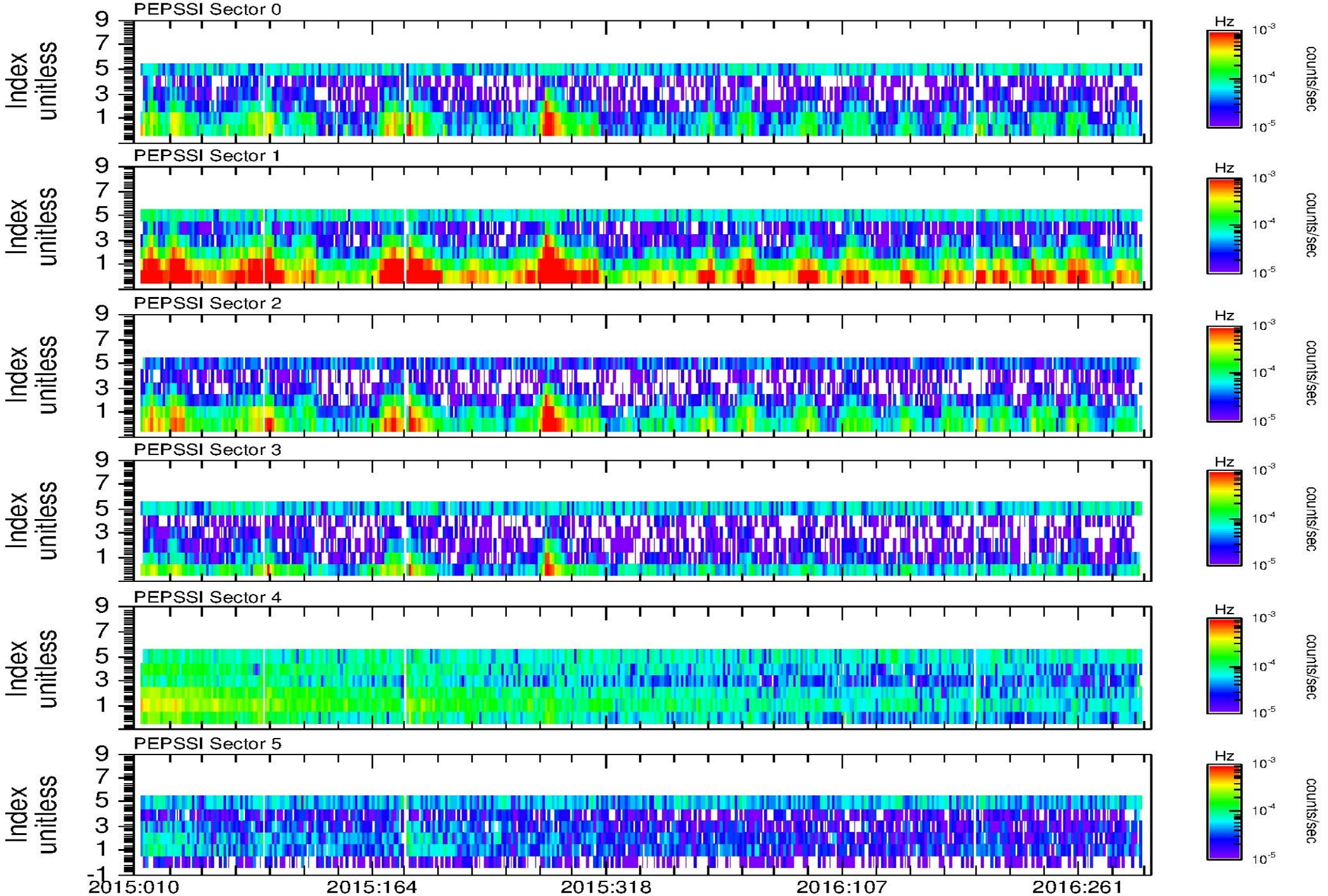
Reason for this Supplement

In the code which processes the FLUX HDU, a memory overwrite was discovered which scrambled some of the data. This was caused by a transposition of matrix indicies in an unrealesed portion of the code. This transposition created an overwrite effect in the PEPSSI data plots for the review. Included here are the original and updated plots.

nh-p-pepssi-3-pluto-v3.0/data FLUX HDU B Rate Boxes – Proton CPS

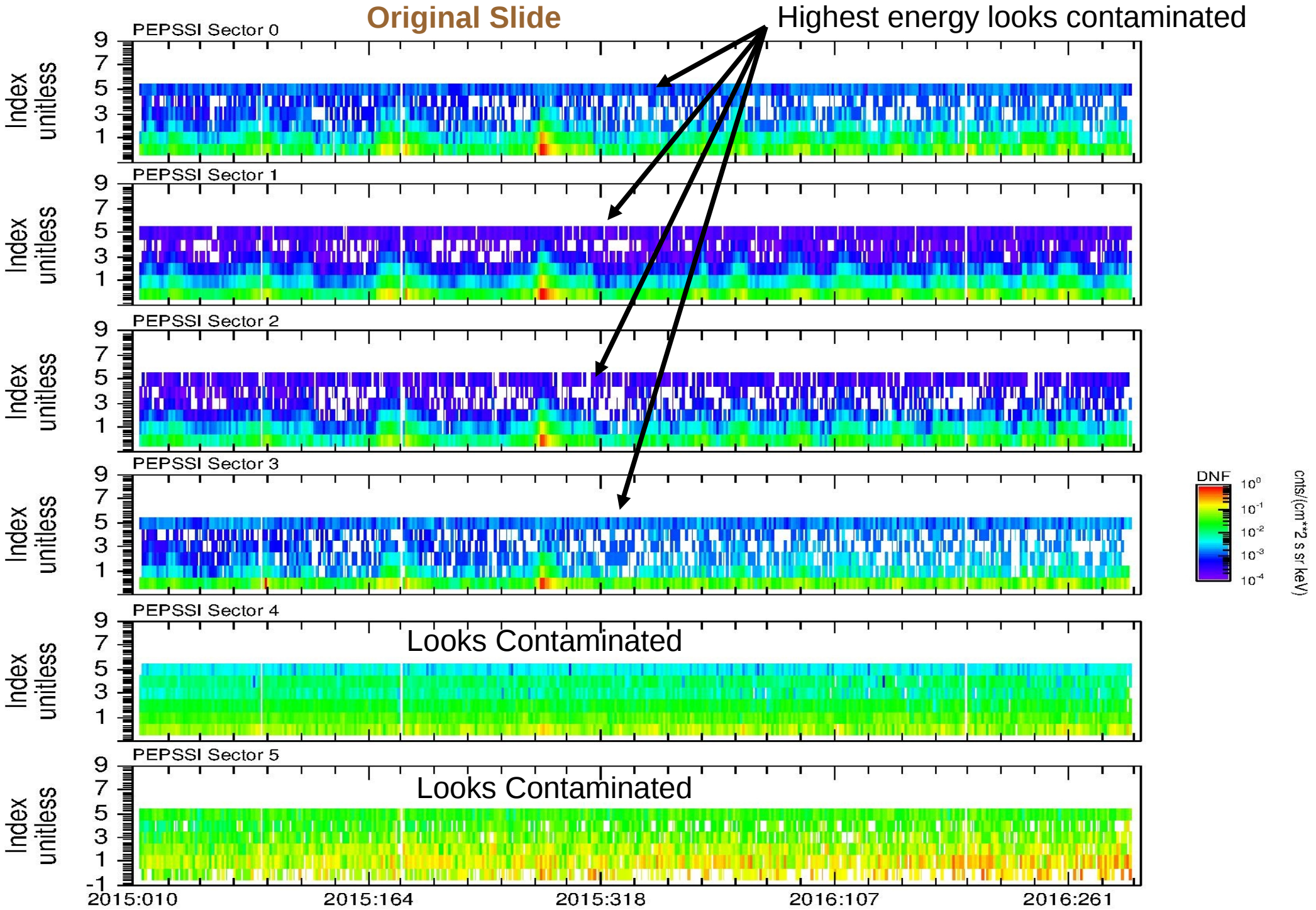


Updated Version – No Difference



nh-p-pepssi-3-pluto-v3.0/data FLUX HDU B Rate Boxes – Proton DNF

Original Slide



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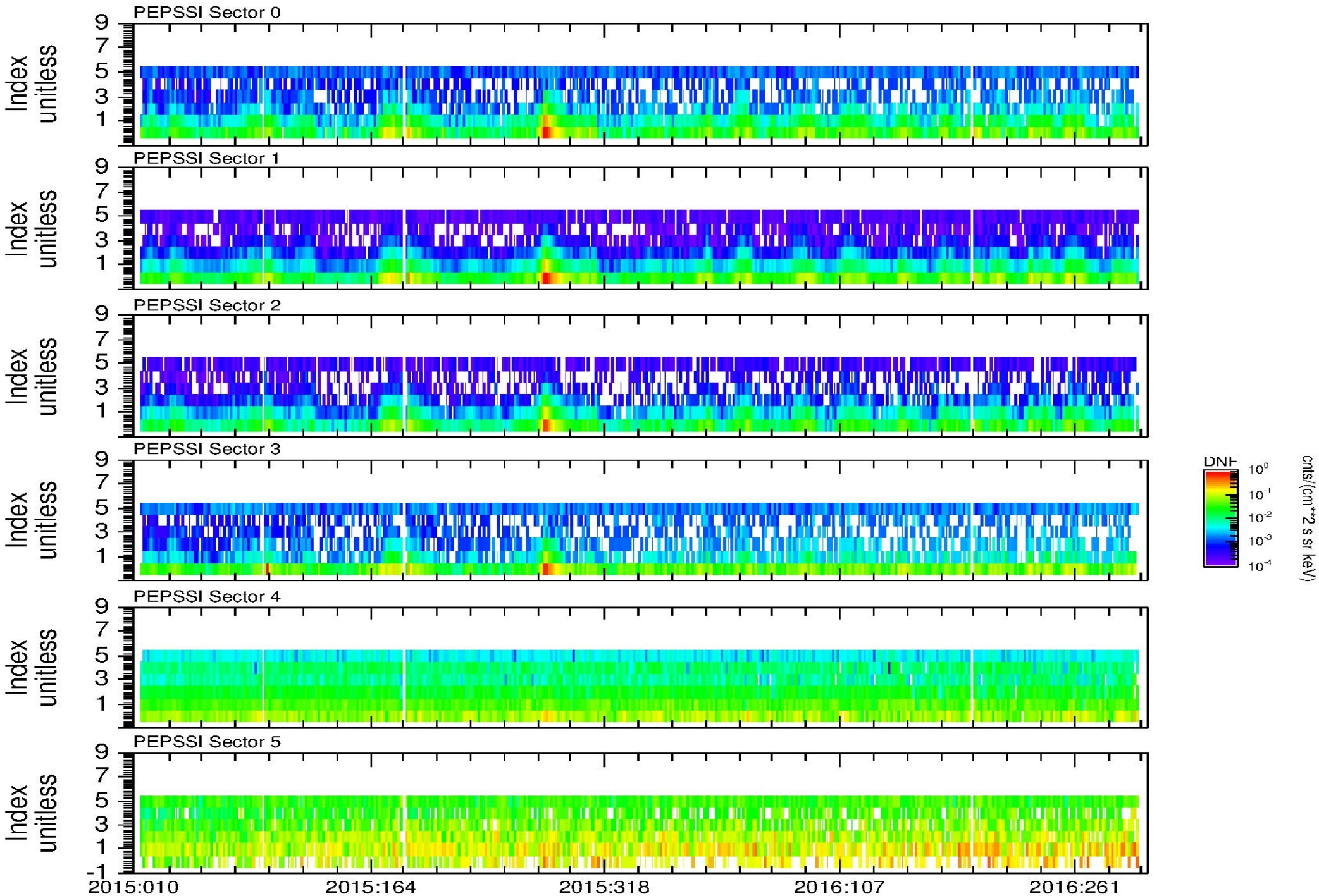
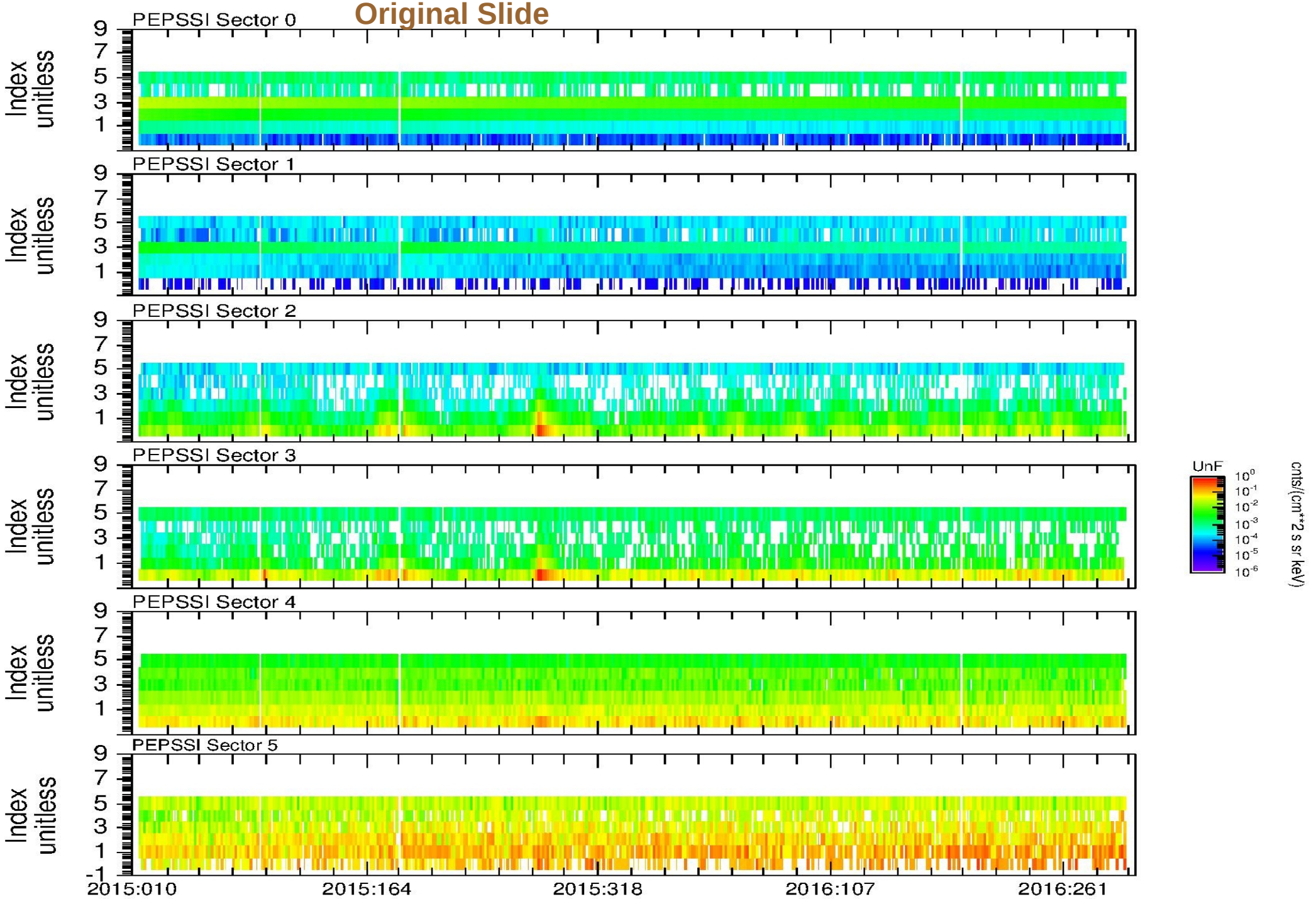
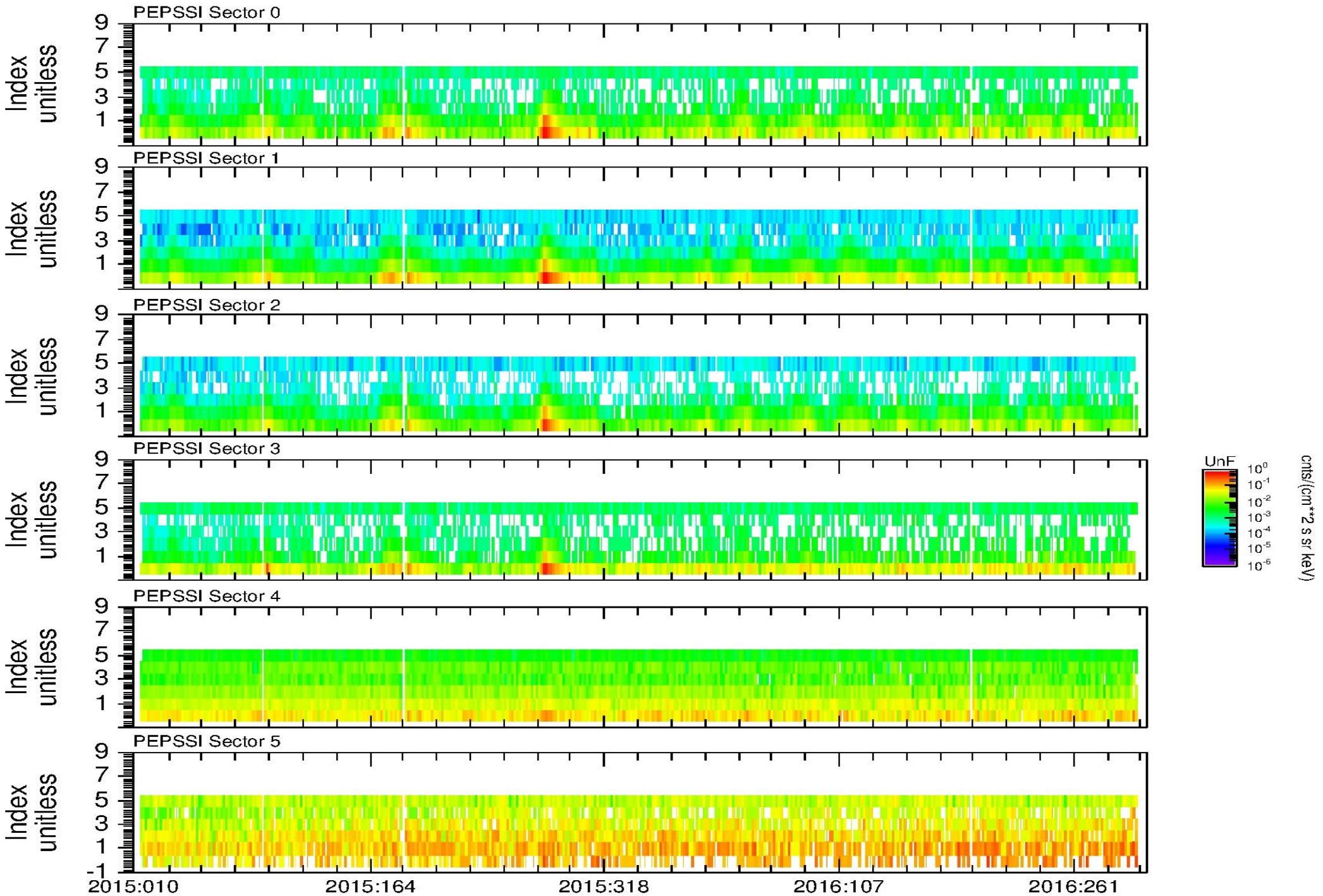


nh-p-pepssi-3-pluto-v3.0/data FLUX HDU B Rate Boxes – Proton UNC

Original Slide

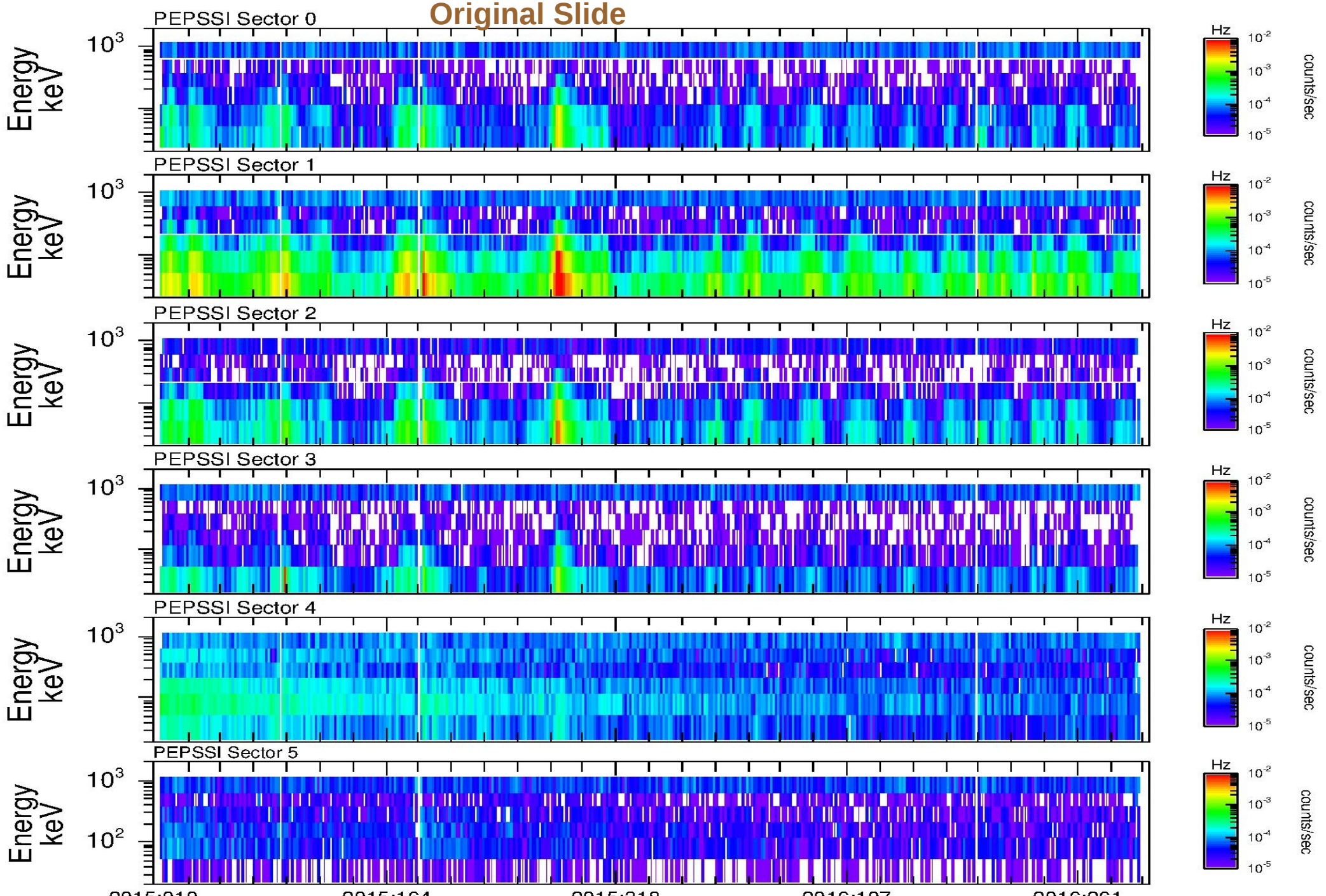


Updated Version – Differences in the Top two panels This is Good!!

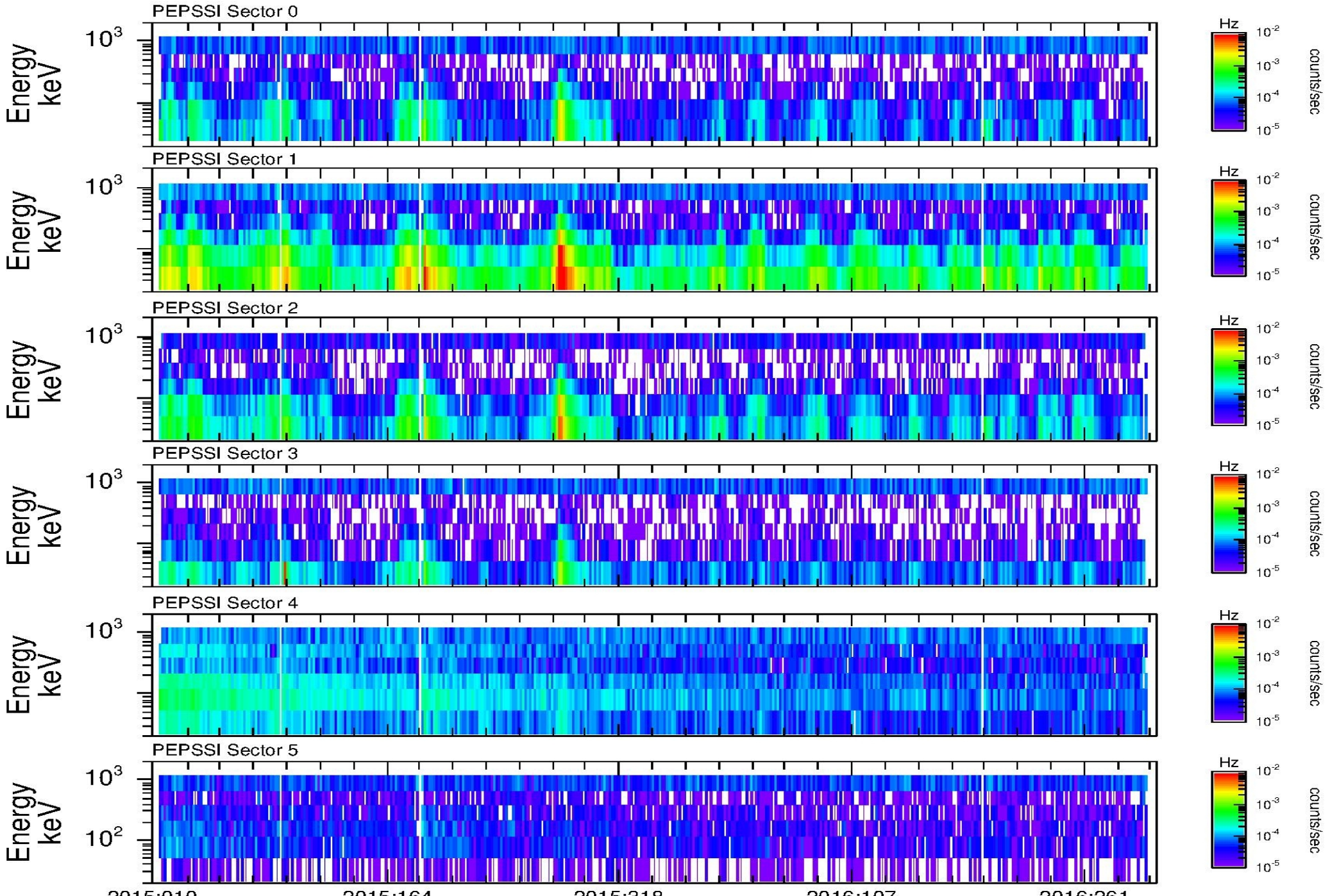


nh-p-pepssi-3-pluto-v3.0/data FLUX HDU B Rate Boxes – Proton CPS

Original Slide

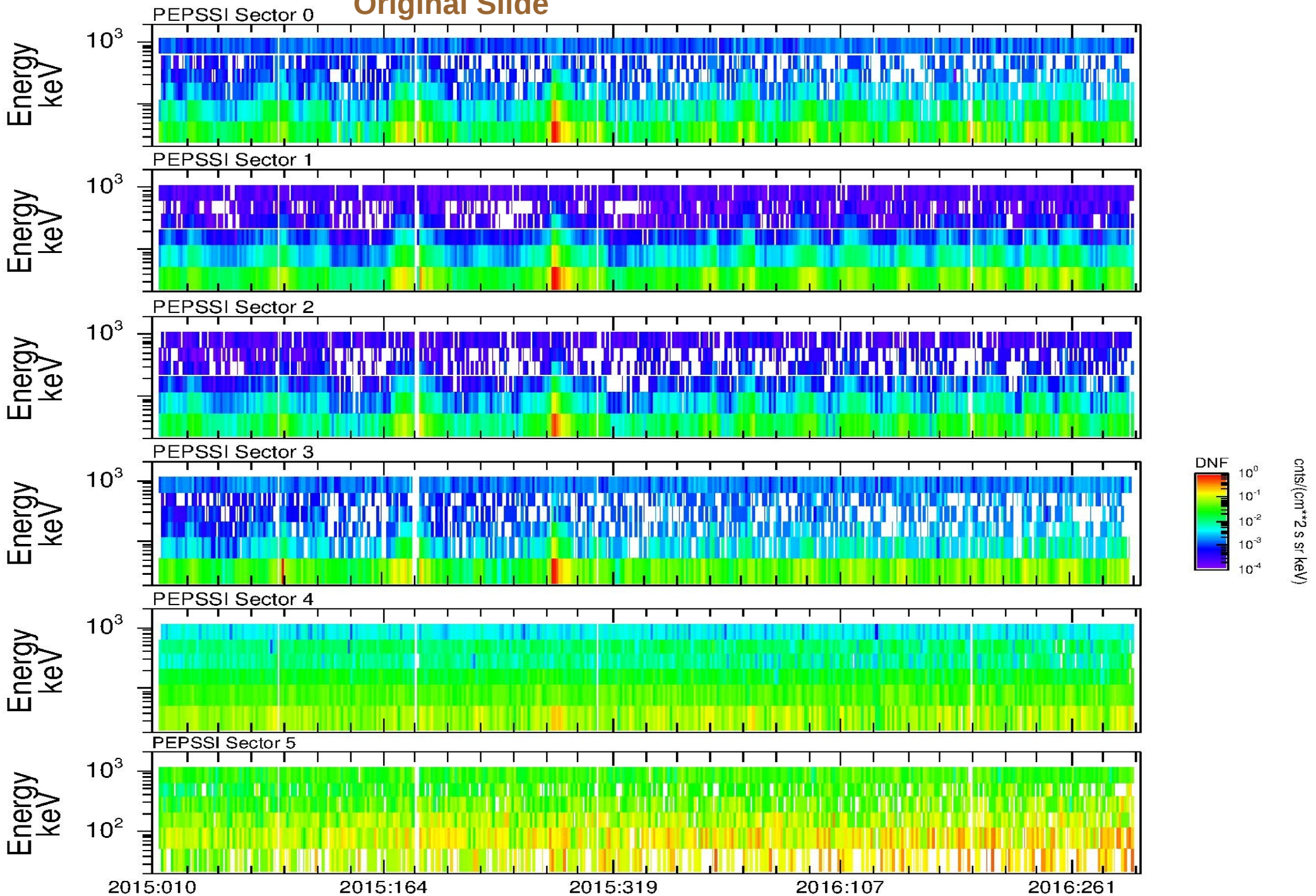


Updated Version – No Difference



nh-p-pepssi-3-pluto-v3.0/data FLUX HDU B Rate Boxes – Proton DNF

Original Slide



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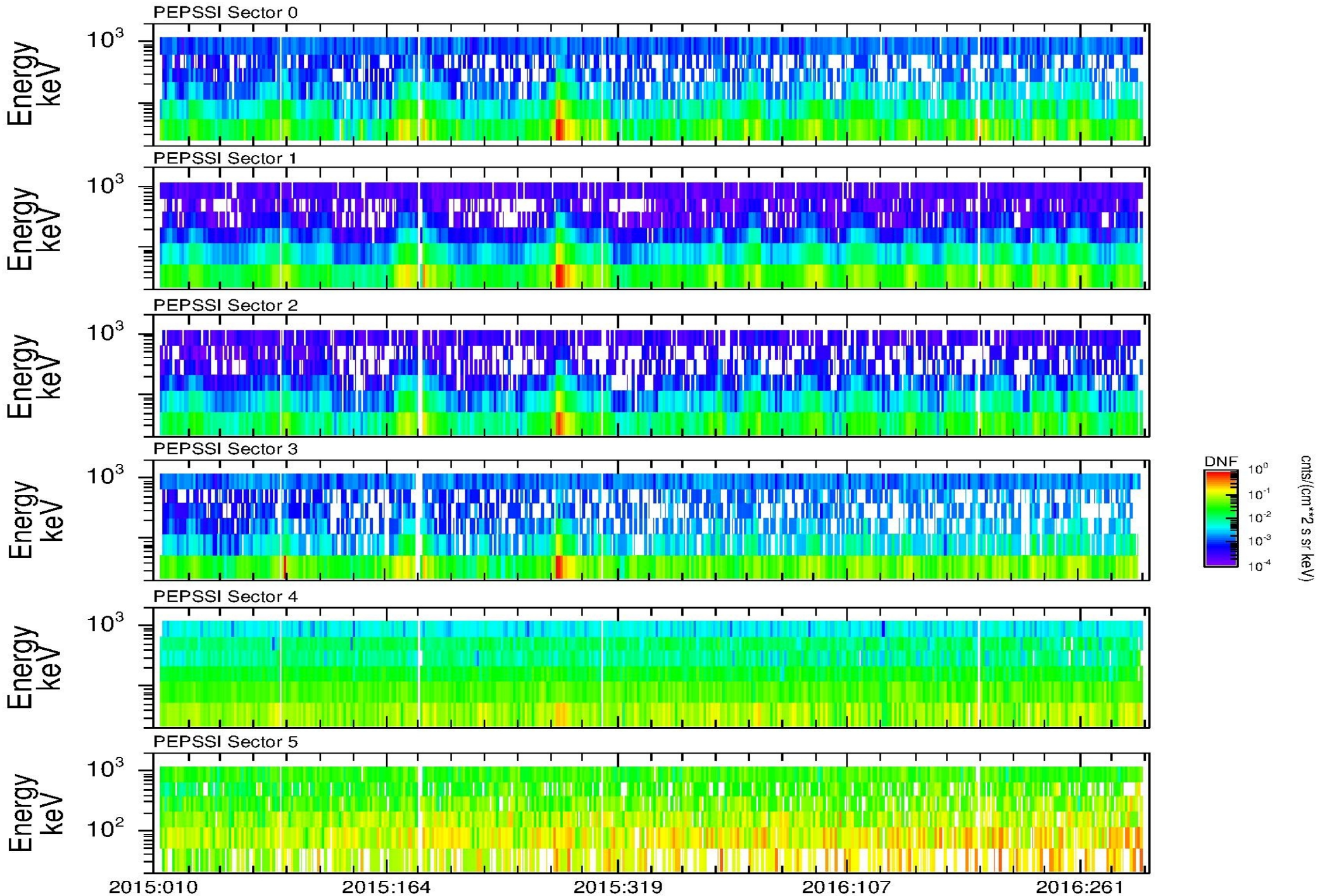
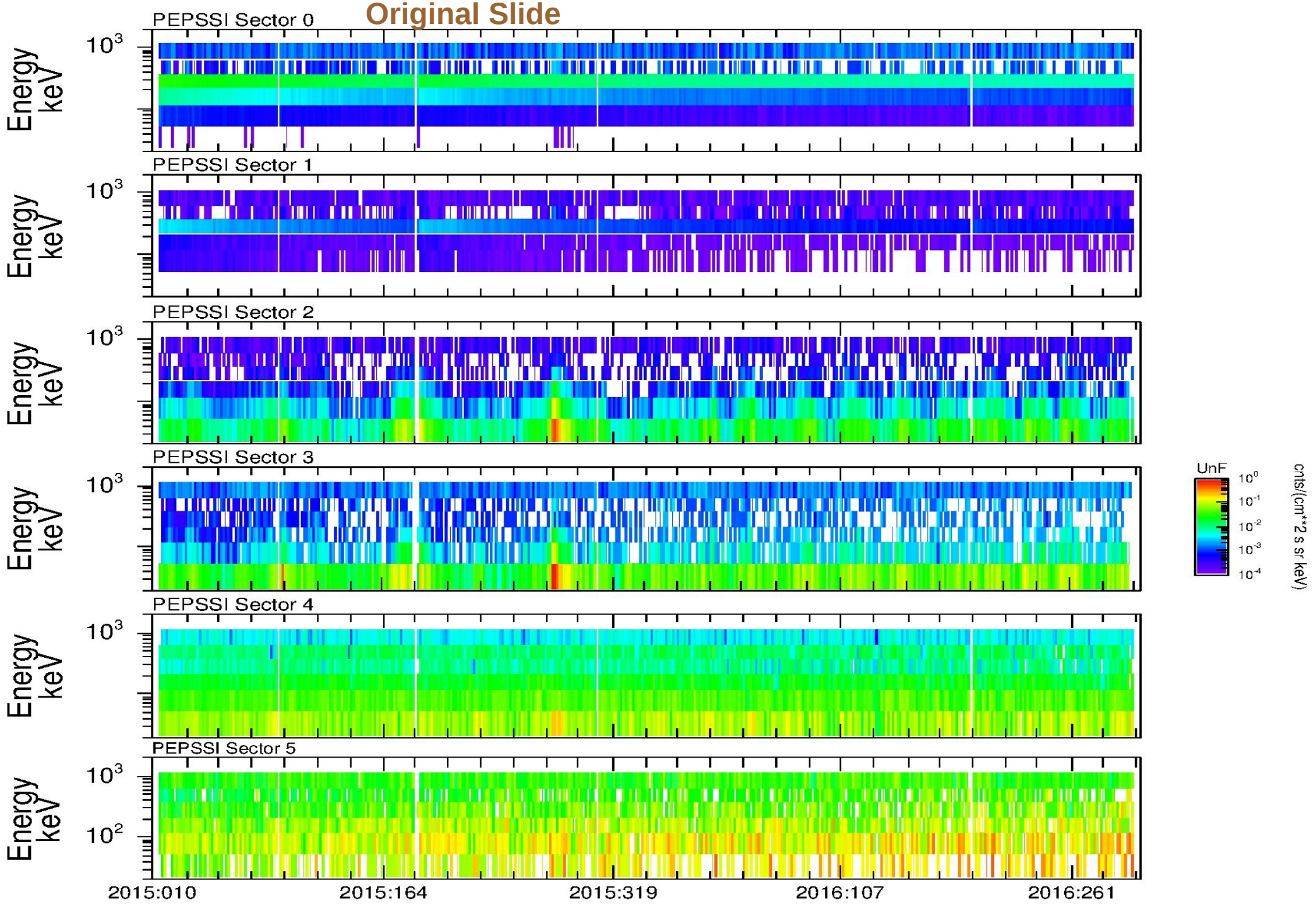


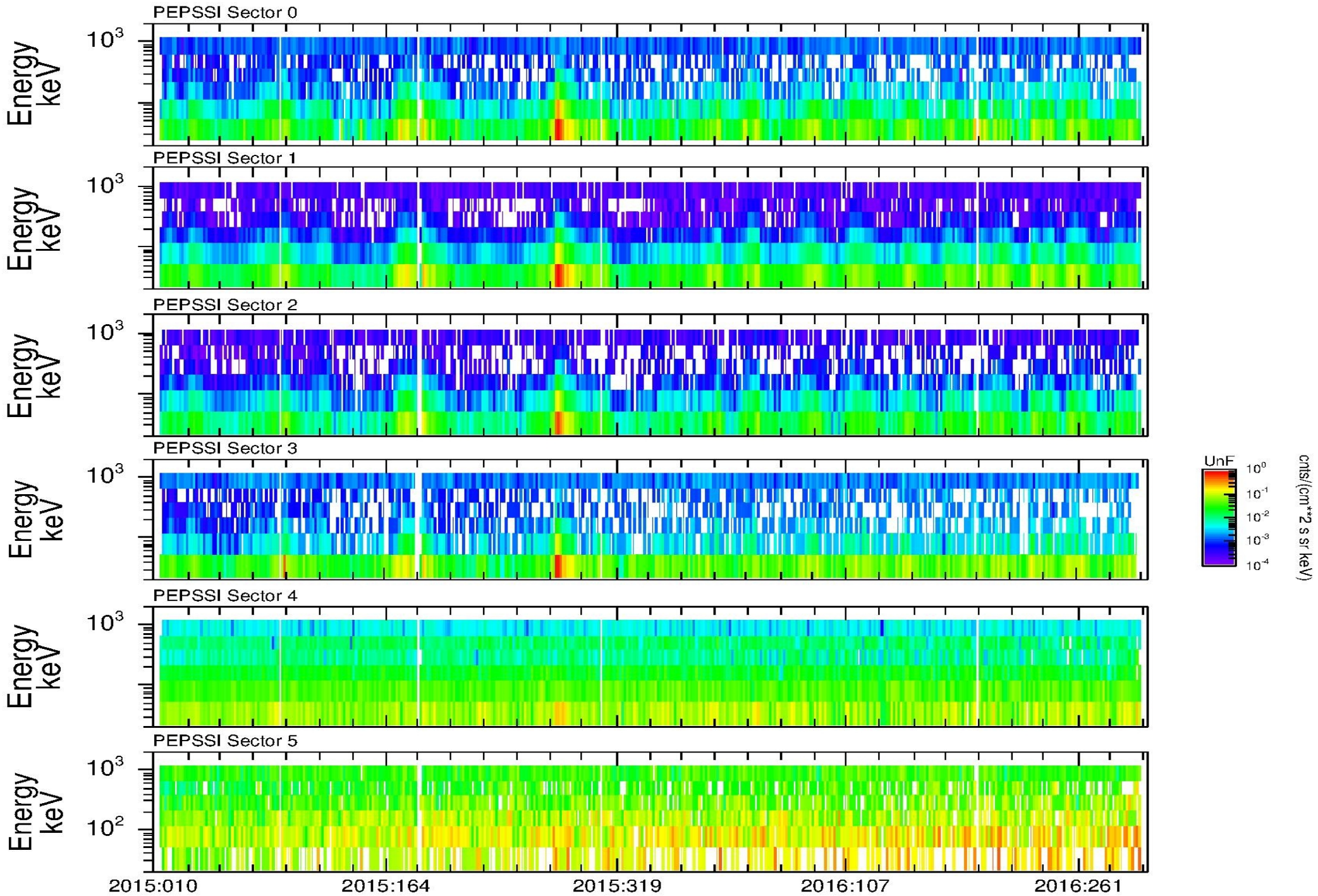
nh-p-pepssi-3-pluto-v3.0/data FLUX HDU B Rate Boxes – Proton UNC

Original Slide



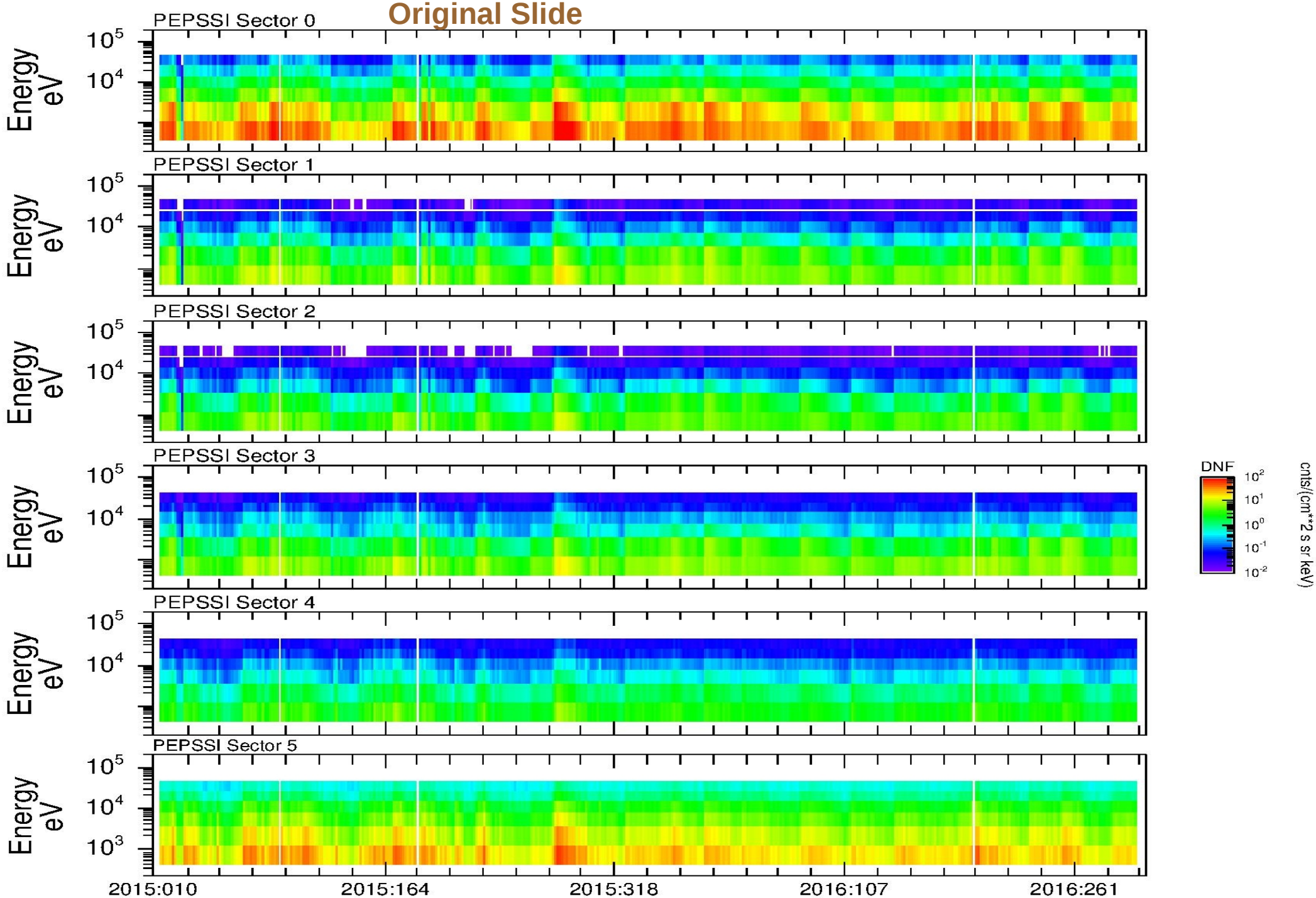
Updated Version – Differences in the Top two panels

This looks Good!!



nh-p-pepssi-3-pluto-v3.0/data FLUX HDU L Rate Boxes – Proton DNF

Original Slide



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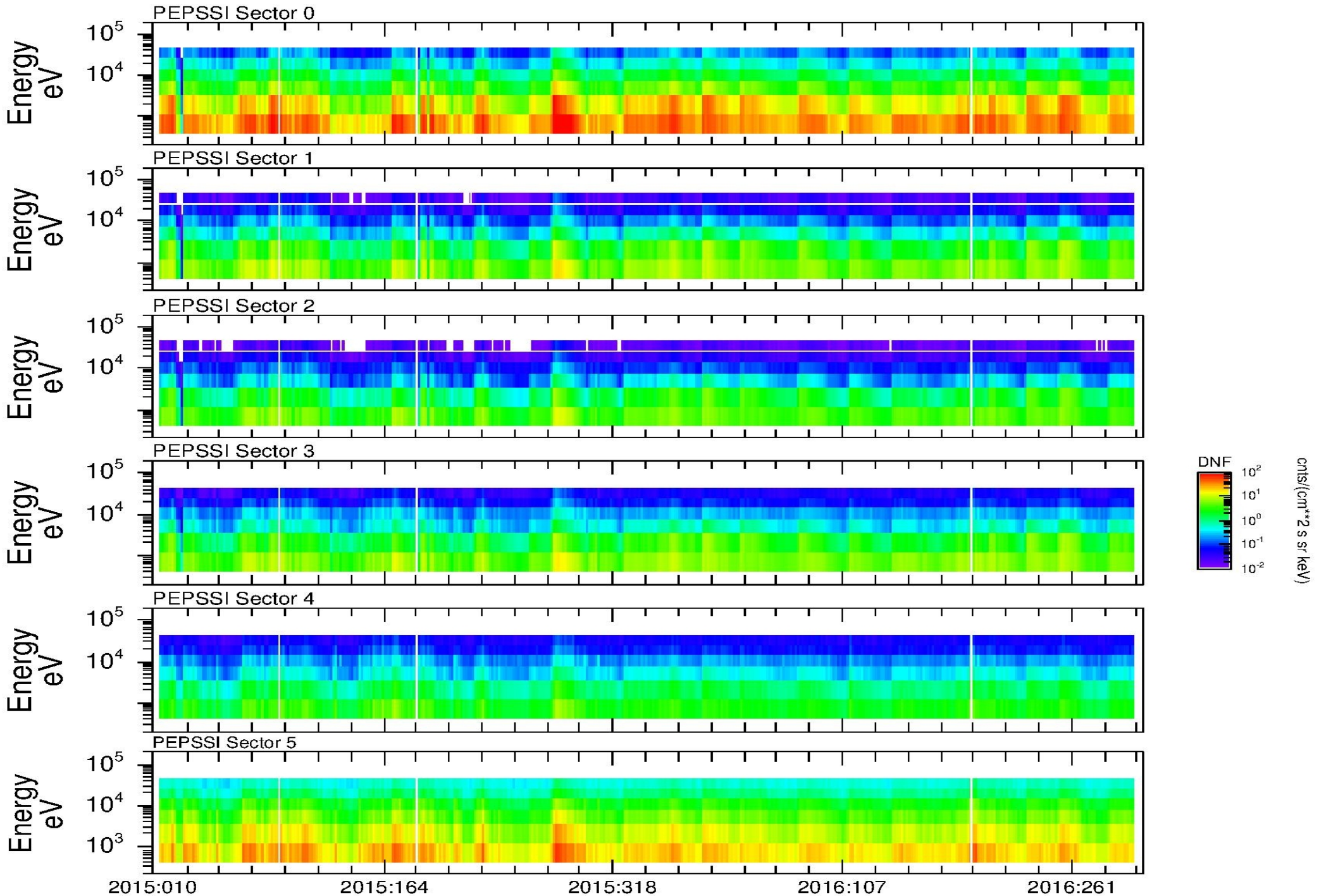
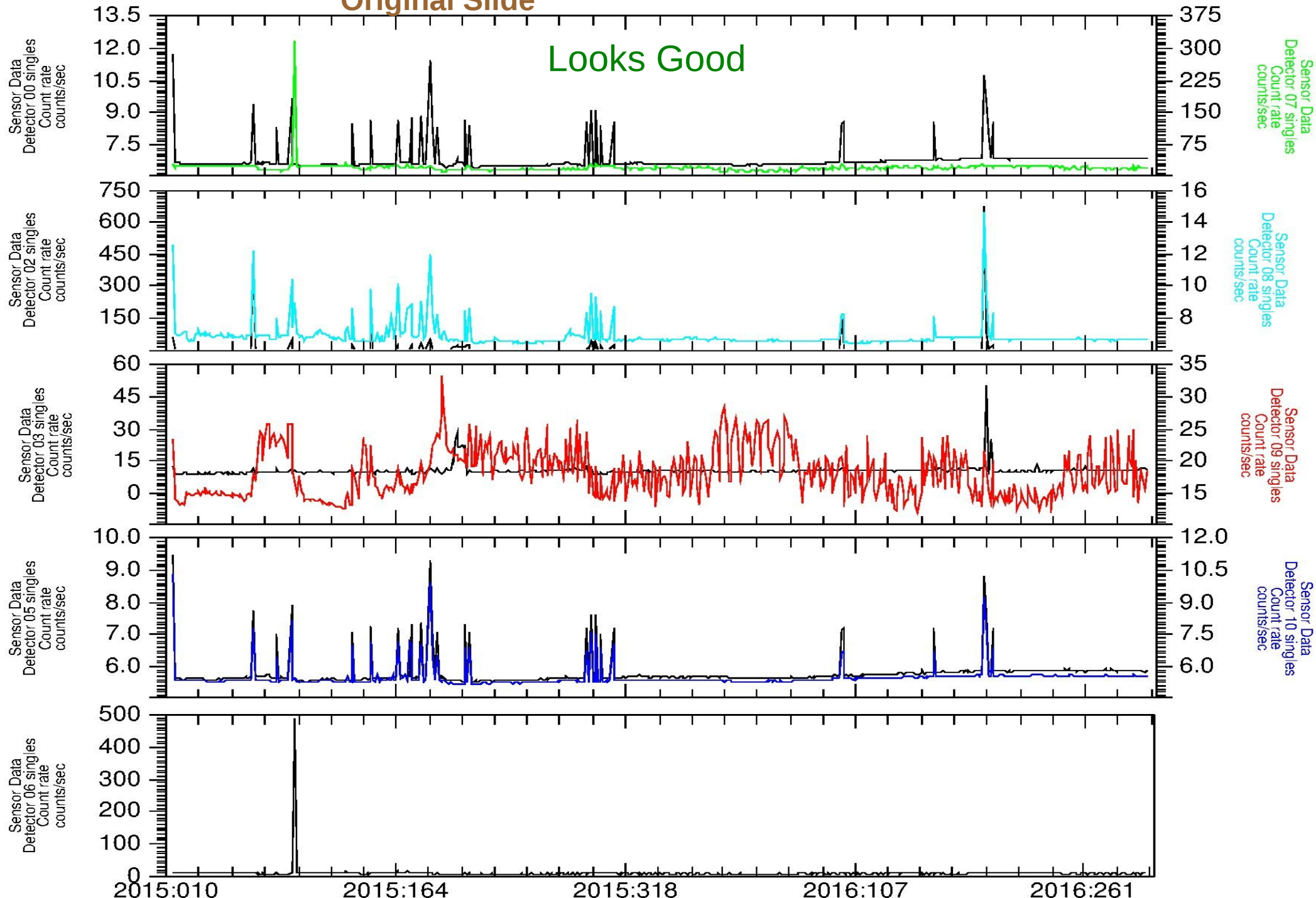
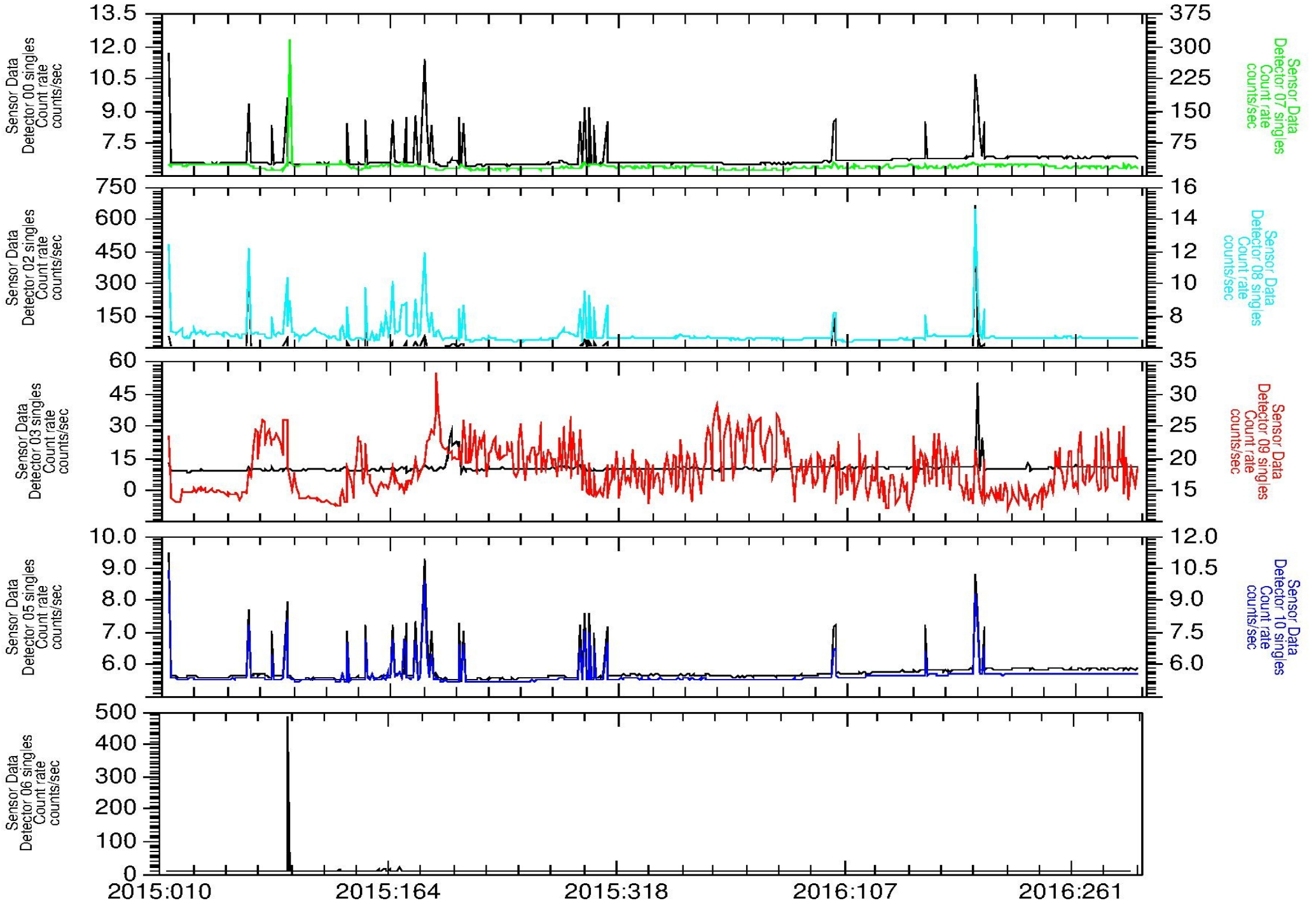


nh-p-pepssi-3-pluto-v3.0/data FLUX HDU Detector Singles

Original Slide

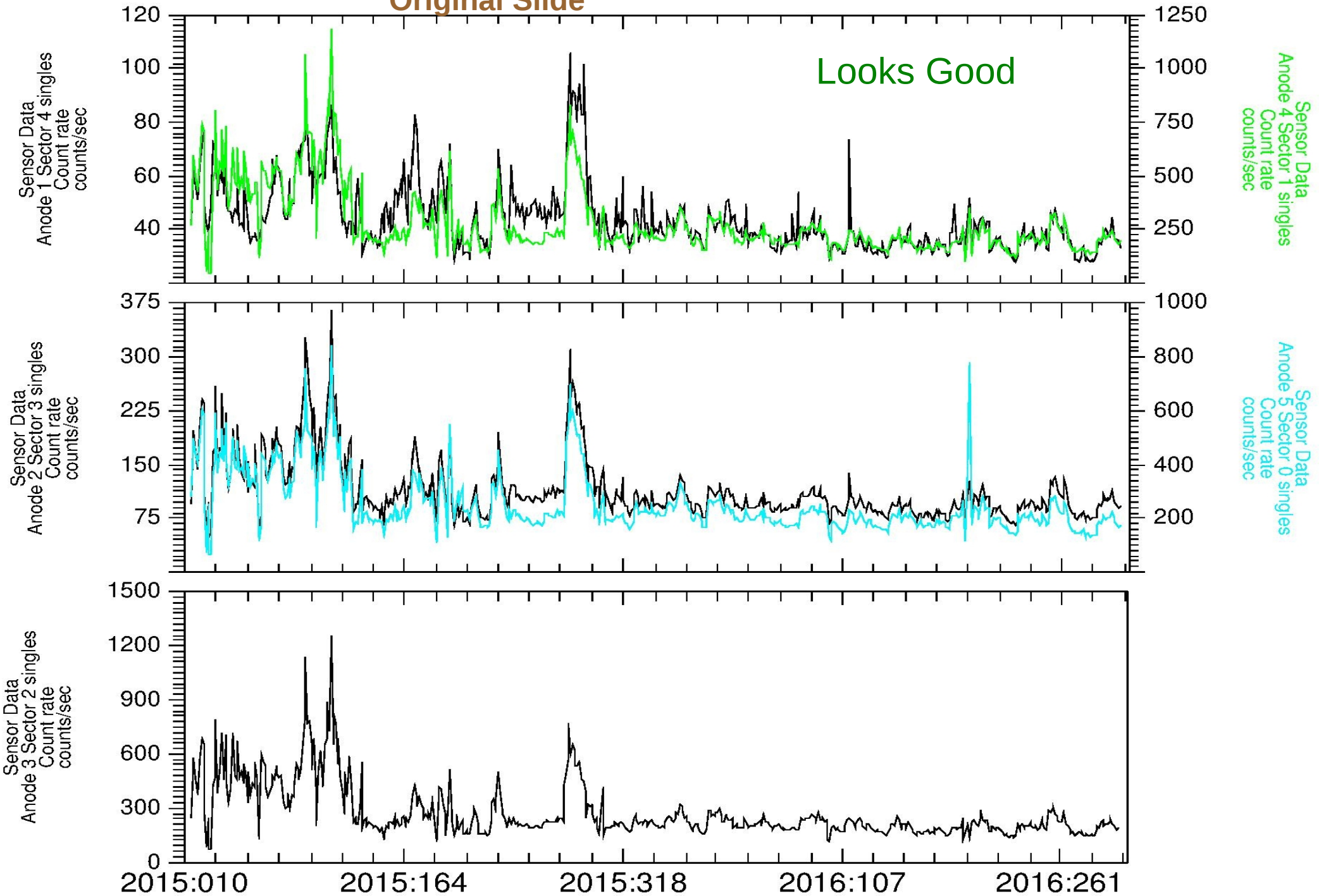


Updated Version – No Difference



nh-p-pepssi-3-pluto-v3.0/data FLUX HDU Anode Singles

Original Slide



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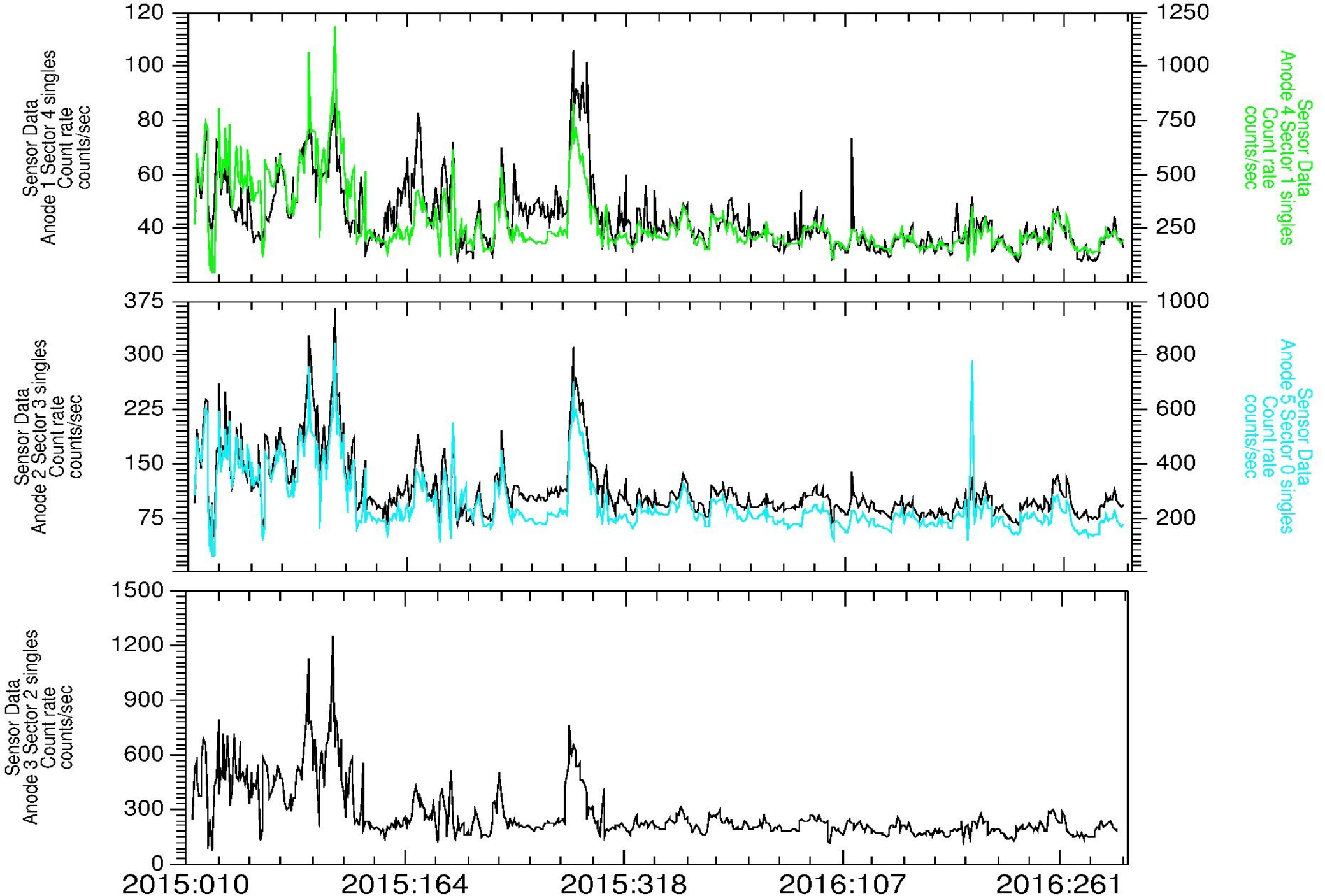
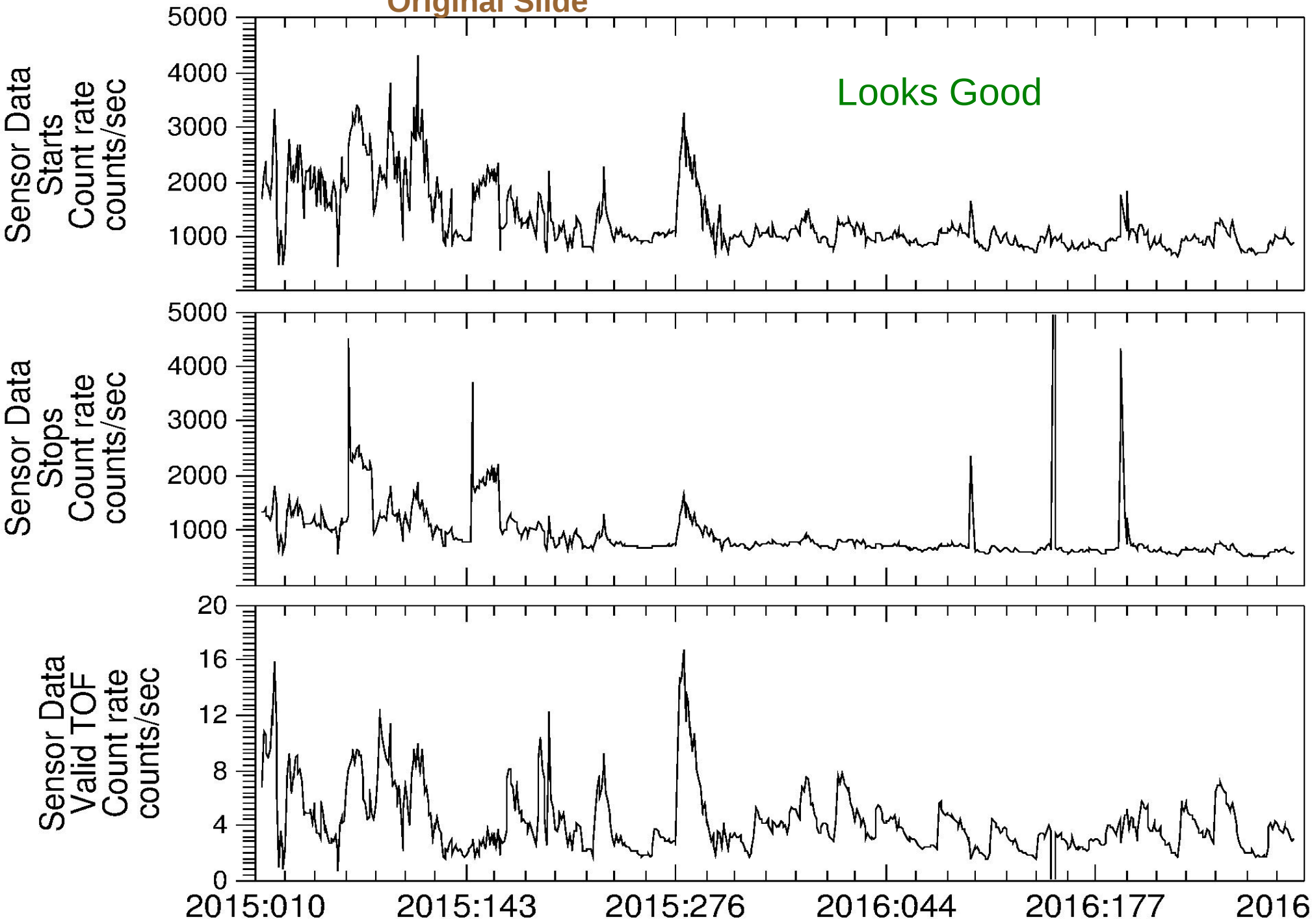


nh-p-pepssi-3-pluto-v3.0/data FLUX HDU Starts, Stops, Valid TOF

Original Slide



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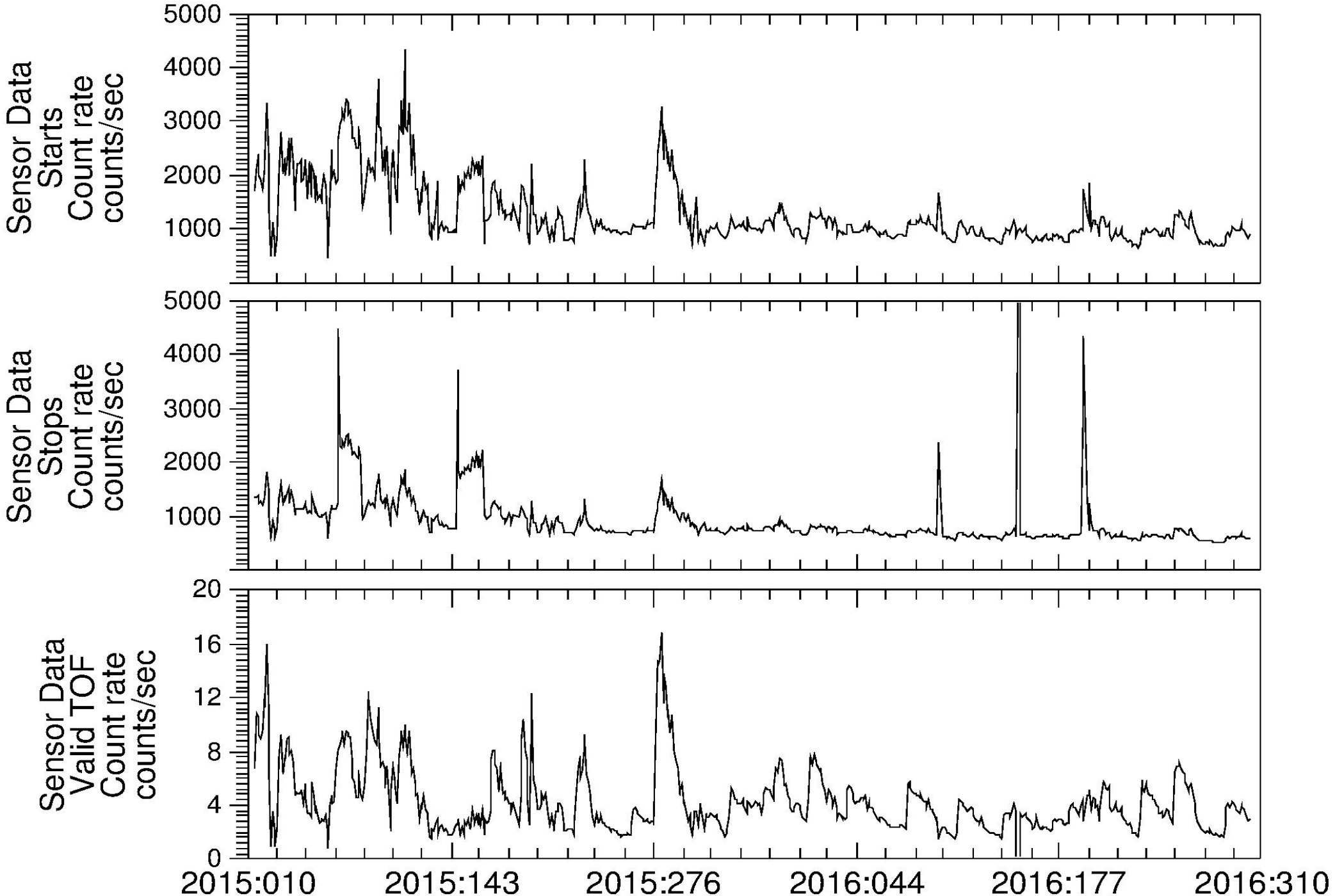
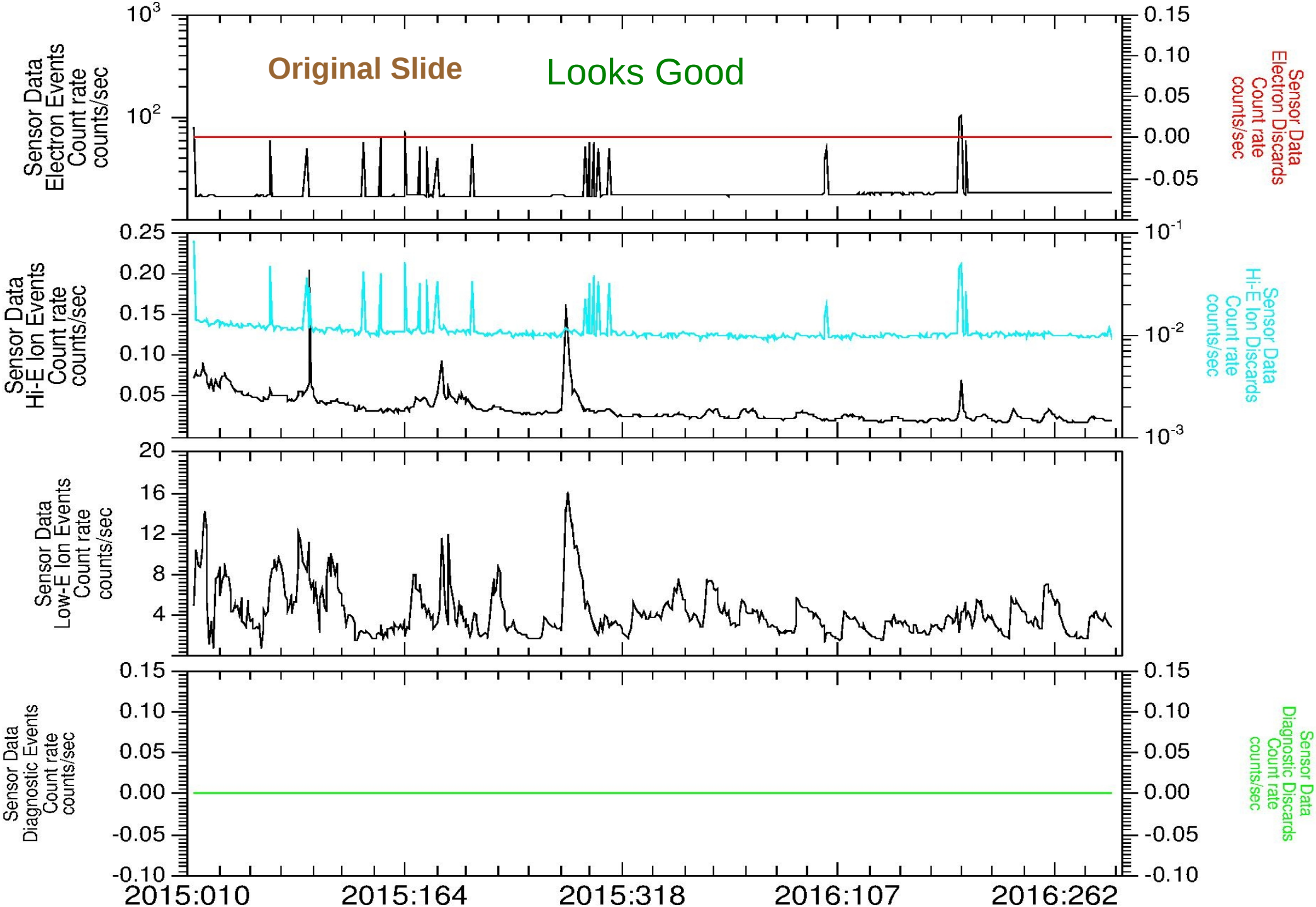


nh-p-pepssi-3-pluto-v3.0/data FLUX HDU Events



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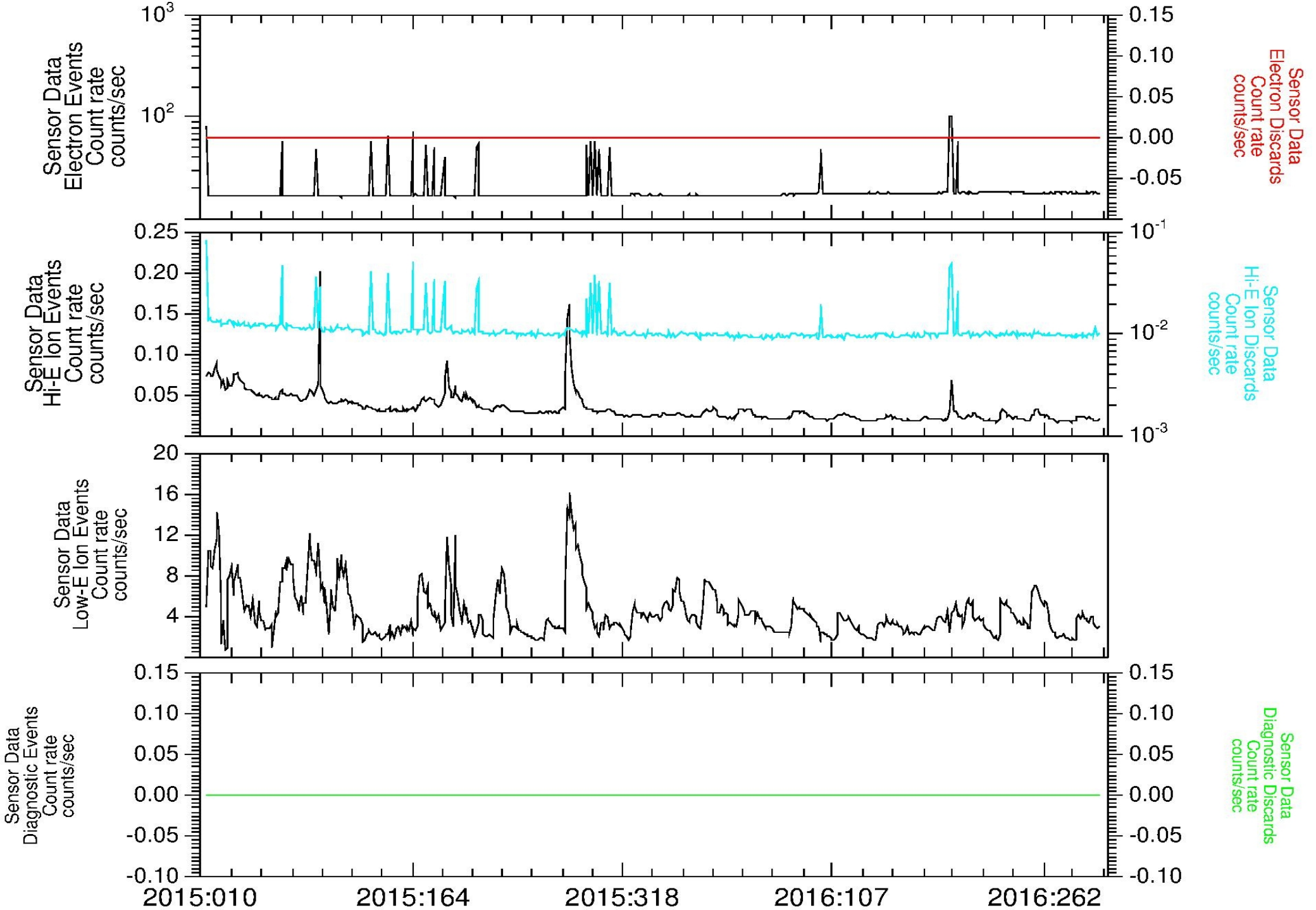
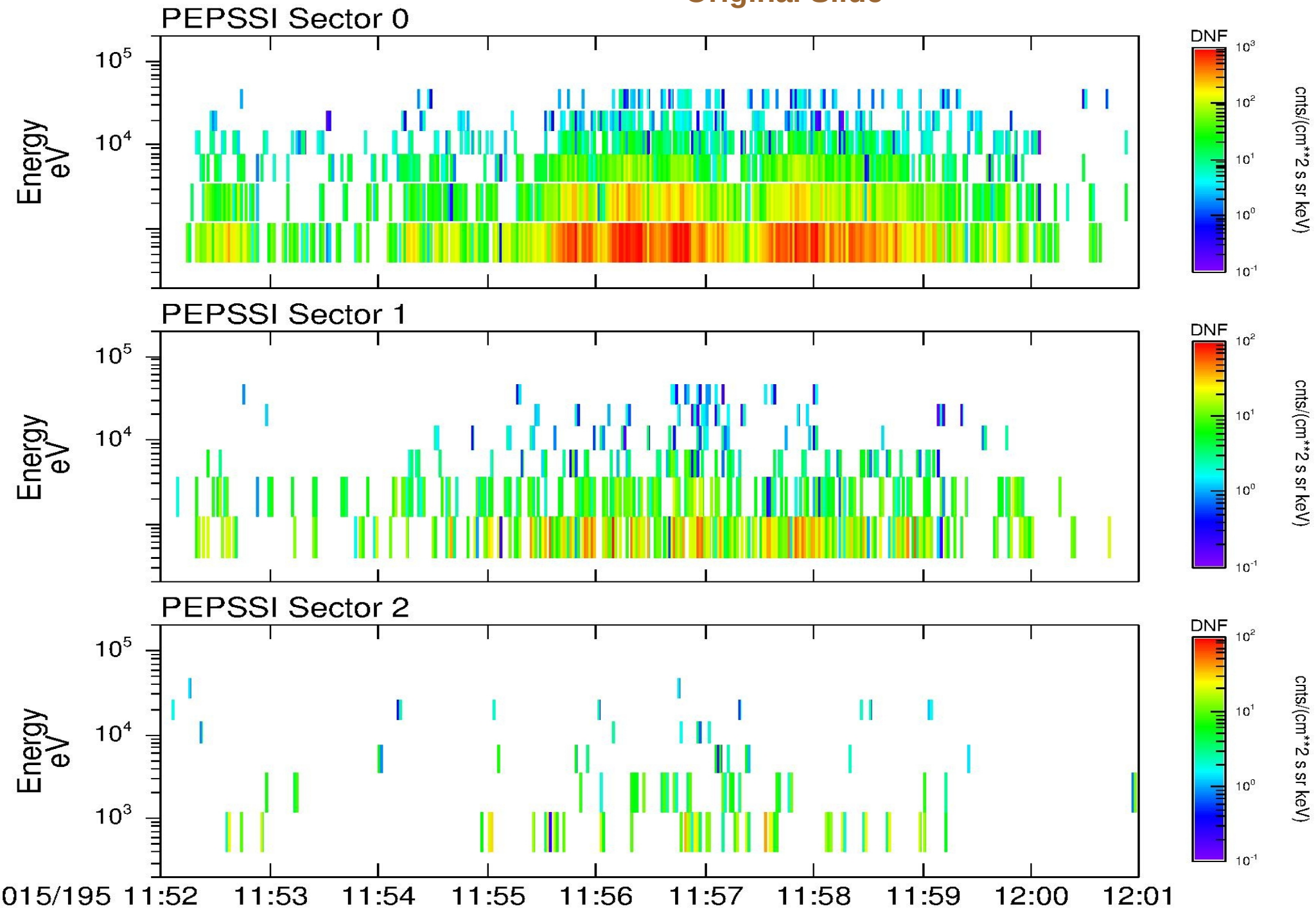


PEPSSI Flux at Pluto

Original Slide



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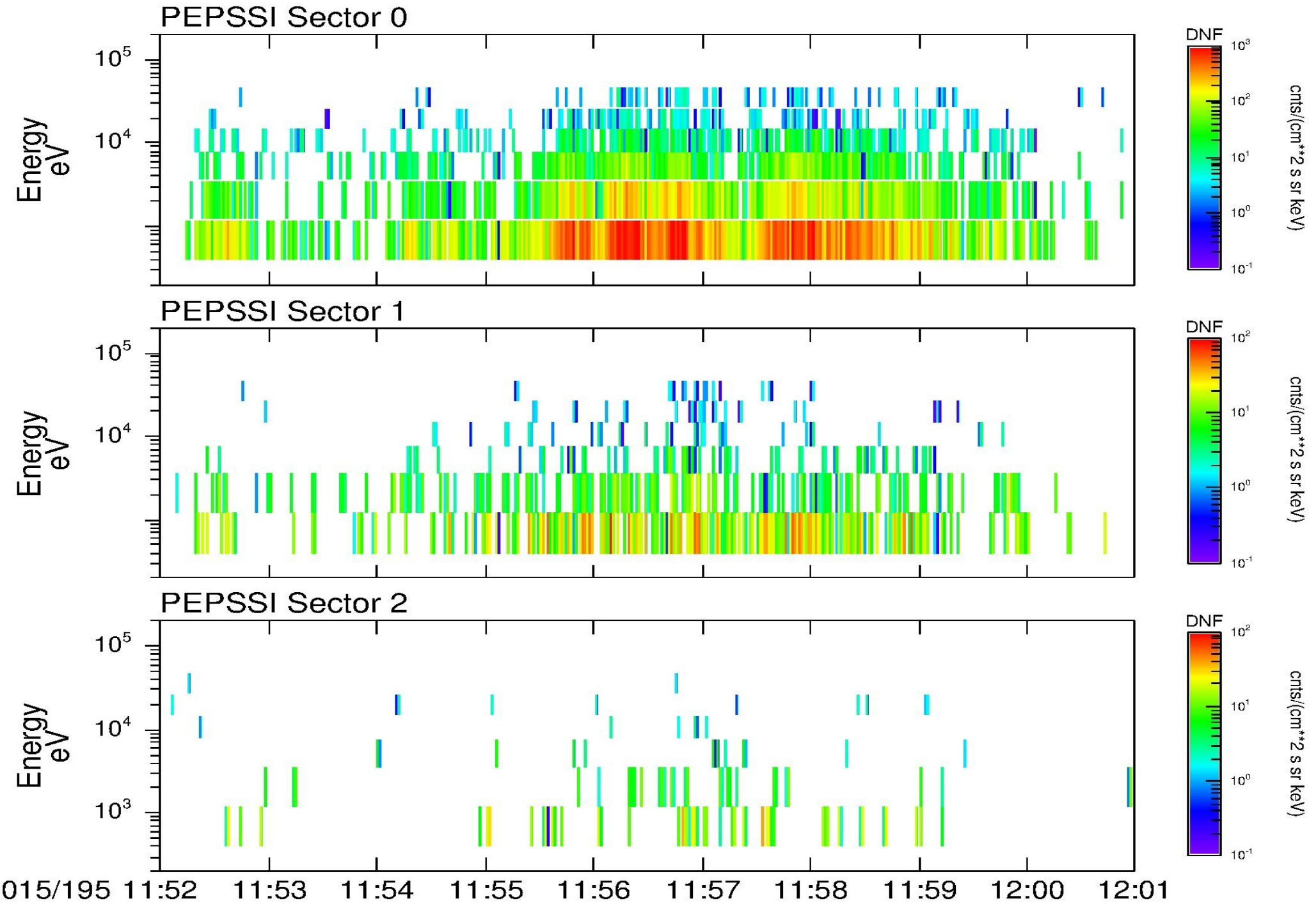
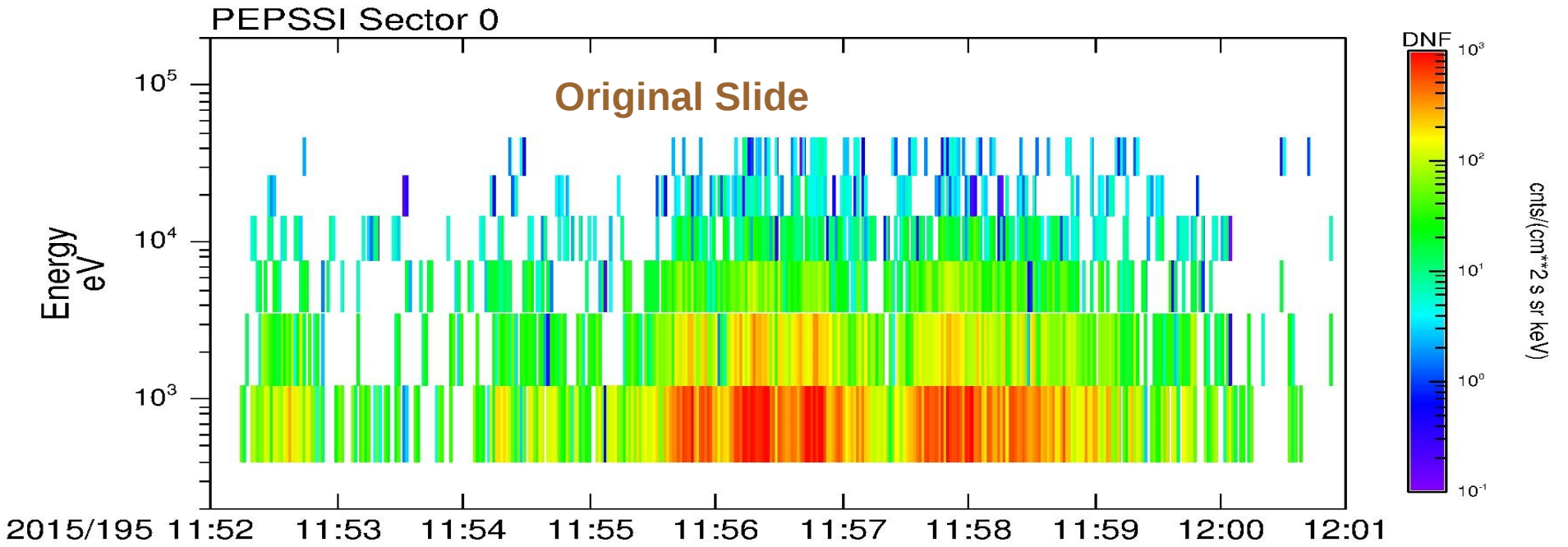
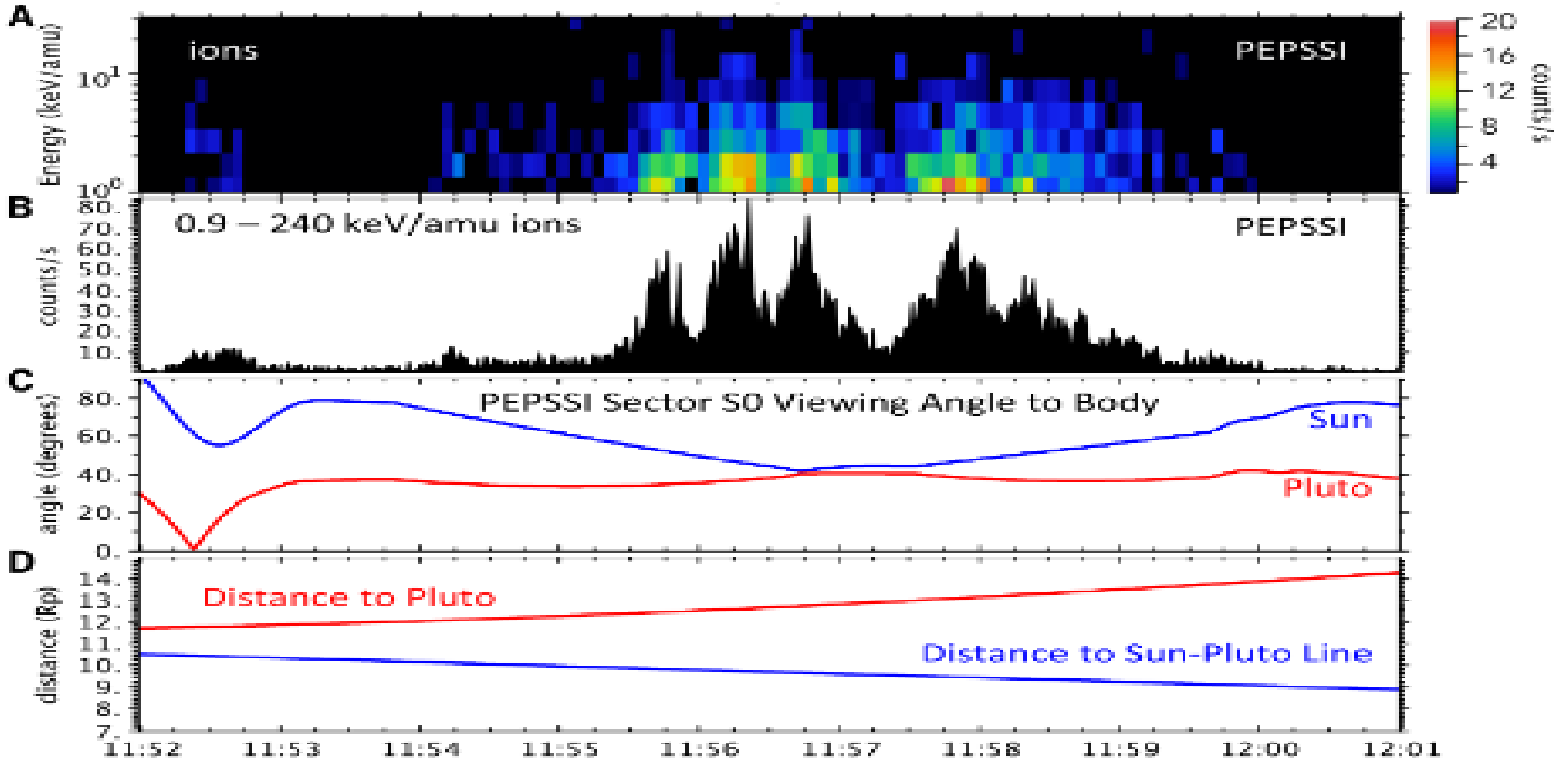
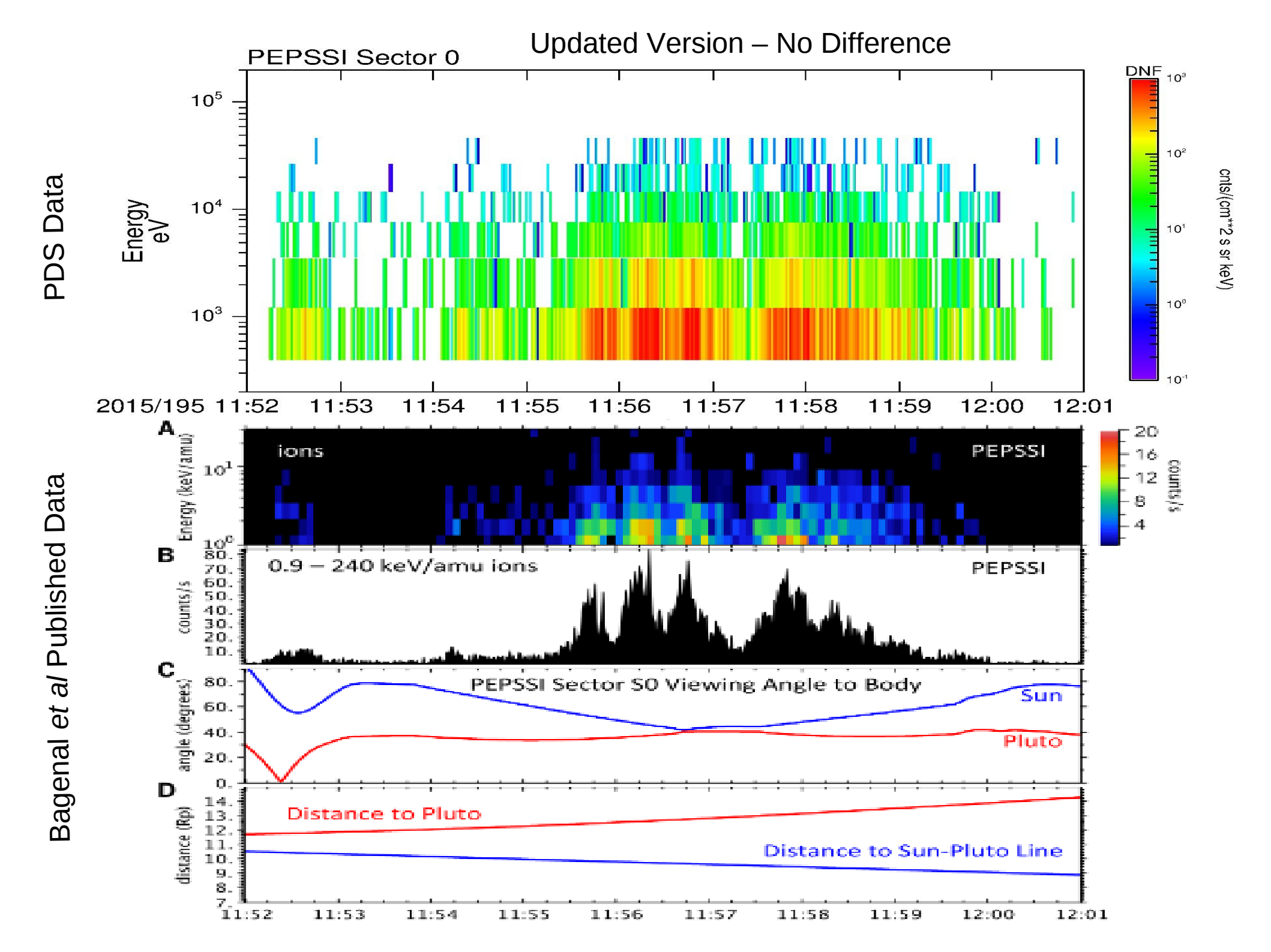


PDS Data



Bagenal *et al* Published Data




Updated Version – No Difference
PDS Data
PEPSSI Sector 0
Energy eV
DNF
cnts/(cm**2 s sr keV)
2015/195 11:52 11:53 11:54 11:55 11:56 11:57 11:58 11:59 12:00 12:01
Bagenal et al Published Data
A
ions
PEPSSI
Energy (keV/amu)
counts/s
B
0.9 – 240 keV/amu ions
PEPSSI
counts/s
C
PEPSSI Sector S0 Viewing Angle to Body
Sun
Pluto
angle (degrees)
D
Distance to Pluto
Distance to Sun-Pluto Line
distance (Rp)
11:52 11:53 11:54 11:55 11:56 11:57 11:58 11:59 12:00 12:01

Conclusion

All of the PEPSSI data and uncertanties are correct. The PEPSSI science data stored in the FITs files are valid for release to the public.

Back-Up Slides