RISA
Remote Interface to SAS Analysis

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INDEX

• RISA now and as a long term SAS preservation infrastructure

• RISA from XSA
  • ODF processing
  • EPIC exposure data analysis
  • EPIC sources products

• Future Work
RISA now and as a long term SAS preservation infrastructure

- RISA is a client/server application able to process XMM-Newton SAS workflows.

- We have developed a set of SAS “microservices” that gives XSA with on-the-fly processing capabilities, such as: spectra and light curve creation, image creation and event filtering.

- With this scheme we tackle at the same time two points:
  - In the long term: We preserve the SAS data analysis capabilities through web services, keeping SAS frozen in a VM.
  - In the short term: We provide users on-demand reprocessing capabilities using the latest SAS and calibration versions.

We also provide the scientific community a way to process XMM-Newton data without having to install SAS on their computers.
XSA/RISA Functionalities

Observation processing
Accessible from the XSA through OBSERVATION panel

http://xxxx.xxx.xxx/RISA_reprocessing?
obsid=0135720601&
PN=yes&
MOS1=yes&
MOS2=yes&
RGS1=yes&
RGS2=yes&
OM=yes&
ra=15.958335&
dec=-72.031294&
target=ODF&
mail=

Results
err_20170426172936_0109270501_ODF
out_20170426172936_0109270501_ODF
risa_20170426172936_0109270501_ODF.tar.gz

SAS Script
1. xmmextractor
XSA/RISA Functionalities

EPIC Data Analysis

Accessible from the XSA through EXPOSURES panel

VO SAMP
(Simple Access Message Protocol)

NOTE: Manually disabled M-Type restrictions
XSA/RISA Functionalities

EPIC Data Analysis

http://xxxx.xxx.xxx/RISA_sl?
product=spectra&
obsid=0651300301&
inst=EMOS2&
exp=S003&
target=WR140&
srcreg=((X,Y) IN
circle(24385.14,24706.642,592.29775))&
bkgreg=((X,Y) IN
circle(23969.759,34756.796,1519.4881))&
optsrcregion=no&
pimin=200&
pimax=8000&
pattern=<=12&
flag=0&
highbkgflaringcountrate=<=0.35 &
timebinsize=100&
mail=

SAS Script

Spectra
1. evselect → Filtering and image generation
2. tabtigen → GTI generation (high bkg flaring filtering)
3. erregionanalyse → centroid and optimize source region
4. especget → spectra, ARF and RMF generations

Light curve
1. evselect → filtering and image generation
2. tabtigen → GTI generation (high bkg flaring filtering)
3. evselect → source and background time series generation
4. epiclccorr → Time series correction

Image
1. evselect → filtering and image generation
2. tabtigen → GTI generation (high bkg flaring filtering)

Event filtering
1. evselect → filtering
2. tabtigen → GTI generation (high bkg flaring filtering)

Products (spectra)

Results

err_20170423185400_0555470801_WR140
out_20170423185400_0555470801_WR140
risa_20170423185400_0555470801_WR140.tar.gz
**XSA/RISA Functionalities**

**EPIC sources spectra**

Accessible from the XSA through EPIC PPS SOURCES panel

http://xxxx.xxx.xxx/RISA_singleskyprod?
product=spectra&
obsid=0202230201&
inst=EPN&
ra=10.8504&
dec=41.22551&
optsrcregion=yes&
highbkgflaringcountrate=<=0.4 &
target=SRC1 &
mail=

---

**SAS Script**

1. region → create file with regions from source list
2. ebkgreg → create background region
3. ecoordconv → convert coord to physical
4. eregionanalyse → centroid and optimize source region
5. evselect → filtering and image generation
6. tabgtigen → GTI generation
7. especget → spectra, ARF and RMF generation

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**Results**

err_20170426173418_0112570101_SRC12
out_20170426173418_0112570101_SRC12
risa_20170426173418_0112570101_SRC12.tar.gz

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**Product**

- R0112570101PNS003BGSPEC0001.FIT
- R0112570101PNS003SRCARF0001.FIT
- R0112570101PNS003SRCRMF0001.FIT
- R0112570101PNS003SRSPEC0001.FIT
Future Work

• Get user´s (your) feedback

From testing phase we have already collect the following ideas
• Add time series plotting capabilities to allow user´s define time filtering
• Allow RISA services to work with intermediate files (customized GTI filtering)
• Upload user´s SAS workflows (RISA compatible “scripts”)
• ...

• Replace ds9 → js9 (SAMP dependency will disappear)