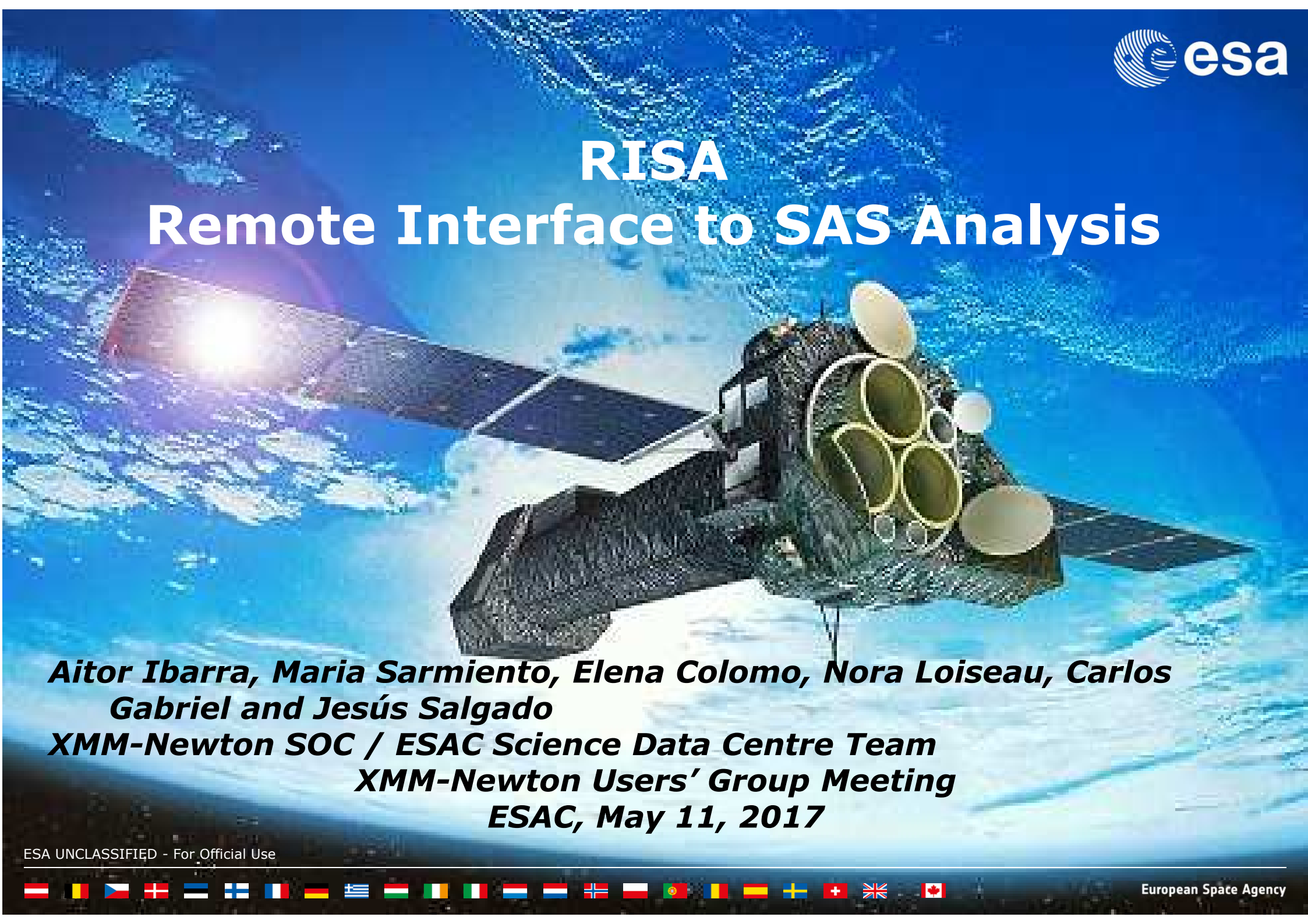

RISA
Remote Interface to SAS Analysis

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XMM-Newton SOC / ESAC Science Data Centre Team

XMM-Newton Users' Group Meeting
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RISA NOW AND AS A LONG TERM SAS PRESERVATION INFRASTRUCTURE

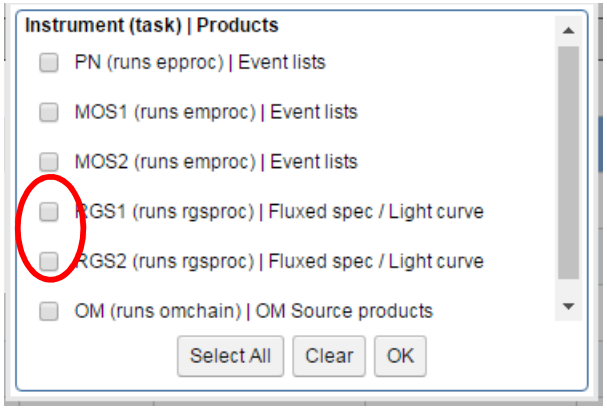
- RISA is a client/server application able to process XMM-Newton SAS workflows
- We have developed a set of SAS "microservices" that gives XSA with on-the-fly processing capabilities, such as: spectra and light curve creation, image creation and event filtering
- With this scheme we tackle at the same 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.

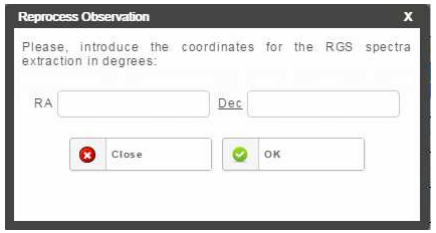
XSA/RISA Functionalities

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

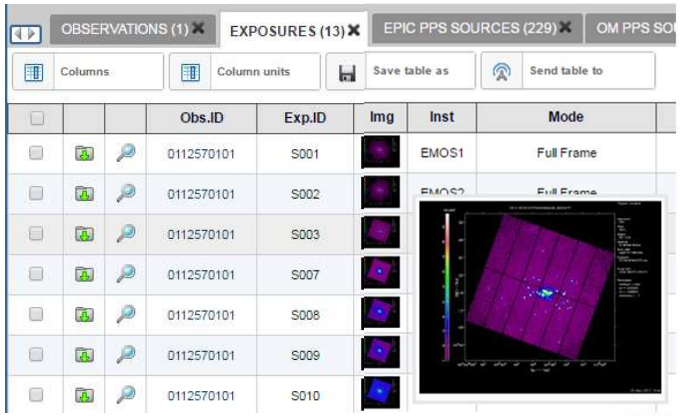
SAS Script

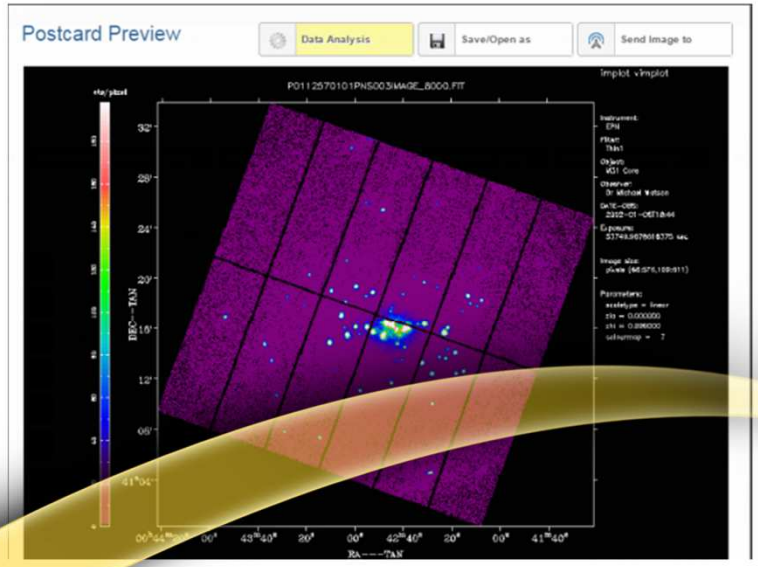
1. xmmextractor

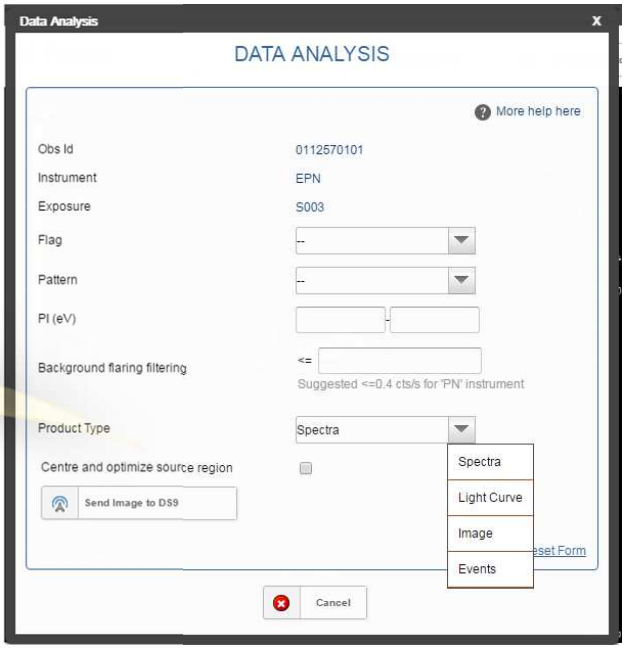
XSA/RISA Functionalities

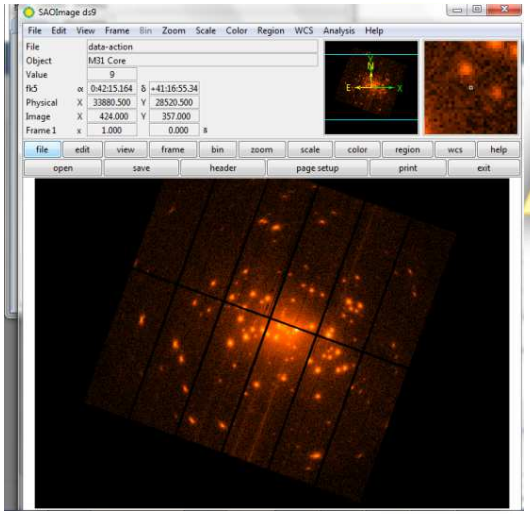
EPIC Data Analysis

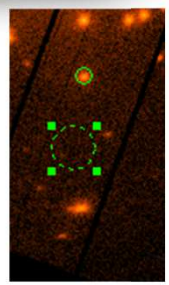
Accessible from the XSA through EXPOSURES panel











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. *tabgtigen* → GTI generation (high bkg flaring filtering)
3. *eregionanalyse* → centroid and optimize source region
4. *especget* → spectra, ARF and RMF generations

Light curve

1. *evselect* → filtering and image generation
2. *tabgtigen* → 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. *tabgtigen* → GTI generation (high bkg flaring filtering)

Event filtering

1. *evselect* → filtering
2. *tabgtigen* → GTI generation (high bkg flaring filtering)

Products (spectra)

- R0555470701PNS003BGSPEC0001.FIT
- R0555470701PNS003SRCARF0001.FIT
- R0555470701PNS003SRCRMF0001.FIT
- R0555470701PNS003SRSPEC0001.FIT

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

Product

R0112570101PNS003BGSPEC0001.FIT
R0112570101PNS003SRCARF0001.FIT
R0112570101PNS003SRCRMF0001.FIT
R0112570101PNS003SRSPEC0001.FIT

Results

err_20170426173418_0112570101_SRC12
out_20170426173418_0112570101_SRC12
risa_20170426173418_0112570101_SRC12.tar.gz

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)