Trigger threshold settings adjustments

in currently used   obsw v7.0.3
in future uploaded obsw v7.1.1

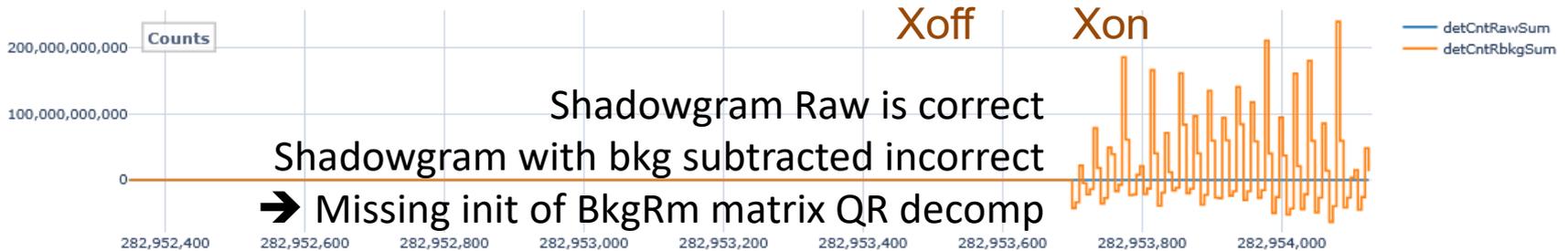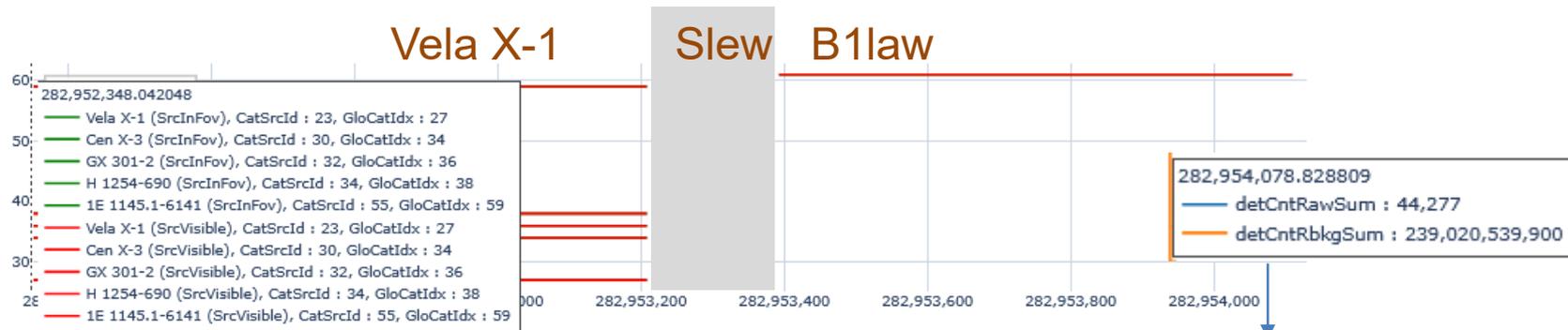SVOM BA-T meeting
260325

S. Schanne (CEA Paris-Saclay/IRFU/DAp)

Some words about OBSW version issues and updates

- Known since Christmas 2024, attempt to correct before Christmas 2025
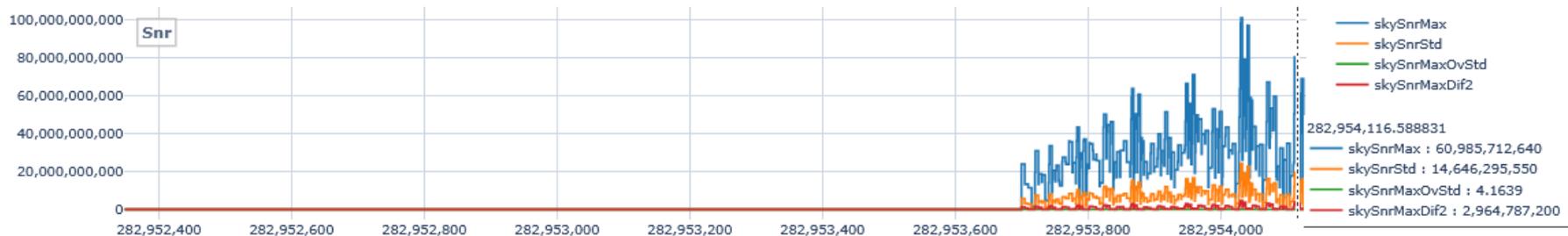- Missing recomputation of source model for sources inside FoV before+after slew

Crab present in FoV before and after slew

schanne@dedippcaa79:/data/ltu/sessions_bot_steph/sess_251127_obsw710deliv/output_ltu~at282835367pm15s_velaX1SlewAway_251218_FAimtBkg
Rm~USS_TRIG_V25121800~obswOBSW469bccd8/ECL_FLOW_packetTime_2025-12-18-13-07-47_2025-12-18-13-37-47_out_20251219_225212

UssMessages:

Vela X-1   Slew   B1law

282,952,348.042048
- Vela X-1 (SrcInFov), CatSrcId : 23, GloCatIdx : 27
- Cen X-3 (SrcInFov), CatSrcId : 30, GloCatIdx : 34
- GX 301-2 (SrcInFov), CatSrcId : 32, GloCatIdx : 36
- H 1254-690 (SrcInFov), CatSrcId : 34, GloCatIdx : 38
- 1E 1145.1-6141 (SrcInFov), CatSrcId : 55, GloCatIdx : 59
- Vela X-1 (SrcVisible), CatSrcId : 23, GloCatIdx : 27
- Cen X-3 (SrcVisible), CatSrcId : 30, GloCatIdx : 34
- GX 301-2 (SrcVisible), CatSrcId : 32, GloCatIdx : 36
- H 1254-690 (SrcVisible), CatSrcId : 34, GloCatIdx : 38
- 1E 1145.1-6141 (SrcVisible), CatSrcId : 55, GloCatIdx : 59

282,954,078.828809
- detCntRawSum : 44,277
- detCntRbkgSum : 239,020,539,900

Xoff   Xon

Shadowgram Raw is correct
Shadowgram with bkg subtracted incorrect
→ Missing init of BkgRm matrix QR decomp

(False Alerts when SnrMax/SnrStd > 6.5)

282,954,116.588831
- skySnrMax : 60,985,712,640
- skySnrStd : 14,646,295,550
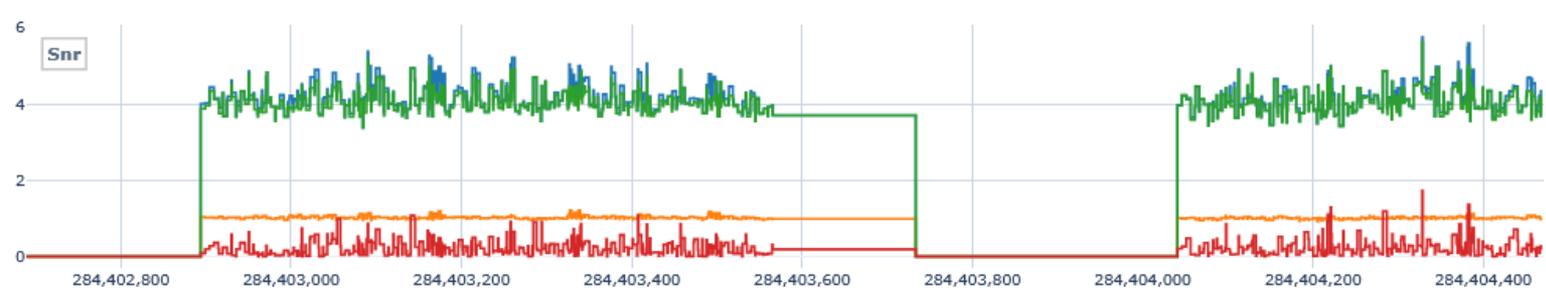- skySnrMaxOvStd : 4.1639
- skySnrMaxDif2 : 2,964,787,200

schanne@dedippcaa79:/data/ltu/sessions_bot_steph/sess_251127_obsw710deliv/output_ltu~at282835367pm15s_velaX1SlewAway_251218_FAimtBkg
Rm~USS_TRIG_V25121800~SSTUf416b4a397/ECL_FLOW_packetTime_2025-12-18-13-07-47_2025-12-18-13-37-47_out_20260105_174432
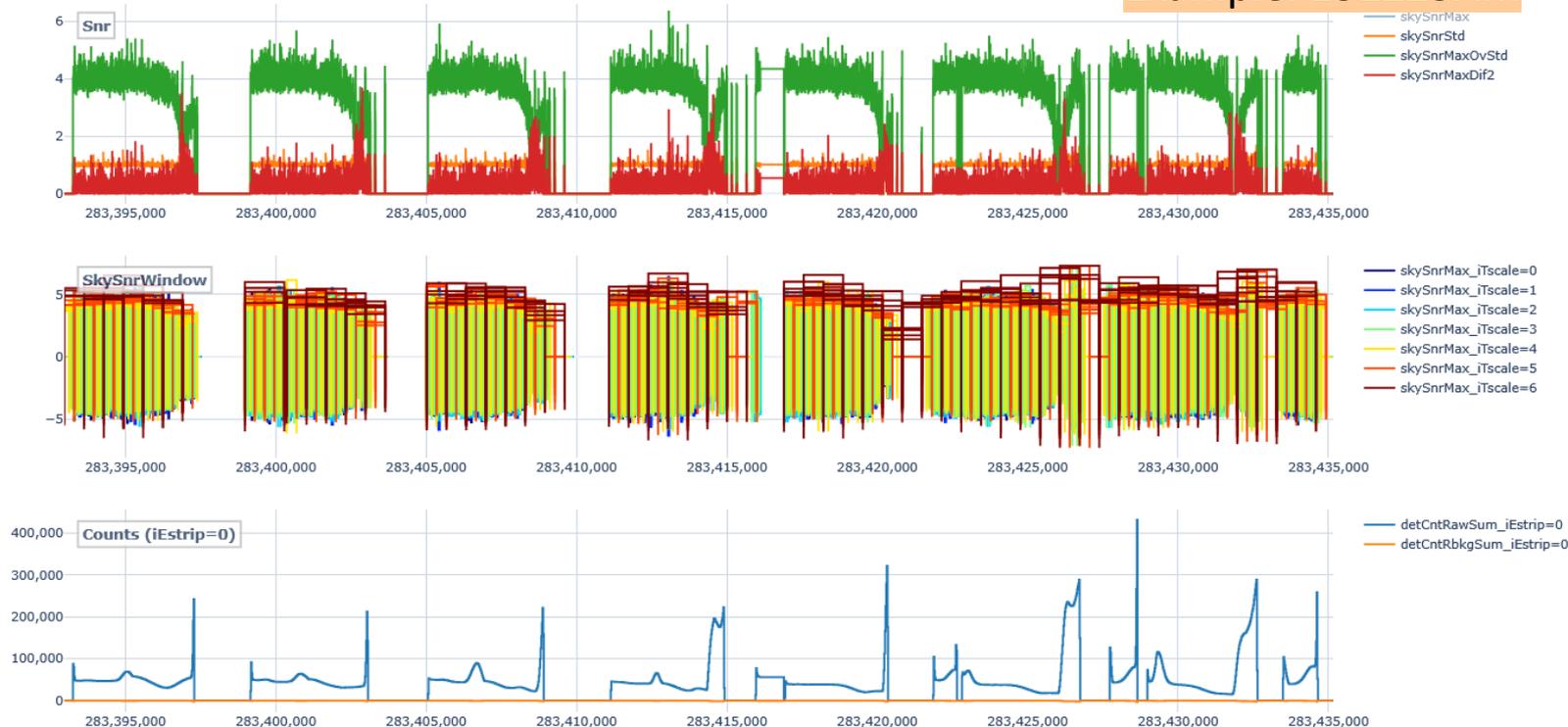
UssMessages:
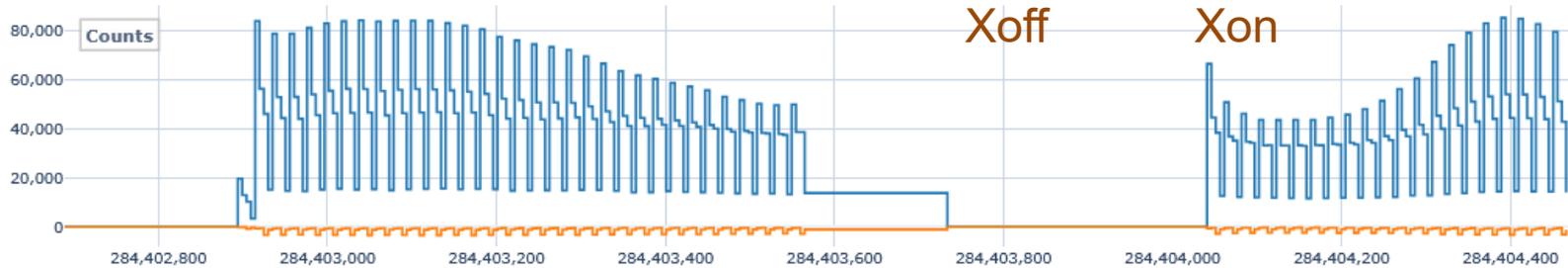
We performed B1law observations as much as possible during 3 weeks (25/12 – 16/1)

This gives an exceptional dataset, where we can study the long term operation conditions of the trigger in clean observing conditions.

Example: 251225AM

It appears that the SnrMax threshold of 6.5 is too high for such stable conditions!

Once uploaded, the v7.1.1 will permit to have adaptive thresholds applied in case we are in B1law or in case of sources present.

Trigger threshold current settings

ETC

```
USS_TRIG:

crtDeconvSnrMaxAlertThreshold: 6.5
crtDeconvSnrStdAlertThreshold: 6.5
crtDeconvSnrMaxSlewThreshold: 7
crtDeconvSnrStdSlewThreshold: 7
crtDeconvSnrDiffMax2Threshold: 1.5

imtDeconvSnrMaxAlertThreshold: 6.5
imtDeconvSnrStdAlertThreshold: 6.5
imtDeconvSnrMaxSlewThreshold: 7
imtDeconvSnrStdSlewThreshold: 7
imtDeconvSnrDiffMax2Threshold: 1.5
```

SnrMax = maximum SNR in sky image
        (outside Earth and known sources)
SnrStd = stdev of SNR in sky image
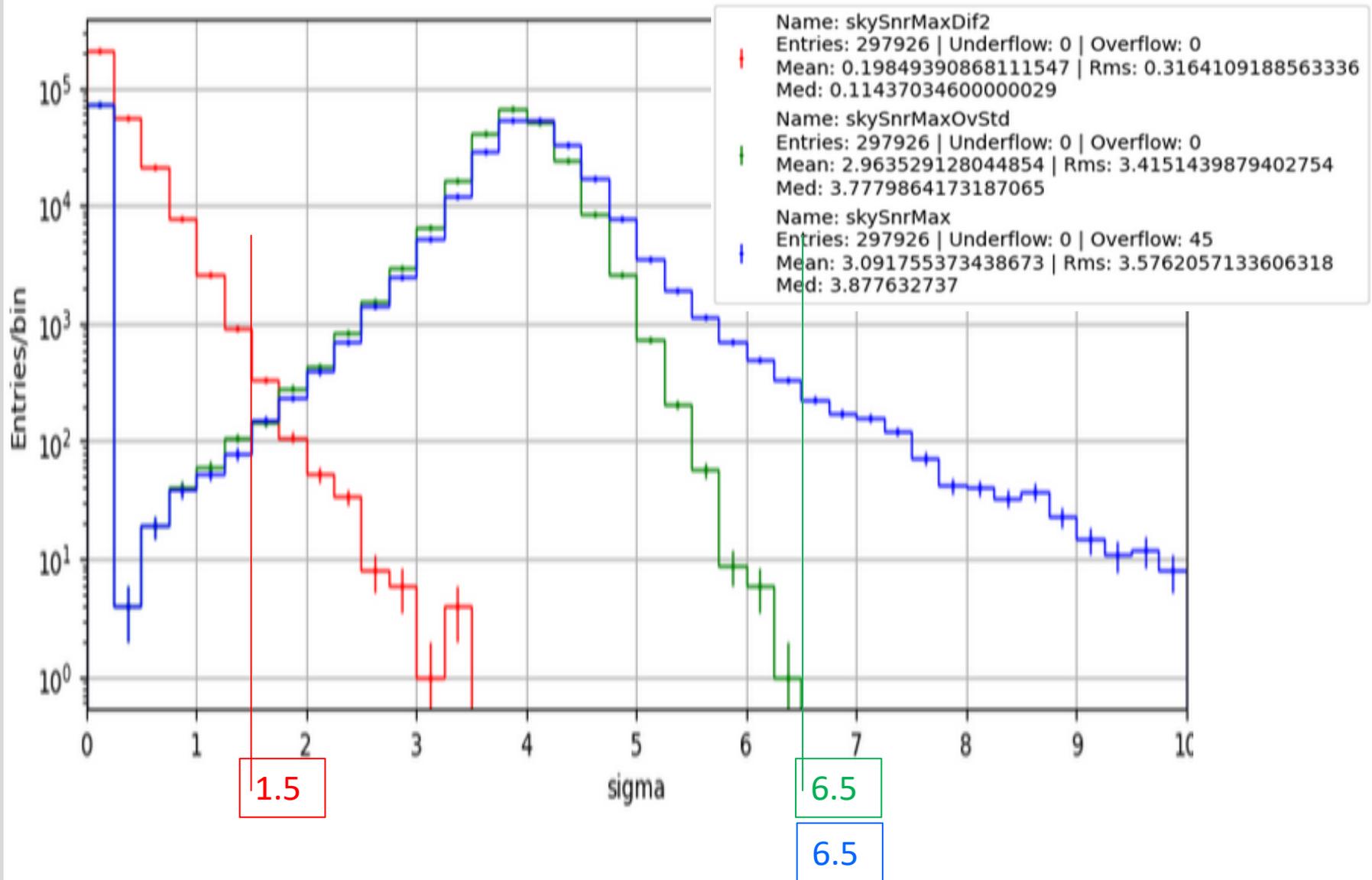*SnrMaxOvStd* = *SnrMax* / max(1, *SnrStd*)
SnrDiffMax2 = *SnrMax* – *SnrMax2*

```
/!\ in all config par names:
SnrStd means SnrMaxOvStd
```
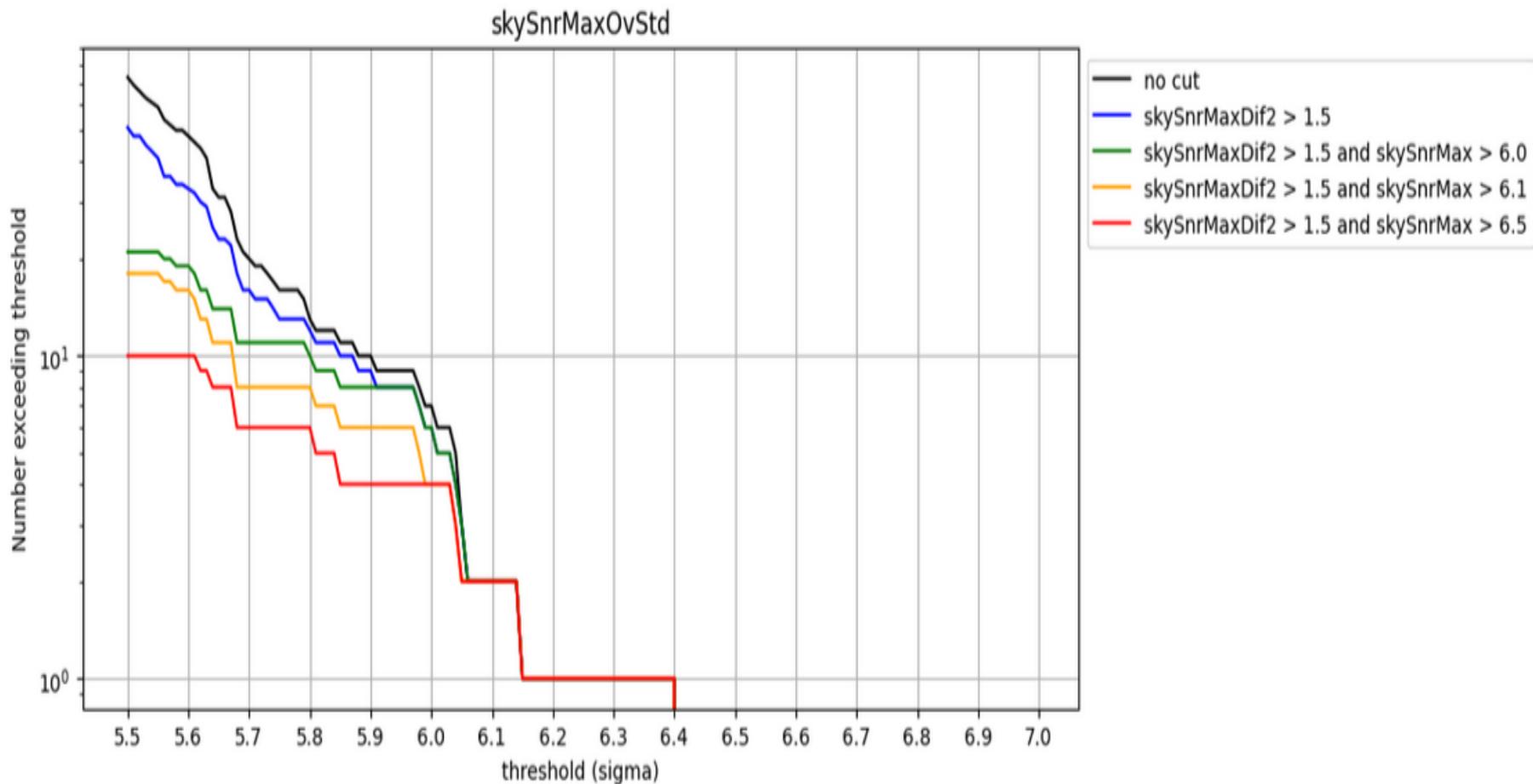
Applied everywhere (with or without many known
sources in the FoV) and every time (inside or outside SAA-ext)
➔ This is the "Safe Trigger" config from Commissioning Phase.

We have seen that we can find some burst below those
thresholds (by replay with lower thresholds or OFTG)

So these settings are not getting the best out of the instrument

Name: skySnrMaxDif2
Entries: 297926 | Underflow: 0 | Overflow: 0
Mean: 0.19849390868111547 | Rms: 0.3164109188563336
Med: 0.11437034600000029

Name: skySnrMaxOvStd
Entries: 297926 | Underflow: 0 | Overflow: 0
Mean: 2.963529128044854 | Rms: 3.4151439879402754
Med: 3.7779864173187065

Name: skySnrMax
Entries: 297926 | Underflow: 0 | Overflow: 45
Mean: 3.091755373438673 | Rms: 3.5762057133606318
Med: 3.877632737

1.5

6.5

6.5

number of Alerts vs Threshold setting (in selected 7 days)

ETC

Trigger threshold future settings to play with

USS_DAQ:

grmAlertNumGRDsThreshold: 3
grmAlertTrigEnergyStartThreshold: 0
grmAlertTrigSigLevelThreshold: 0

used in V7.0.3
but coincidences of 3 GRDs are rare !

USS_TRIG:

mode_crtGrmAlertProcessing: 1
crtGrmAlertProcessing_latestCycleAfterGrmAlertRxInCycles: 12
crtGrmAlertProcessing_earliestTimeTbBeforeGrmAlertRxInCycles: 4
crtGrmAlertDeconvSnrMaxAlertThreshold: 6
crtGrmAlertDeconvSnrStdAlertThreshold: 6
crtGrmAlertDeconvSnrMaxSlewThreshold: 7
crtGrmAlertDeconvSnrStdSlewThreshold: 7

mode_imtGrmAlertProcessing: 1
imtGrmAlertProcessing_latestCycleAfterGrmAlertRxInCycles: 5
imtGrmAlertProcessing_earliestTimeTbBeforeGrmAlertRxInCycles: 2
imtGrmAlertDeconvSnrMaxAlertThreshold: 6
imtGrmAlertDeconvSnrStdAlertThreshold: 6
imtGrmAlertDeconvSnrMaxSlewThreshold: 7
imtGrmAlertDeconvSnrStdSlewThreshold: 7

ETC

not used currently:
we apply the same thresholds
in and outside SAA-ext

```
mode_saaManagement: 0
crtThrSaaExt_SnrFactorDenom: 10
crtThrSaaExt_SnrMaxAlertFactorNumer_atEstrip: [20, 20, 20, 20]
crtThrSaaExt_SnrMaxSlewFactorNumer_atEstrip:  [40, 40, 40, 40]
crtThrSaaExt_SnrStdAlertFactorNumer_atEstrip: [20, 20, 20, 20]
crtThrSaaExt_SnrStdSlewFactorNumer_atEstrip:  [40, 40, 40, 40]

mode_saaManagement: 0
imtThrSaaExt_SnrFactorDenom: 10
imtThrSaaExt_SnrMaxAlertFactorNumer_atEstrip: [20, 20, 20, 20]
imtThrSaaExt_SnrMaxSlewFactorNumer_atEstrip:  [40, 40, 40, 40]
imtThrSaaExt_SnrStdAlertFactorNumer_atEstrip: [20, 20, 20, 20]
imtThrSaaExt_SnrStdSlewFactorNumer_atEstrip:  [40, 40, 40, 40]
```

Parameter settings need to study in detail the Snr in and outside SAA-ext

If applied, these example config parameters would be too high
and set the thresholds of
- Alert when SnrMax/Std > 6.5 * 20/10 = **13**
- Slew when SnrMax/Std > 7 *40/10 = **28**

Complete set of config possibilities in v7.1.1:
(was incomplete in v7.0.3)

```
crtThrET_SnrMaxFactorDenom: 100
crtThrET_SnrStdFactorDenom: 100
crtThrET_SnrMaxAlertFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=1: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=2: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=3: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
crtThrET_SnrStdAlertFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=1: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=2: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=3: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
crtThrET_SnrMaxSlewFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=1: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=2: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=3: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
crtThrET_SnrStdSlewFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=1: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=2: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
  Estrip=3: [100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 100, 10
```

Complete set of config possibilities in v7.1.1:
(was incomplete in v7.0.3)

```
imtThrET_SnrMaxFactorDenom: 100
imtThrET_SnrStdFactorDenom: 100
imtThrET_SnrMaxAlertFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 100, 100]
  Estrip=1: [100, 100, 100, 100, 100, 100, 100]
  Estrip=2: [100, 100, 100, 100, 100, 100, 100]
  Estrip=3: [100, 100, 100, 100, 100, 100, 100]
imtThrET_SnrStdAlertFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 100, 100]
  Estrip=1: [100, 100, 100, 100, 100, 100, 100]
  Estrip=2: [100, 100, 100, 100, 100, 100, 100]
  Estrip=3: [100, 100, 100, 100, 100, 100, 100]
imtThrET_SnrMaxSlewFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 100, 100]
  Estrip=1: [100, 100, 100, 100, 100, 100, 100]
  Estrip=2: [100, 100, 100, 100, 100, 100, 100]
  Estrip=3: [100, 100, 100, 100, 100, 100, 100]
imtThrET_SnrStdSlewFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 100, 100]
  Estrip=1: [100, 100, 100, 100, 100, 100, 100]
  Estrip=2: [100, 100, 100, 100, 100, 100, 100]
  Estrip=3: [100, 100, 100, 100, 100, 100, 100]
```

Example usage: rise the Alert and Slew threshold for the longest time scales in IMT:

```
imtThrET_SnrMaxFactorDenom: 100
imtThrET_SnrStdFactorDenom: 100
imtThrET_SnrMaxAlertFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 100, 100]
  Estrip=1: [100, 100, 100, 100, 100, 100, 100]
  Estrip=2: [100, 100, 100, 100, 100, 100, 100]
  Estrip=3: [100, 100, 100, 100, 100, 100, 100]
imtThrET_SnrStdAlertFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 108, 108]
  Estrip=1: [100, 100, 100, 100, 100, 108, 108]
  Estrip=2: [100, 100, 100, 100, 100, 108, 108]
  Estrip=3: [100, 100, 100, 100, 100, 108, 108]
imtThrET_SnrMaxSlewFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 100, 100]
  Estrip=1: [100, 100, 100, 100, 100, 100, 100]
  Estrip=2: [100, 100, 100, 100, 100, 100, 100]
  Estrip=3: [100, 100, 100, 100, 100, 100, 100]
imtThrET_SnrStdSlewFactorNumer_atEstripTscale:
  Estrip=0: [100, 100, 100, 100, 100, 115, 115]
  Estrip=1: [100, 100, 100, 100, 100, 115, 115]
  Estrip=2: [100, 100, 100, 100, 100, 115, 115]
  Estrip=3: [100, 100, 100, 100, 100, 115, 115]
```

Alert produced
in Tscale = 5 and 6 (11, 22 min)
for SnrMax/Std
> 6.5 * 108/100 = **7.02**

Slew request produced
in Tscale = 5 and 6 (11, 22 min)
for SnrMax/Std
> 7.0 * 115/100 = **8.05**

New feature in v7.1.1:
* Independently for CRT and IMT
* Disabled by default
* Define up to 10 groups of sources
  (group = list of sources contiguous in CAT,
  groups ordered by priority)
* Apply threshold multiplier as soon as a source
  of highest priority group visible (not behind Earth)

```
enable_crtThrVSrc: false
crtThrVSrc_iGloSrcBeg_atGrp: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
crtThrVSrc_iGloSrcMax_atGrp: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
crtThrVSrc_SnrFactorDenom: 100
crtThrVSrc_SnrMaxAlertFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100
crtThrVSrc_SnrStdAlertFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100
crtThrVSrc_SnrMaxSlewFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100,
crtThrVSrc_SnrStdSlewFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100,

enable_imtThrVSrc: false
imtThrVSrc_iGloSrcBeg_atGrp: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
imtThrVSrc_iGloSrcMax_atGrp: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
imtThrVSrc_SnrFactorDenom: 100
imtThrVSrc_SnrMaxAlertFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100
imtThrVSrc_SnrStdAlertFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100
imtThrVSrc_SnrMaxSlewFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100,
imtThrVSrc_SnrStdSlewFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100,
```

Example usage: rize the <u>slew</u> threshold
if Sco X-1 or Crab are in the FoV and visible:

- Sco X-1: Slew if SnrMax/Std > 7 * 214/100 = **15**
- Crab: Slew if SnrMax/Std > 7 * 143/100 = **10**

Example: define just 2 groups with 1 source each:

ScoX-1 Crab

```
enable_crtThrVSrc: true
crtThrVSrc_iGloSrcBeg_atGrp: [5, 6, 0, 0, 0, 0, 0, 0, 0, 0]
crtThrVSrc_iGloSrcMax_atGrp: [6, 7, 0, 0, 0, 0, 0, 0, 0, 0]
crtThrVSrc_SnrFactorDenom: 100
crtThrVSrc_SnrMaxAlertFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100
crtThrVSrc_SnrStdAlertFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100
crtThrVSrc_SnrMaxSlewFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100,
crtThrVSrc_SnrStdSlewFactorNumer_atGrp: [214, 143, 100, 100, 100, 100, 100, 100,

enable_imtThrVSrc: true
imtThrVSrc_iGloSrcBeg_atGrp: [5, 6, 0, 0, 0, 0, 0, 0, 0, 0]
imtThrVSrc_iGloSrcMax_atGrp: [6, 7, 0, 0, 0, 0, 0, 0, 0, 0]
imtThrVSrc_SnrFactorDenom: 100
imtThrVSrc_SnrMaxAlertFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100
imtThrVSrc_SnrStdAlertFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100
imtThrVSrc_SnrMaxSlewFactorNumer_atGrp: [100, 100, 100, 100, 100, 100, 100, 100,
imtThrVSrc_SnrStdSlewFactorNumer_atGrp: [214, 143, 100, 100, 100, 100, 100, 100,
```

Trigger threshold actually applied is given in UssMessages (X-band)
for each trigger threshold excess, in order to precisely monitor
the automatic threshold adjustments.

, "Id": 155, "MsgName": "IMT_SkyAnalysisTimeInfo", "skyTimeTbInTf": 90112, "skyExposureInCycles": 2, "iEstrip": 0, "iTscale": 1 },
, "Id": 14, "MsgName": "IMT_SkyAnalysisPixMaxAndMax2", "iTscale": 1, "skyIPix": 125, "skyJPix": 133, "skyNumPix": 29269, "skyIPix2": 142, "skyJPix2": 135, "skyNumPixDiff2": 49 },
, "Id": 15, "MsgName": "IMT_SkyAnalysisSnrMaxAndStd", "skySnrMax": 16.57413101, "skySnrStd": 1.140057683 },
, "Id": 16, "MsgName": "IMT_SkyAnalysisSnrMax2AndStd2", "skySnrMax2": 4.328340054, "skySnrStd2": 1.116561055 },
, "Id": 198, "MsgName": "IMT_TrigGrbThreshApplied", "threshSnrAlertX1000": 6500, "threshSnrOvStdAlertX1000": 6500, "threshSnrSlewX1000": 7000, "threshSnrOvStdSlewX1000": 7000 },
, "Id": 17, "MsgName": "IMT_AlertCriterium", "slewRequestVal": 11, "iCycle": 45, "iEstrip": 0, "iTscale": 1 },
, "Id": 18, "MsgName": "IMT_AlertTimeInTf", "alertTimeTb": 90112, "alertTimeT0": 94208 },
, "Id": 19, "MsgName": "IMT_AlertPositionFit", "skySnrMaxIFit": 124.8950348, "skySnrMaxJFit": 133.0587311 },
, "Id": 49, "MsgName": "IMT_AlertPositionBiasCorr", "skySnrMaxIBiasCorr": 124.8950348, "skySnrMaxJBiasCorr": 133.0587311 },
, "Id": 20, "MsgName": "IMT_AlertPositionThetaPhi", "skySnrMaxThetaDeg": 22.10327339, "skySnrMaxPhiDeg": 143.0182495 },
, "Id": 21, "MsgName": "IMT_AlertPositionRaDec", "skyRaDeg": 204.6859589, "skyDecDeg": 44.66417694 },
, "Id": 103, "MsgName": "IMT_VhfAlertPacketSend", "trigCriterium": 12367 },

, "Id": 156, "MsgName": "CRT_SkyAnalysisTimeInfo", "skyTimeTbInTf": 90625, "skyExposureInTf": 2048, "iEstrip": 0, "iTscale": 22 },
, "Id": 26, "MsgName": "CRT_SkyAnalysisPixMaxAndMax2", "iTscale": 22, "skyIPix": 125, "skyJPix": 133, "skyNumPix": 29343, "skyIPix2": 132, "skyJPix2": 147, "skyNumPixDiff2": 49 },
, "Id": 27, "MsgName": "CRT_SkyAnalysisSnrMaxAndStd", "skySnrMax": 13.37336922, "skySnrStd": 1.126984358 },
, "Id": 28, "MsgName": "CRT_SkyAnalysisSnrMax2AndStd2", "skySnrMax2": 4.472736359, "skySnrStd2": 1.11178422 },
, "Id": 199, "MsgName": "CRT_TrigGrbThreshApplied", "threshSnrAlertX1000": 6500, "threshSnrOvStdAlertX1000": 6500, "threshSnrSlewX1000": 7000, "threshSnrOvStdSlewX1000": 7000 },
, "Id": 29, "MsgName": "CRT_AlertCriterium", "slewRequestVal": 10, "iCycle": 362, "iEstrip": 0, "iTscale": 22, "iZone": 8 },
, "Id": 30, "MsgName": "CRT_AlertTimeInTf", "alertTimeTb": 90625, "alertTimeT0": 92928 },
, "Id": 31, "MsgName": "CRT_AlertPositionFit", "skySnrMaxIFit": 124.8506165, "skySnrMaxJFit": 133.0135651 },
, "Id": 50, "MsgName": "CRT_AlertPositionBiasCorr", "skySnrMaxIBiasCorr": 124.8506165, "skySnrMaxJBiasCorr": 133.0135651 },
, "Id": 32, "MsgName": "CRT_AlertPositionThetaPhi", "skySnrMaxThetaDeg": 22.0729599, "skySnrMaxPhiDeg": 143.0297699 },
, "Id": 33, "MsgName": "CRT_AlertPositionRaDec", "skyRaDeg": 204.6620178, "skyDecDeg": 44.63864899 },
, "Id": 104, "MsgName": "CRT_VhfAlertPacketSend", "trigCriterium": 13704 },
, "Id": 34, "MsgName": "CRT_ProcessCycleEndTime", "timeMicros": 2202006130 },

Planned configuration updates

- **Put in XRDPIX module E6X24**
  - Ebands boundaries for this module corrected (by Sébastien Guillot, IRAP)

- **Change lowest energy band to start at 4 keV**
  - Currently the onboard Trigger starts at 5 keV, while OFTG start at 4 keV (and showed to work) → we can gain detection of very soft events, XRR, XRF
  - Need to recompute the efficiencies from 4 keV (with Wenjin Xie, NAOC)

- **Trigger thresholds lowering on GRM triggers**
  - A GRM trigger currently lowers the thresholds to SnrMax>6 and SnrMax/Std>6, in case of 3 GRDs triggering simultaneously (very rare!)
  - Update the configuration to lower the thresholds on 2 GRDs triggering (frequent).

- **Lower Alert thresholds** (while keeping Slew threshold at 7 for the time being)
  - To avoid having several days in sequence without a single Alert!
  - Currently SnrMax > 6.5, SnrMax/Std>6.5, SnrMaxDif2> 1.5 for all Estrips & Tscales
  - In quiet periods (no Xrdpix effects, no Galactic center region), number of false alerts is not really increased with SnrMax > 6 and SnrMax/Std > 6 (in quiet conditions, to be reassessed with current B1law pointings)
  - Adaptive threshold depending on Sources in FoV and depending on SAA-ext
  - Adaptive threshold depending on Tscale (lower for short Tscales, higher for long)

- **Slew delay setting**
  - Set to 26 s, this is often a bit short, for 20.48 s IMT cycle and 2.56 s CRT cycle, this allows only for 1 IMT + 2 CRT cycles, often we observe only 1 (or a few Alerts). An extension permits to get more Alerts and more confidence.

- **IMT change cycle time**
  - Currently cycle of 20.48s, and we have processing power margin
  - Shorter cycles (down to 18 s or even 15s) are possible (checked on LTU)
  - With 15 s cycle, IMT has access to shorter time windows:
    - 15s, 30s, 1min, 2min, 4min, 8min, 16min (instead of 22 min)

- **CRT change excess detection formula to favor short excesses.**
  - Currently too many 10 and 20s timescales observed
  - Current configured formula $\sim (N-B)/\sqrt{N}$ change to $\sim (N-B)/\sqrt{B}$

- **Localization configuration**
  - Currently the mask-detector height is configured to get good localization accuracy
  - A slight improvement (~0.5 arcmin for Crab like source) could be reached using the ECL/SAT rotation matrix (currently configured as identity matrix).