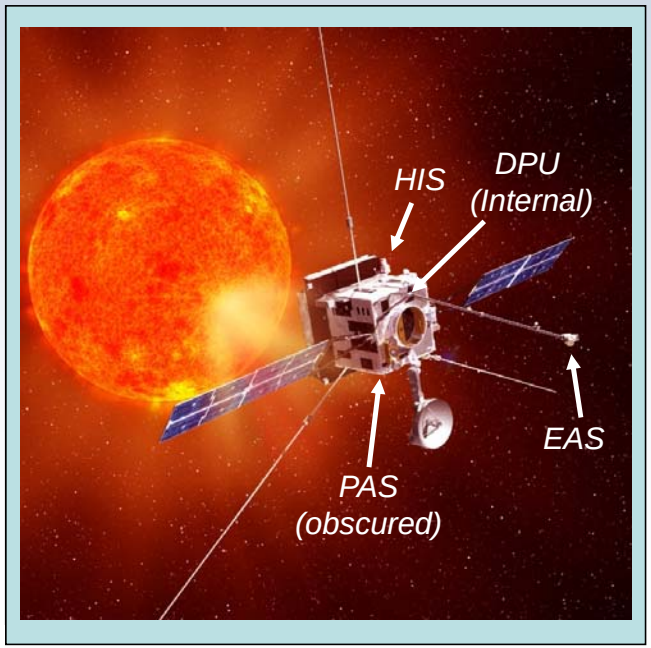
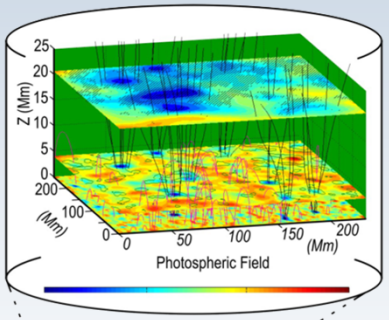
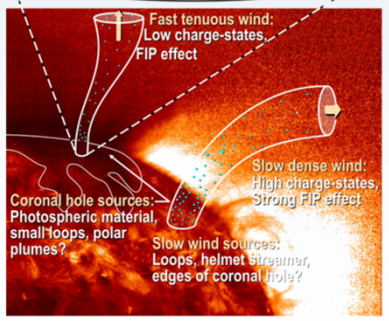
SWA Team Meeting, Online, 26th and 27th May 2020
Aspirations for SWA science planning in cruise phase

Gethyn Lewis







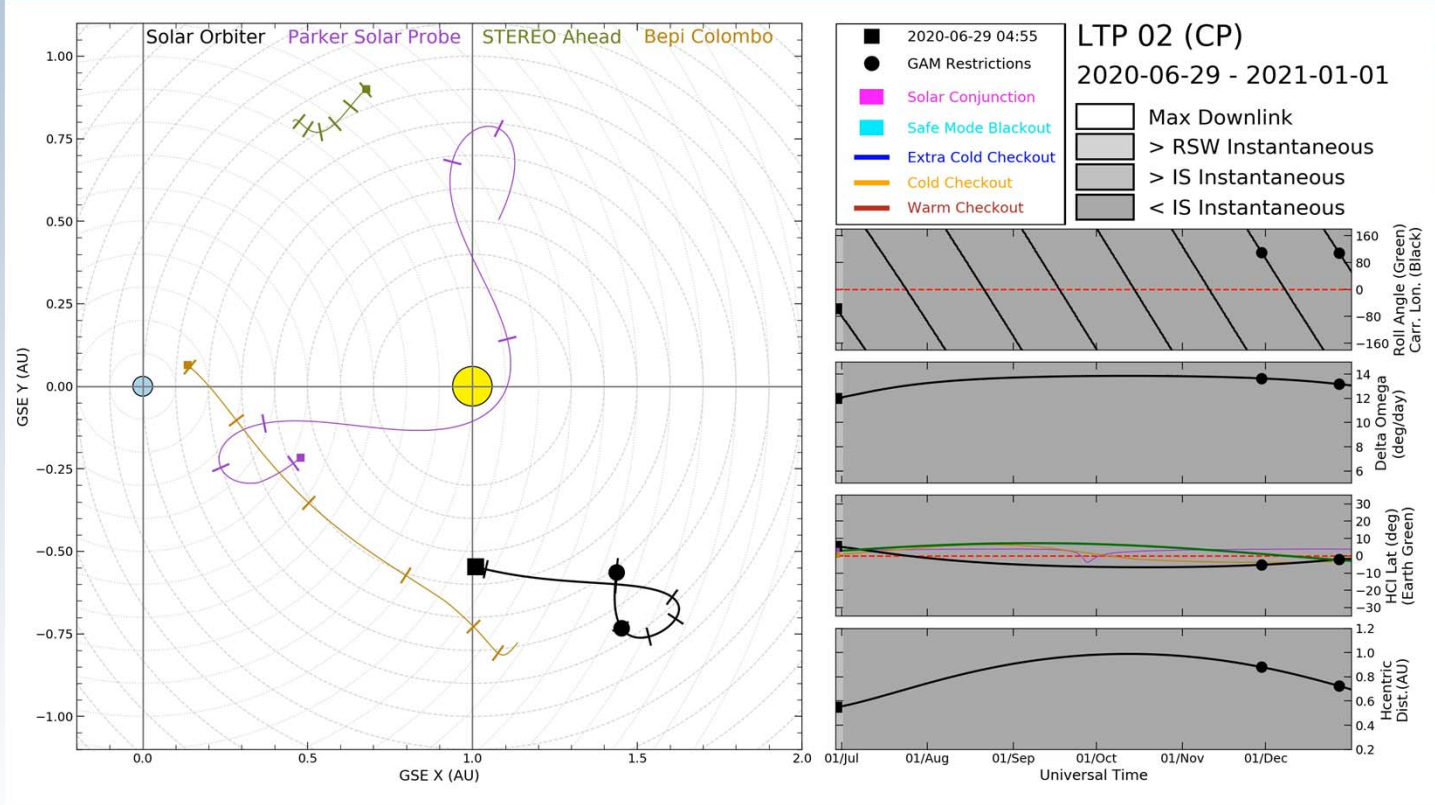
Aspirations for SWA science planning in cruise phase

- Brief overview of:
  - Planning cycles;
  - Constraints on operations for SWA;
  - Timescales for inputs to the process;

- Much more detail is available on the SOC planning web pages and in the SOOP kitchen planning tool, for example at:
  - https://issues.cosmos.esa.int/solarorbiterwiki/pages/viewpage.action?pageId=34047195
  - https://solarorbiter.esac.esa.int/soopkitchen/#/planning/plan/LTP02_Jun2020-Dec2020/15

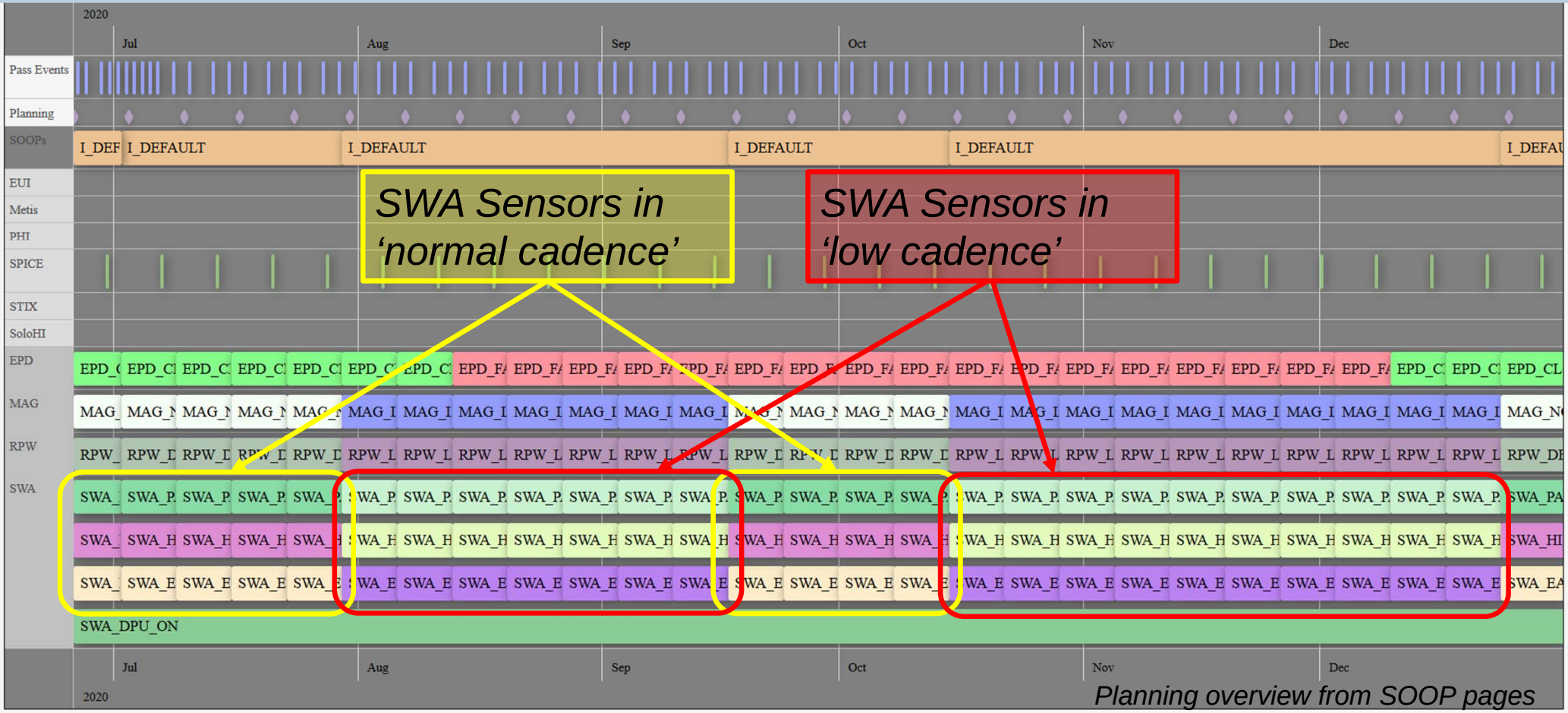
LTP02

- Venus GAM on 2020-12-27, GAM restriction period expected to run from 2020-11-29 to 2021-01-03;
- PSP perihelion on 27 Sep 2020;
- Large distance from Earth so data downlink capabilty is terrible and instruments will be in ’low-cadence mode for a good part of this period;



Movie from SOC pages

SWA Coarse view of observations in LTP2 (July-Dec 2020)



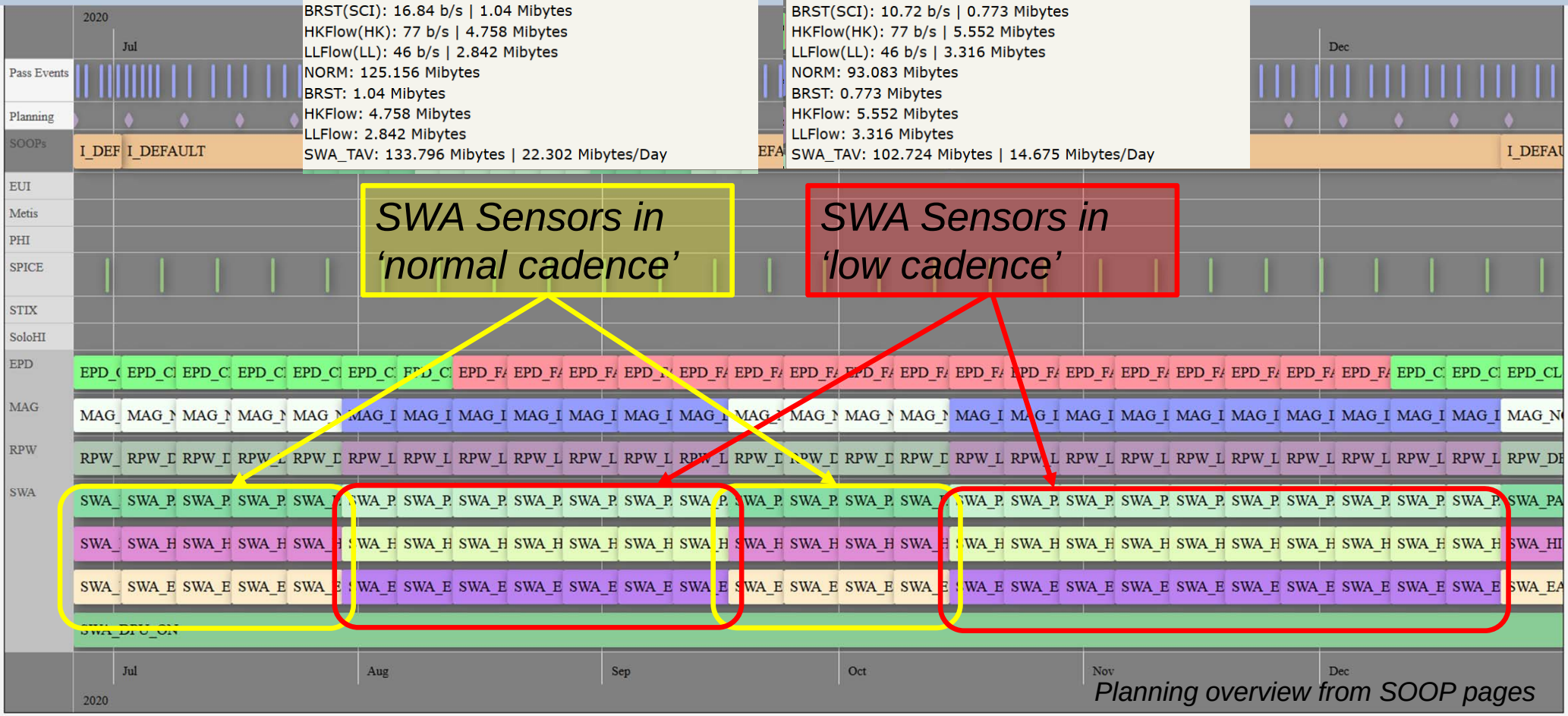
SWA Coarse vi 2

SWA_PAS_NORMAL11_BURST11
2020-06-26T00:00:00Z (178)->2020-07-01T23:58:50Z (183)
Module: PAS
SOC OBS_IDs: SSWA_020A_IDF_116_7RRN_11A
BURST_MINS: 5 mins
PAS_COMPRESSION: 7
POWER: 4.8 W
NORM(SCI): 2025.51 b/s | 125.156 Mibytes
BRST(SCI): 16.84 b/s | 1.04 Mibytes
HKFlow(HK): 77 b/s | 4.758 Mibytes
LLFlow(LL): 46 b/s | 2.842 Mibytes
NORM: 125.156 Mibytes
BRST: 1.04 Mibytes
HKFlow: 4.758 Mibytes
LLFlow: 2.842 Mibytes
SWA_TAV: 133.796 Mibytes | 22.302 Mibytes/Day

SWA_PAS_NORMAL7_BURST7
2020-08-12T23:58:50Z (225)->2020-08-19T23:58:50Z (232)
Module: PAS
SOC OBS_IDs: SSWA_020A_IDF_112_TM8L_113
BURST_MINS: 5 mins
PAS_COMPRESSION: 7
POWER: 4.6 W
NORM(SCI): 1291.07 b/s | 93.083 Mibytes
BRST(SCI): 10.72 b/s | 0.773 Mibytes
HKFlow(HK): 77 b/s | 5.552 Mibytes
LLFlow(LL): 46 b/s | 3.316 Mibytes
NORM: 93.083 Mibytes
BRST: 0.773 Mibytes
HKFlow: 5.552 Mibytes
LLFlow: 3.316 Mibytes
SWA_TAV: 102.724 Mibytes | 14.675 Mibytes/Day

SWA Sensors in 'normal cadence'

SWA Sensors in 'low cadence'



Planning overview from SOOP pages

SWA Coarse vie

SWA_HIS_NORMAL_BURST
2020-07-08T23:58:50Z (190)->2020-07-15T23:58:50Z (197)
Module: HIS
SOC OBS_IDs: SSWA_020A_IDF_111_FQ1i_112
BURST_MINS: 5 mins
POWER: 13.01 W
NORM(SCI): 5271.63 b/s | 380.073 Mibytes
BRST(SCI): 181.01 b/s | 13.05 Mibytes
HKFlow(HK): 54 b/s | 3.893 Mibytes
LLFlow(LL): 4 b/s | 0.288 Mibytes
NORM: 380.073 Mibytes
BRST: 13.05 Mibytes
HKFlow: 3.893 Mibytes
LLFlow: 0.288 Mibytes
SWA_TAV: 397.305 Mibytes | 56.758 Mibytes/Day

SWA_HIS_LOW_BURST_HALF
2020-08-19T23:58:50Z (232)->2020-08-26T23:58:50Z (239)
Module: HIS
SOC OBS_IDs: SSWA_020A_IDF_112_cLSv_114
BURST_MINS: 5 mins
POWER: 13.01 W
NORM(SCI): 1933.26 b/s | 139.384 Mibytes
BRST(SCI): 181.01 b/s | 13.05 Mibytes
HKFlow(HK): 54 b/s | 3.893 Mibytes
LLFlow(LL): 4 b/s | 0.288 Mibytes
NORM: 139.384 Mibytes
BRST: 13.05 Mibytes
HKFlow: 3.893 Mibytes
LLFlow: 0.288 Mibytes
SWA_TAV: 156.616 Mibytes | 22.374 Mibytes/Day

SWA Sensors in 'normal cadence'

SWA Sensors in 'low cadence'

2020 Jul Dec

Pass Events
Planning
SOOPs I_DEF I_DEFAULT I_DEFAU
EUI
Metis
PHI
SPICE
STIX
SoloHI
EPD
MAG
RPW
SWA
SWA_DPU_ON

Jul Aug Sep Oct Nov Dec 2020

Planning overview from SOOP pages

SWA Coarse view

SWA_EAS_NOMINAL_BURST
2020-07-15T23:58:50Z (197)->2020-07-22T23:58:50Z (204)
Module: EAS
SOC OBS_IDs: SSWA_020A_IDF_111_zXft_113
BURST_MINS: 10 mins/day
POWER: 10.24 W
VDFS(SCI): 2629.29 b/s | 189.566 Mibytes
BRST(SCI): 910.22 b/s | 65.625 Mibytes
MOMS(SCI): 790.47 b/s | 56.991 Mibytes
HKFlow(HK): 168 b/s | 12.112 Mibytes
LLFlow(LL): 42.7 b/s | 3.079 Mibytes
VDFS: 189.566 Mibytes
BRST: 65.625 Mibytes
MOMS: 56.991 Mibytes
HKFlow: 12.112 Mibytes
LLFlow: 3.079 Mibytes
SWA_TAV: 327.374 Mibytes | 46.768 Mibytes/Day

SWA_EAS_LOW_BURST
2020-08-12T23:58:50Z (225)->2020-08-19T23:58:50Z (232)
Module: EAS
SOC OBS_IDs: SSWA_020A_IDF_112_CGop_113
BURST_MINS: 10 mins/day
POWER: 10.24 W
VDFS(SCI): 657.32 b/s | 47.392 Mibytes
BRST(SCI): 910.22 b/s | 65.625 Mibytes
MOMS(SCI): 790.47 b/s | 56.991 Mibytes
HKFlow(HK): 168 b/s | 12.112 Mibytes
LLFlow(LL): 42.7 b/s | 3.079 Mibytes
VDFS: 47.392 Mibytes
BRST: 65.625 Mibytes
MOMS: 56.991 Mibytes
HKFlow: 12.112 Mibytes
LLFlow: 3.079 Mibytes
SWA_TAV: 185.199 Mibytes | 26.457 Mibytes/Day

SWA Sensors in 'normal cadence'

SWA Sensors in 'low cadence'

2020 Jul Aug Sep Oct Nov Dec

Pass Events
Planning
SOOPs
EUI
Metis
PHI
SPICE
STIX
SoloHI
EPD
MAG
RPW
SWA
SWA_DPU_ON

Planning overview from SOOP pages

LTP03

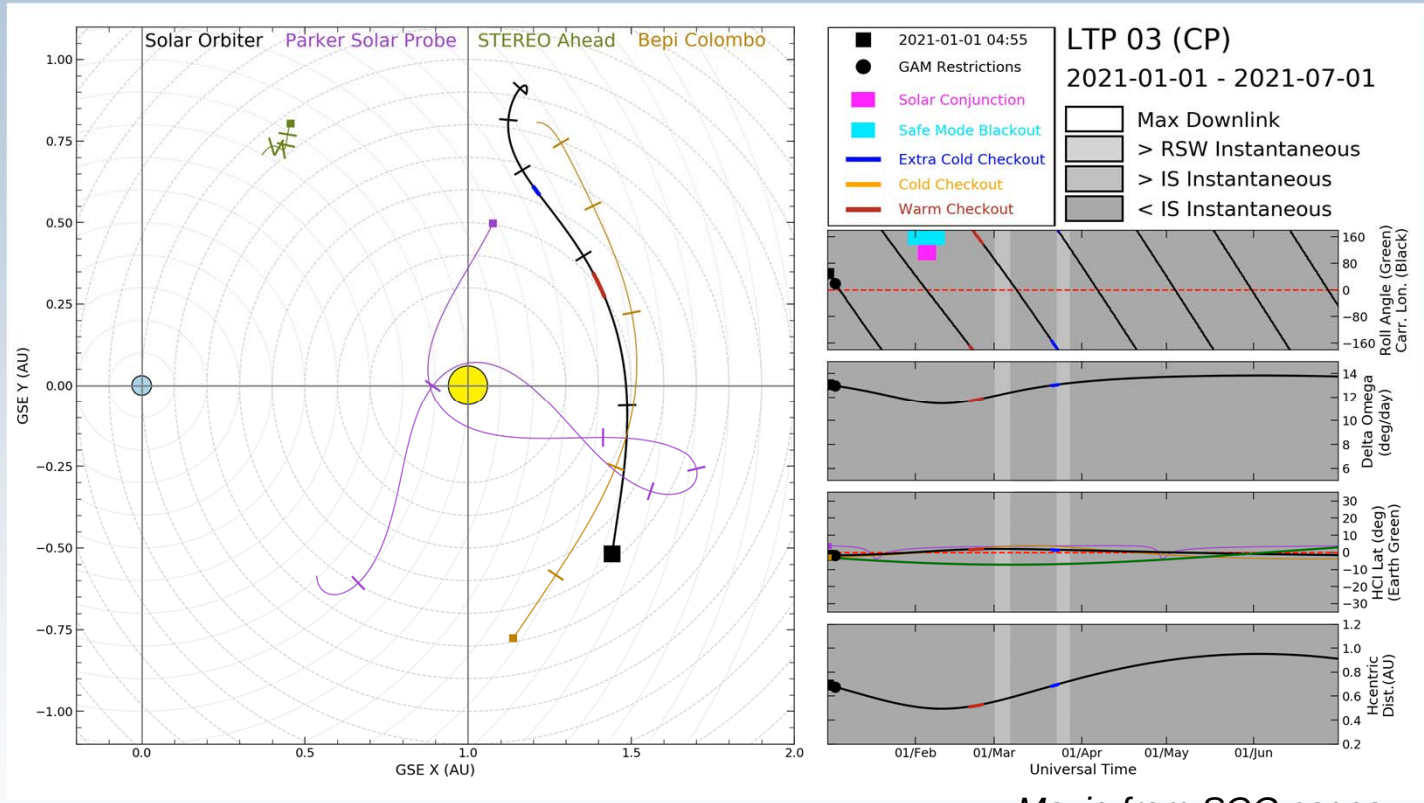
2021-01-01 to 2021-07-01

Superior conjunction from 2021-02-02 to 2021-02-08
There are No GAMs

2 RSCW:
#2 2021-02-20 to 2021-02-25 Warm
#3 2021-03-21 to 2021-03-24 Extra cold

IS modes: as in SOOP Kitchen plan (confirmed by ISWG of 31 Mar '20 to be adequate)

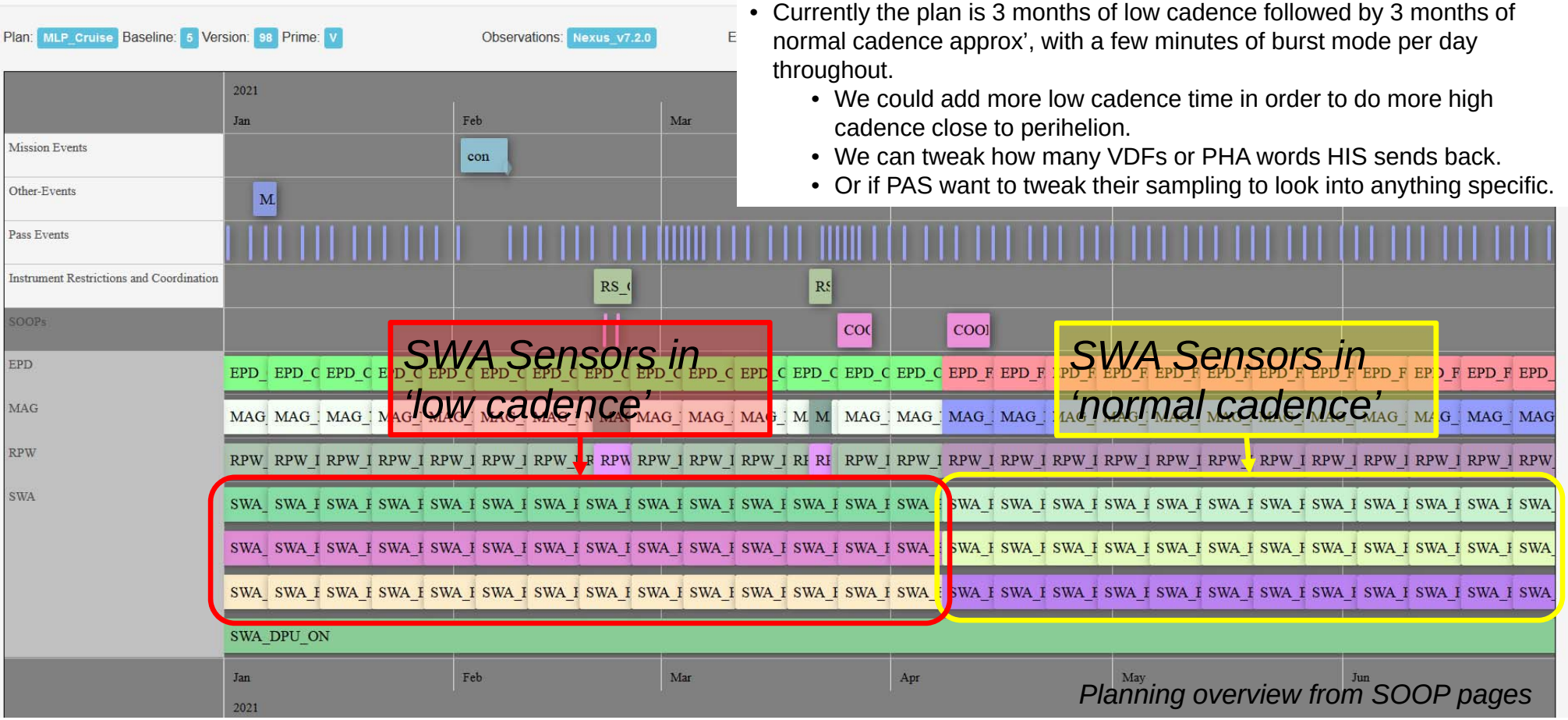
“The data return is going to be a bit bad, that's true, but there's some stuff you can do as long as the total data volume over the six months is about the same” – A. Walsh.



Movie from SOC pages

SWA Coarse view of observations in LTP3 (Jan-June 2021)

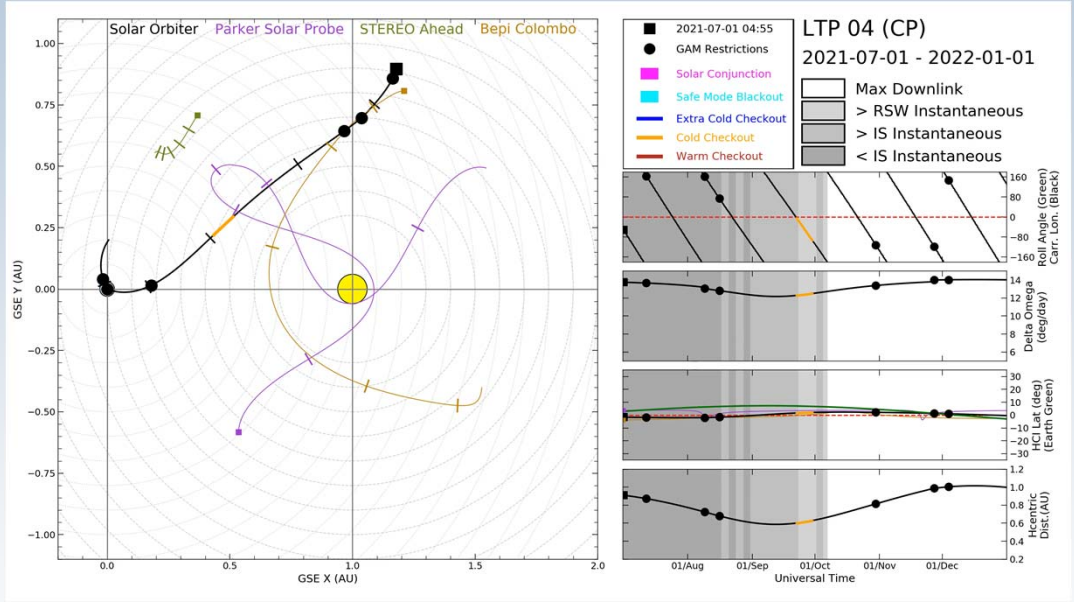
- Currently the plan is 3 months of low cadence followed by 3 months of normal cadence approx', with a few minutes of burst mode per day throughout.
  - We could add more low cadence time in order to do more high cadence close to perihelion.
  - We can tweak how many VDFs or PHA words HIS sends back.
  - Or if PAS want to tweak their sampling to look into anything specific.



Planning overview from SOOP pages

Planning

- Plans for LTP2 (July-Dec 2020) are fixed and we only have the flexibility to vary our operations in the weekly IOR's (refer to Chandra's presentation);
- There will be a 'Virtual' SOWG#16 in July where the final plan for LTP3 will be frozen.
- Thereafter the scheme is for planning to proceed with:
  - Science priority decisions at the SWT in ~Oct/~April;
  - Planning and agreement of the LTP at the SOWG's in January/July (so Jan 2021 for LTP4);
  - Enactment of the LTP for the following period July-Dec/Jan-June.
- There is great detail on mission level planing on the SOC pages, e.g.: https://issues.cosmos.esa.int/solarorbiterwiki/pages/viewpage.action?pageId=34047195



Movie from SOC pages

- MSSL is PoC for SWA in this process, so if there are specific opportunities you wish to make use of, then ideally we need to know about them on these kind of timescales:
  - Examples might be the identification of a comet, special campaign/event with another space-/ground-based facility, etc.;
  - Flexibility to react declines at each stage, especially if the required action is not resource neutral!