

BRAVO PM6: Evaluation of Baseline BA

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BBR L1 baselines



Latest EarthCARE BBR Level 1 baseline BA deployed on the 27th May 2025 → Users should use BA

Baseline B-NOM/B-SNG	Start Date (Frame)	Stop Date	Most important Updates
BA	27 May 2025 (05651C*) *small bug in the fore and aft view correction per detector (radiometric level is good) Fixed as from 05793C	ongoing	BBR CCDB version 9 including: CCOG updated: <ul style="list-style-type: none">- LUT of Radiances vs Blackbody Temperatures updated to account for Far Infrared sensitivity CCSN: <ul style="list-style-type: none">- SW Gain ratios updated to account to reduce stripping in the B-SNG product and to correct pre-launch SW calibration
AD	14 January 2025 + some campaigns	27 May 2025 (05651B)	Frame margins included
AC	25 July 2024	13 January 2025	

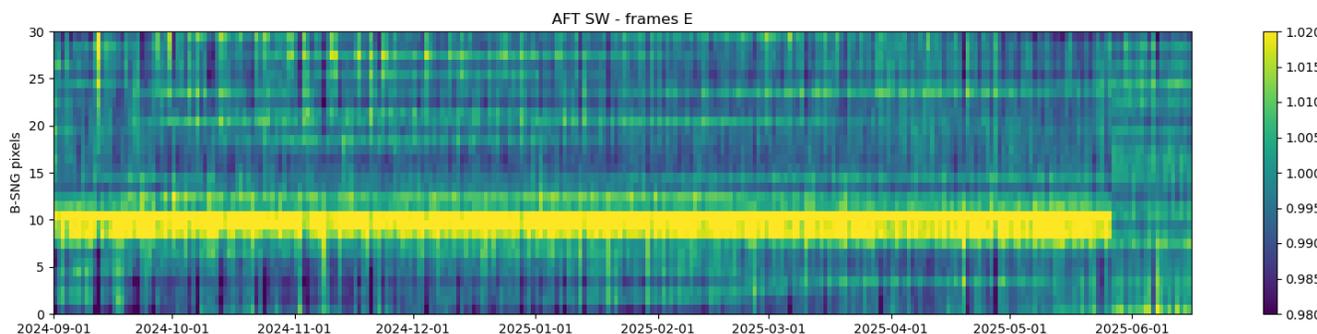
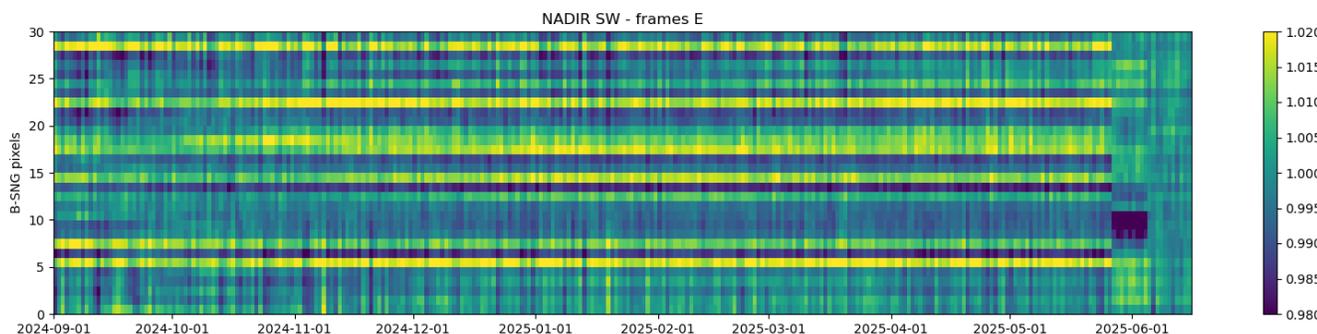
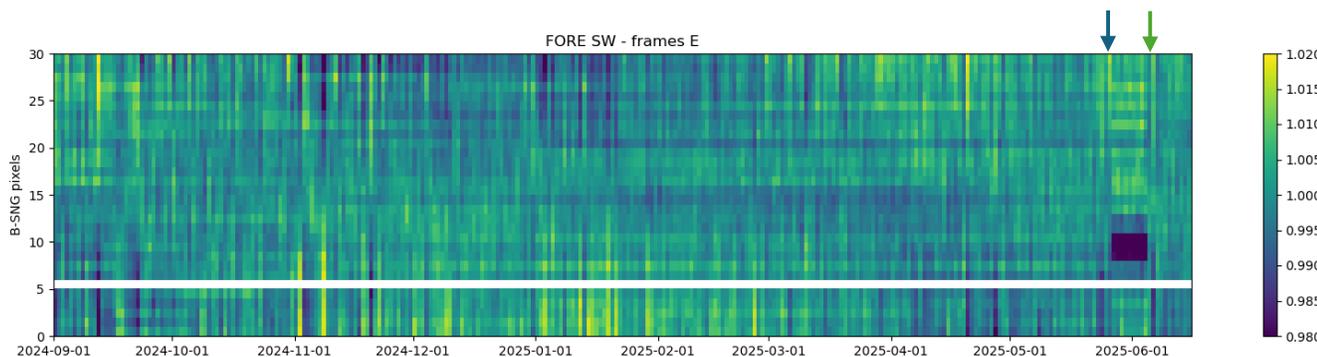
**New baseline used
for full
reprocessing**

B-SNG Calibration update baseline BA

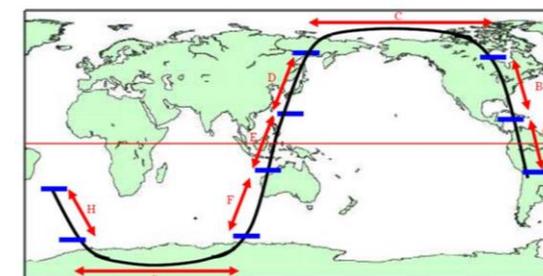
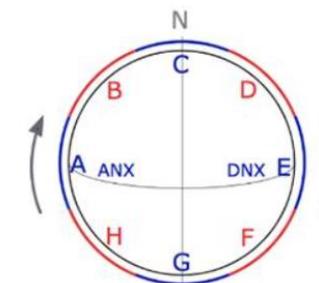


Latest EarthCARE BBR Level 1 baseline BA deployed on the 27th May 2025

SW
daytime



Bug in the stripping correction applied for the fore and nadir views → **corrected** the 5th June (frame 05793C onwards)



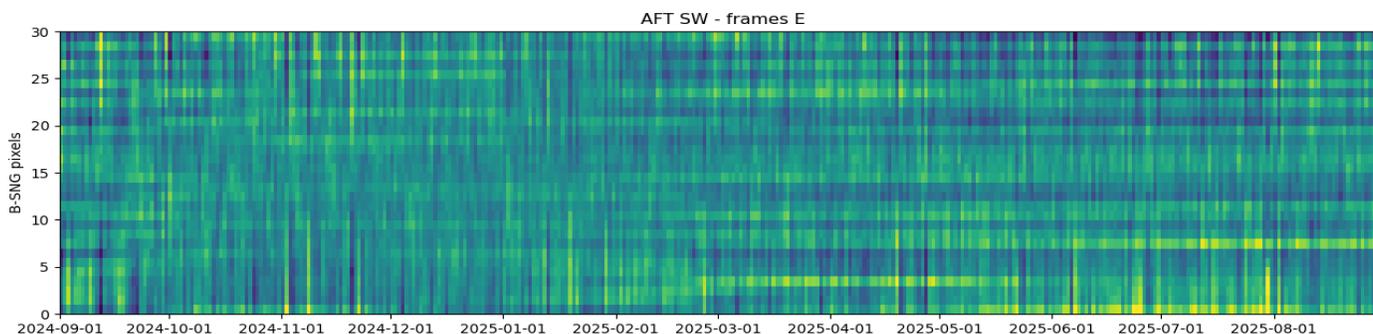
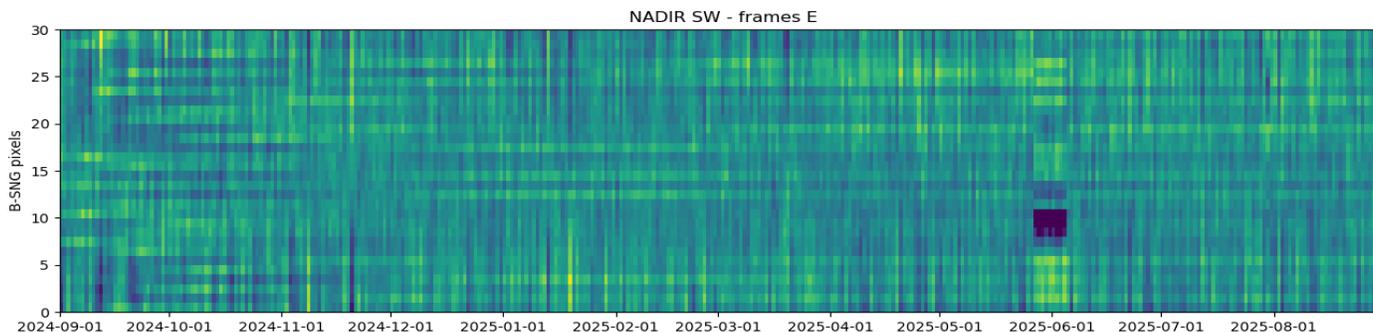
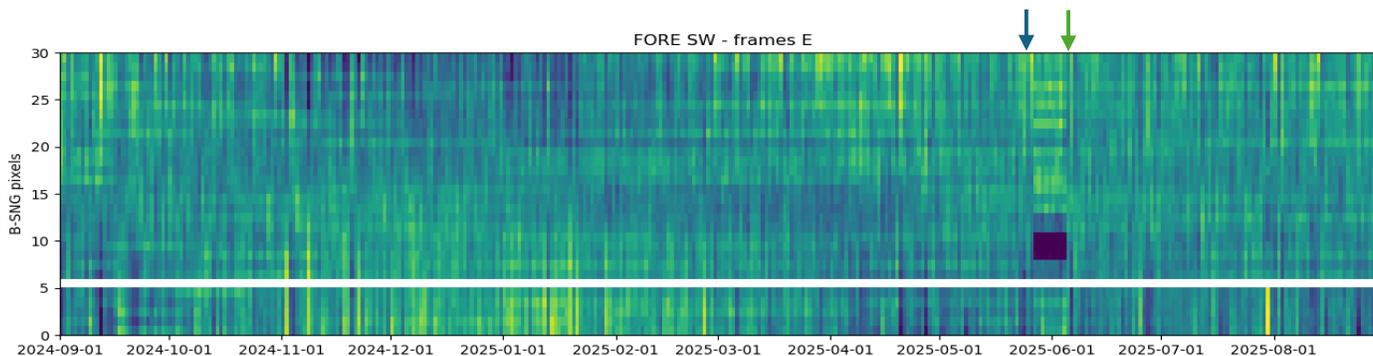
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B-SNG Calibration update baseline BA

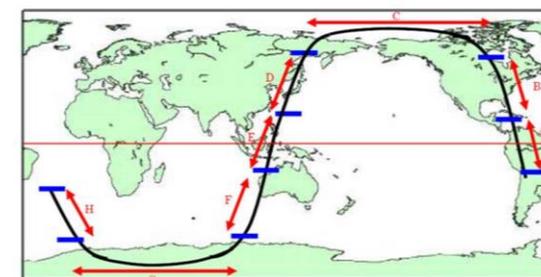
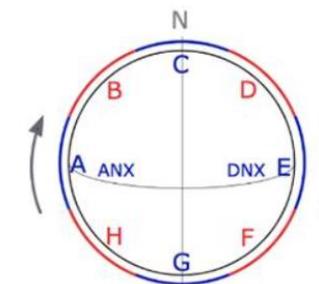


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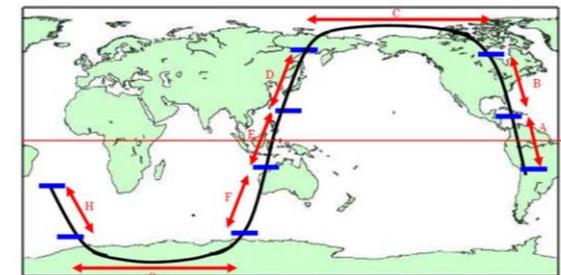
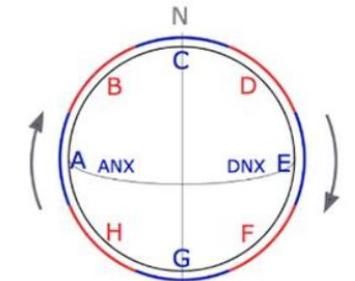
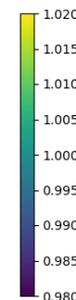
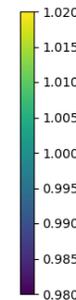
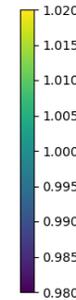
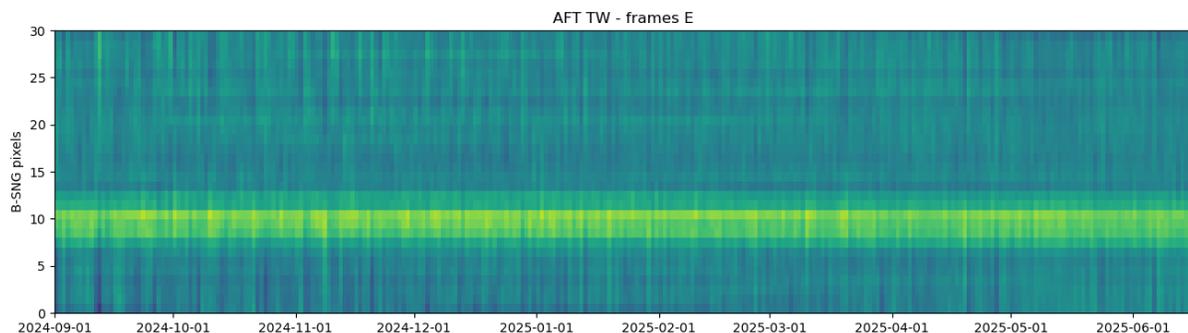
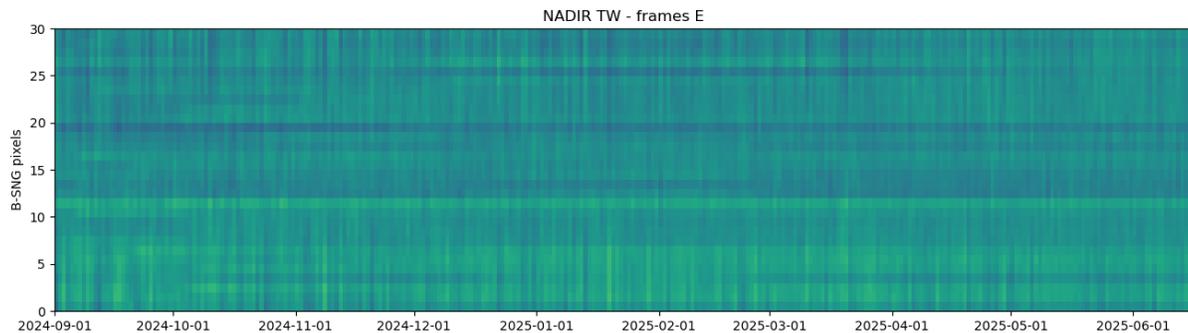
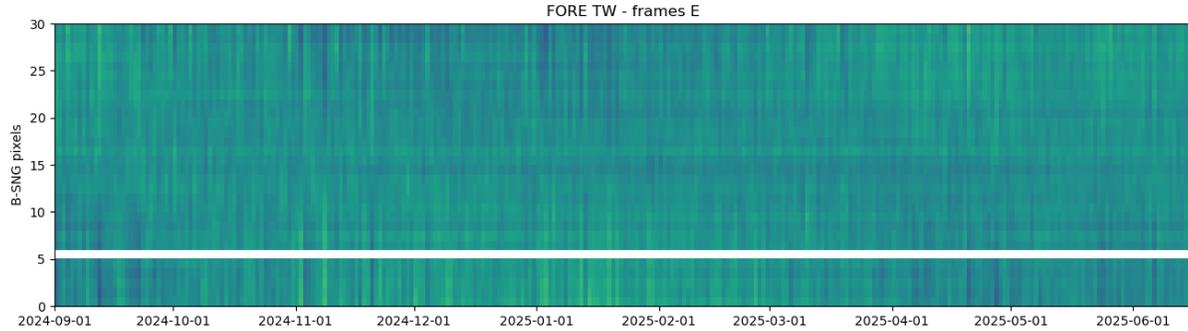
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B-SNG Calibration update baseline BA



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TW
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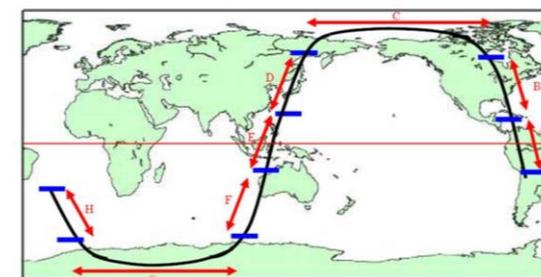
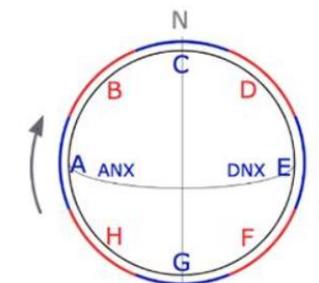
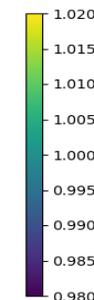
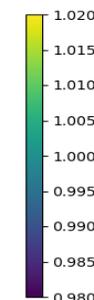
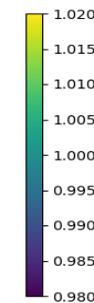
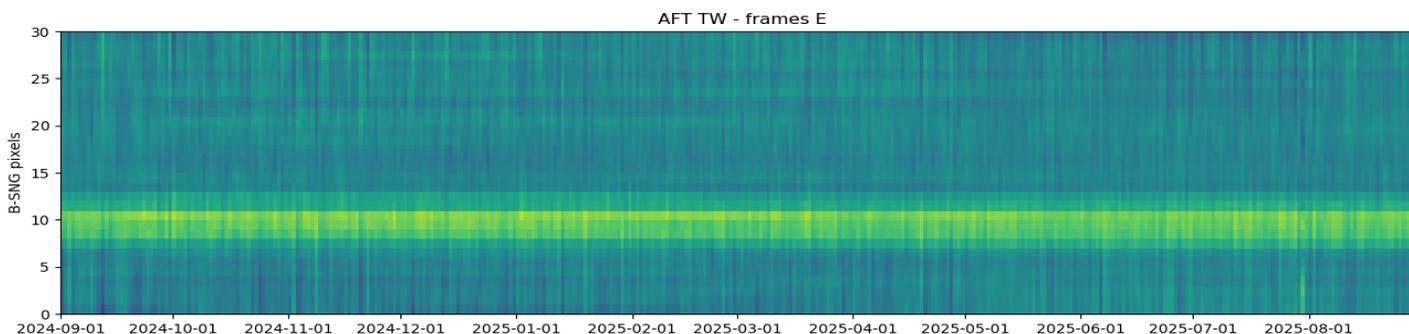
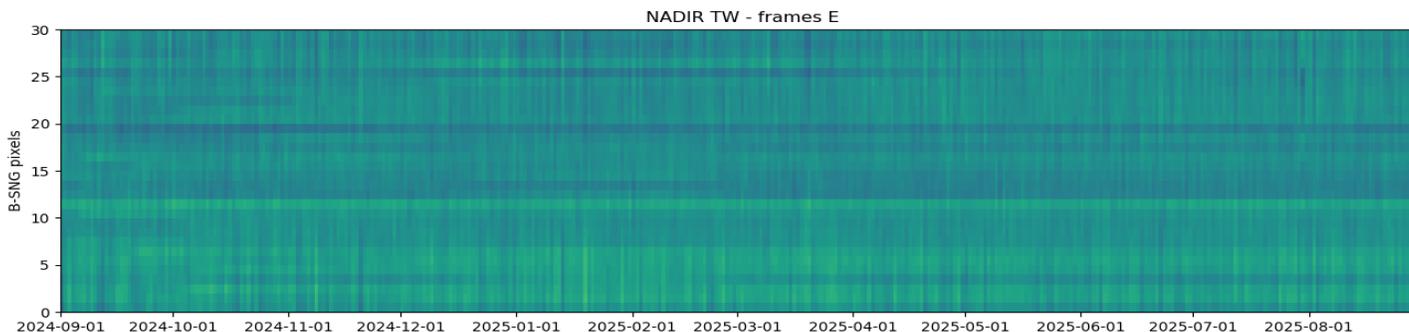
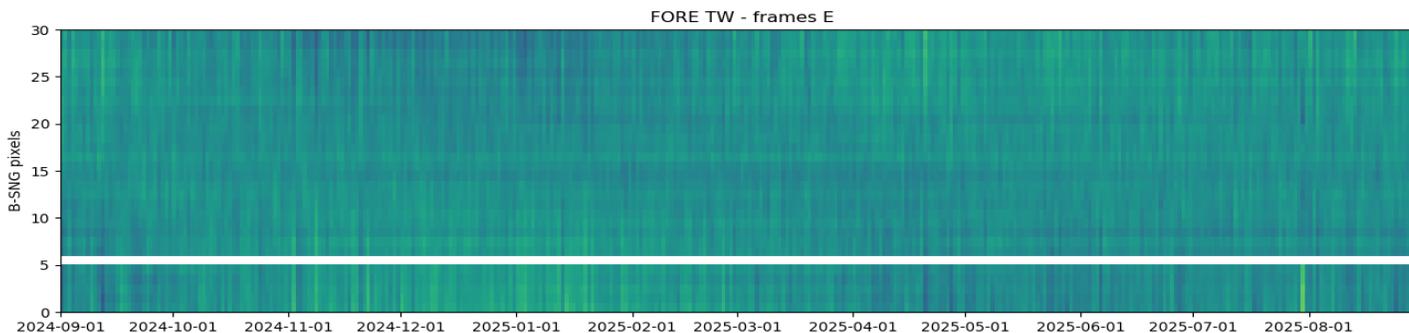
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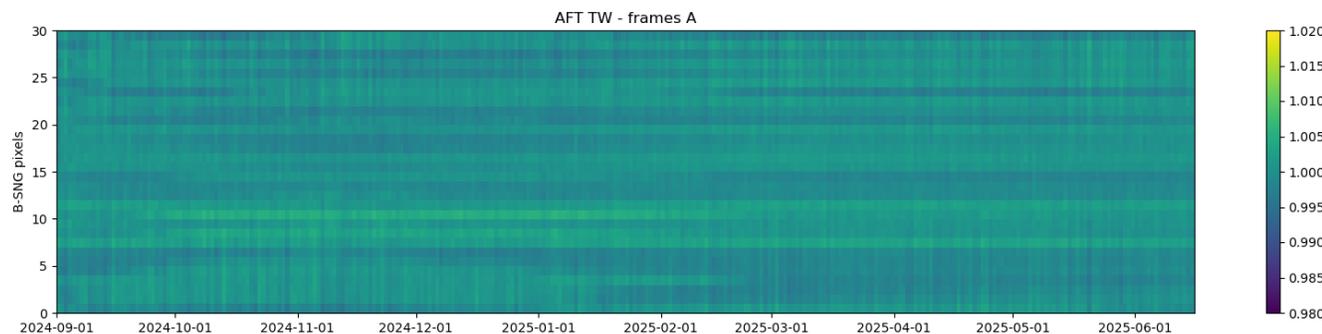
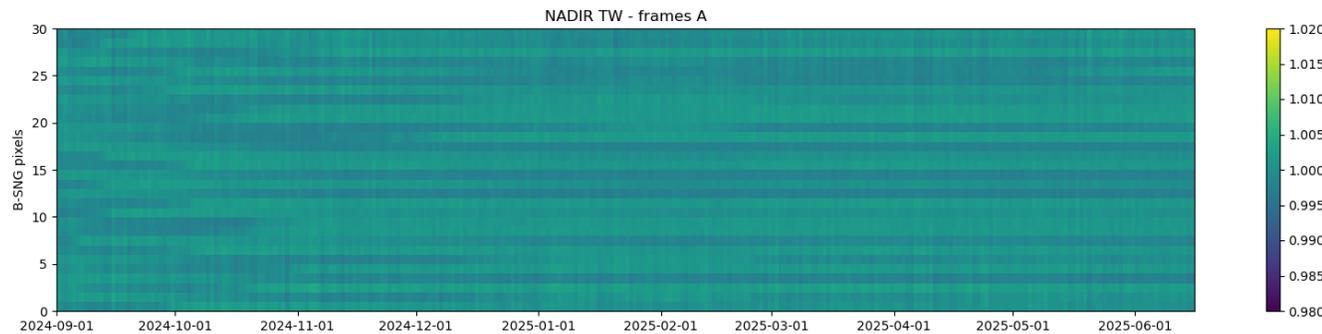
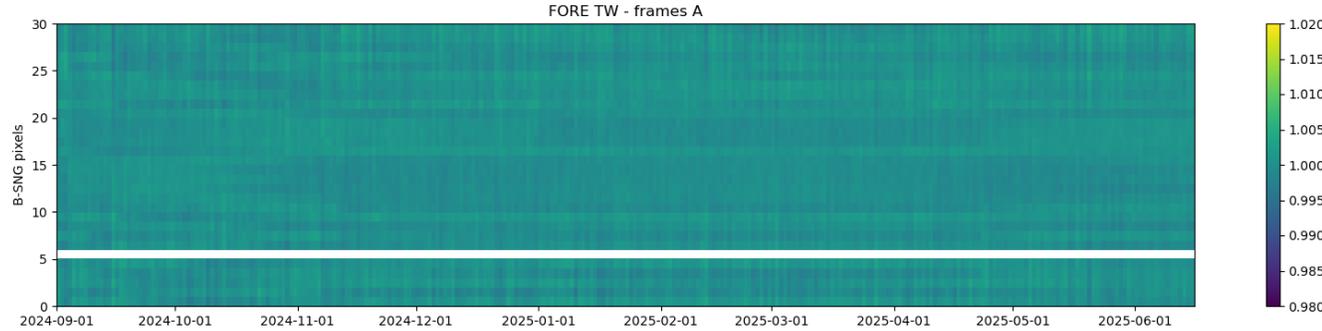
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B-SNG Calibration update baseline BA



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TW
nighttime

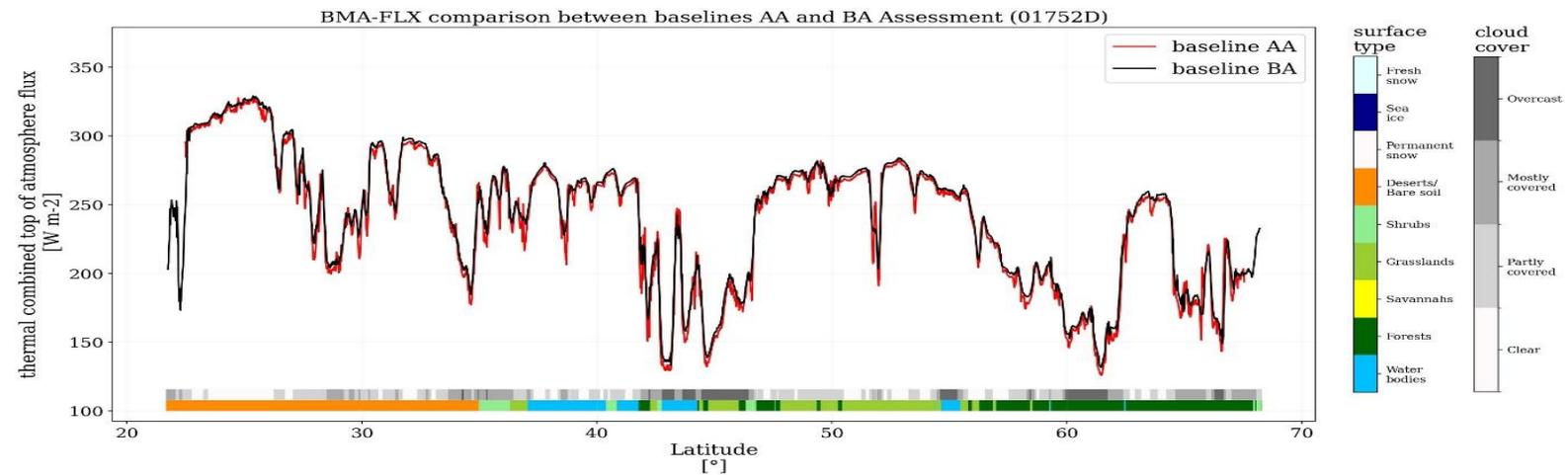
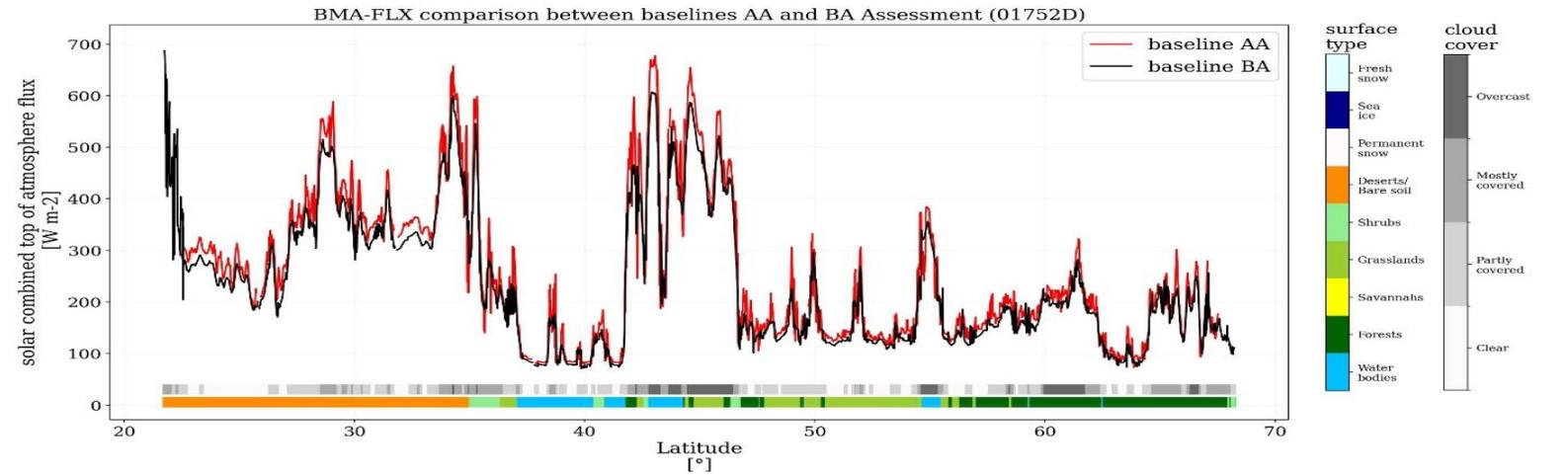


BMA-FLX updates baseline AA/BA



Main changes:

- Radiometric level of BMA-FLX fluxes
BA updated indirectly via BM-RAD
(see plots in the right)



GERB-like/BBR comparisons baseline BA: SW and LW Radiances

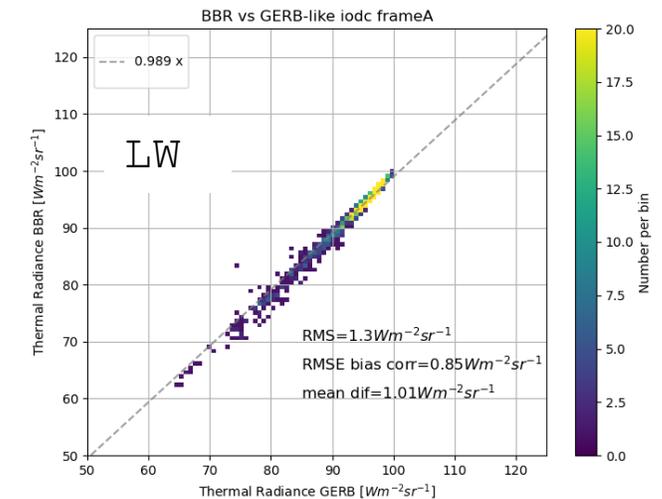
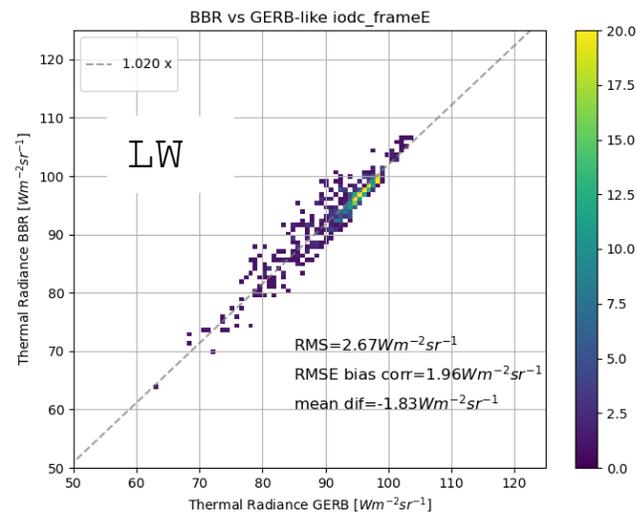
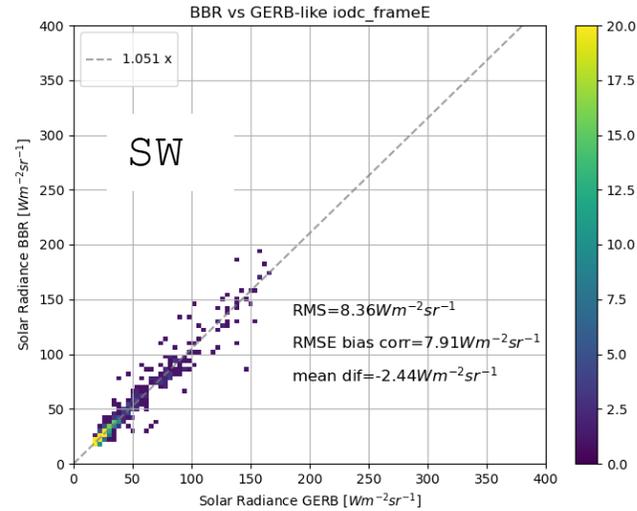


- GERB-1 is over the Indian ocean
- Data from 28 May 2025 to 5 August 2025
- Only nadir comparisons

Daytime

Nighttime

- BBR solar radiances are higher than GERB-like



GERB VZA < 3 deg
 Δ dist < 3 km
 Δ time < 5 min

GERB-like/BBR comparisons baseline BA: SW and LW Radiances

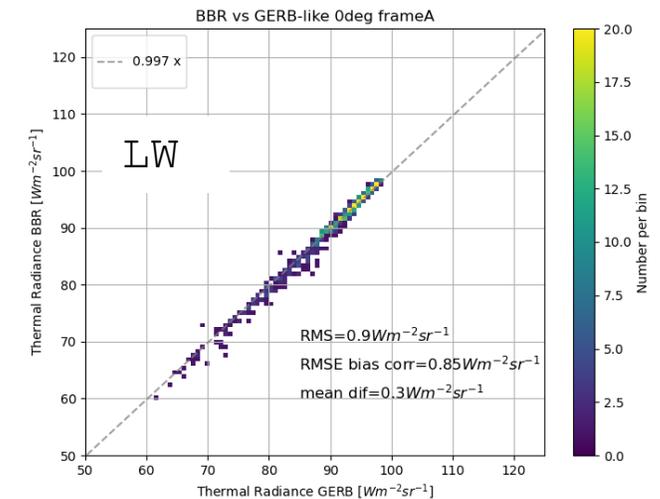
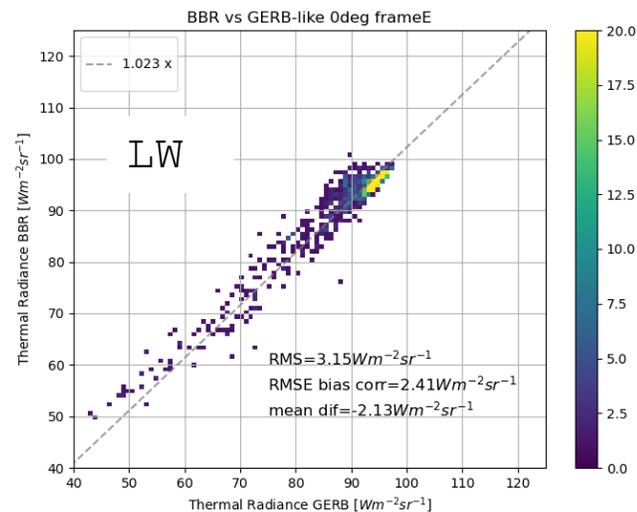
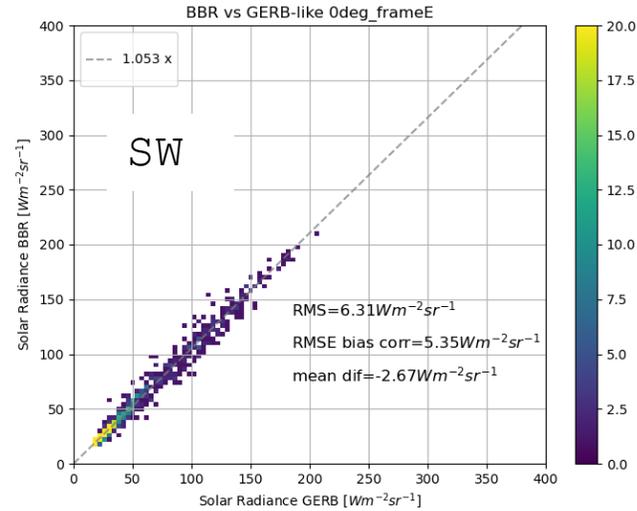


Daytime

Nighttime

- GERB-3 at 0deg
- Data from 28 May 2025 to 5 August 2025
- Only nadir comparisons

- BBR solar radiances are higher than GERB-like



GERB VZA < 3 deg
 Δ dist < 3 km
 Δ time < 5 min

GERB/BBR comparisons baseline BA: SW and LW Radiances



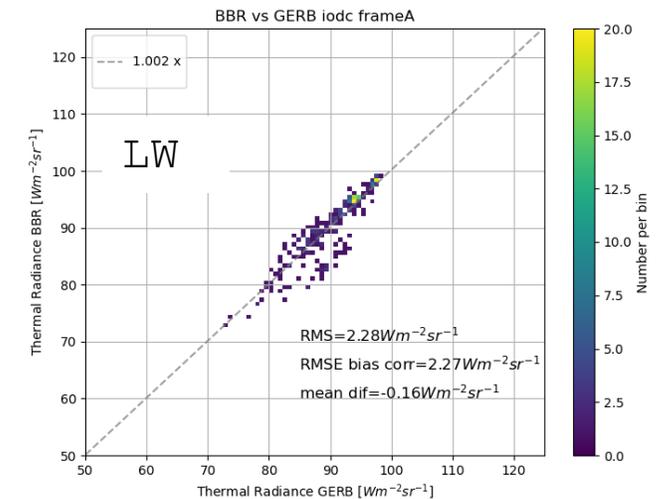
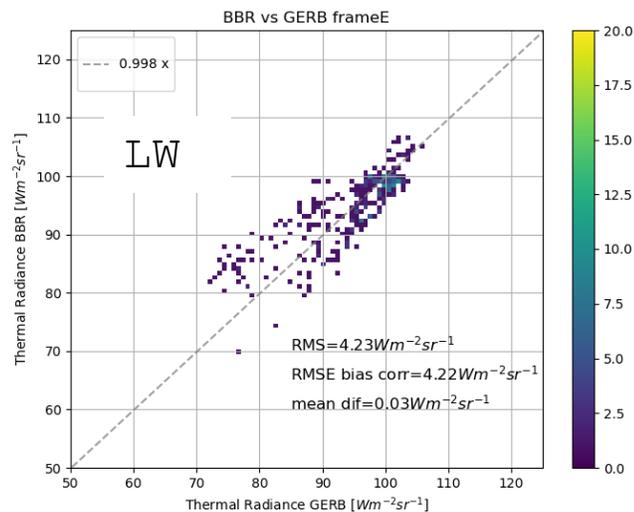
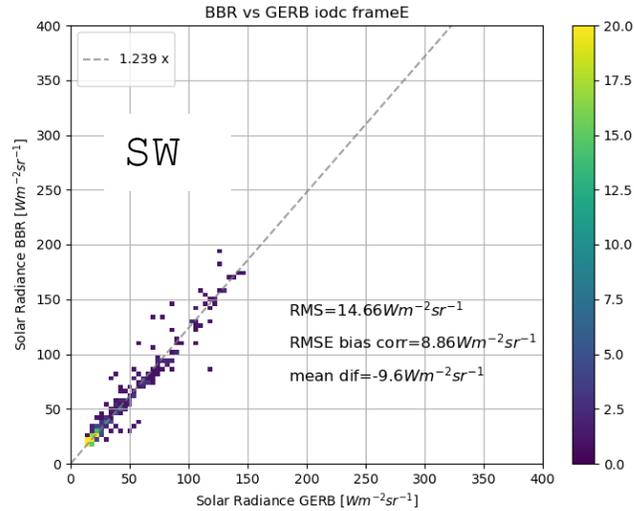
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Daytime

Nighttime

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GERB/BBR comparisons baseline BA: SW and LW Radiances

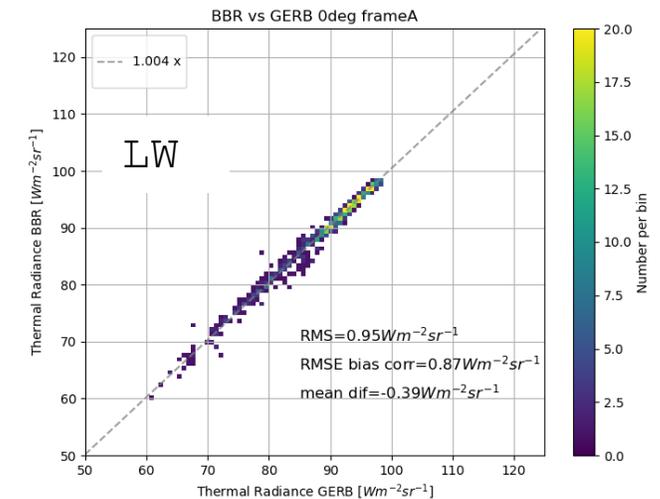
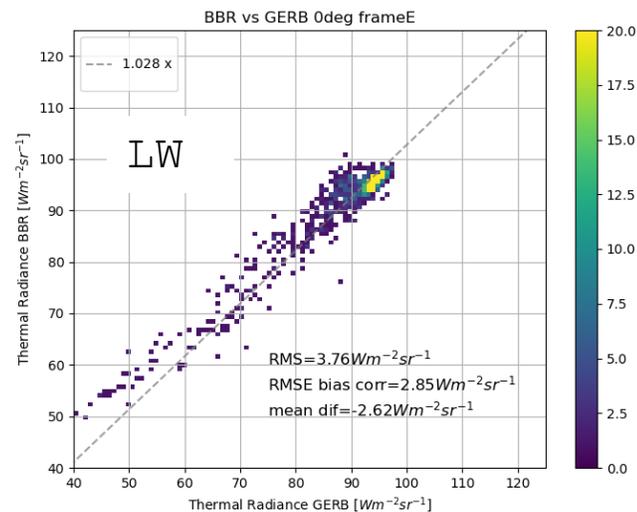
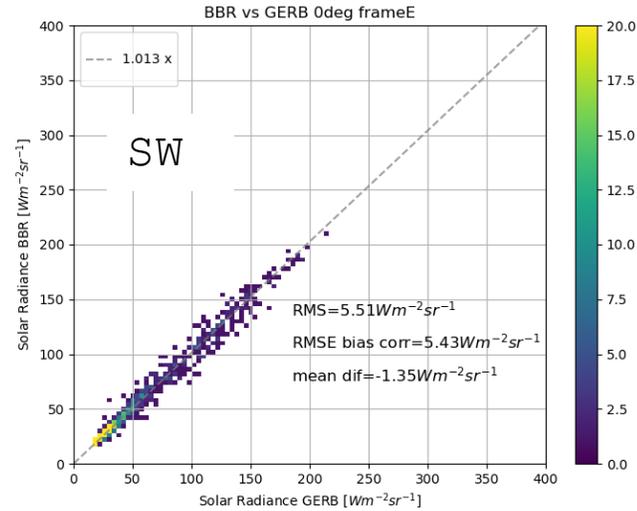


Daytime

Nighttime

- GERB-3 at 0deg
- Data from 28 May 2025 to 5 August 2025
- Only nadir comparisons

- BBR solar radiances are higher than GERB-like



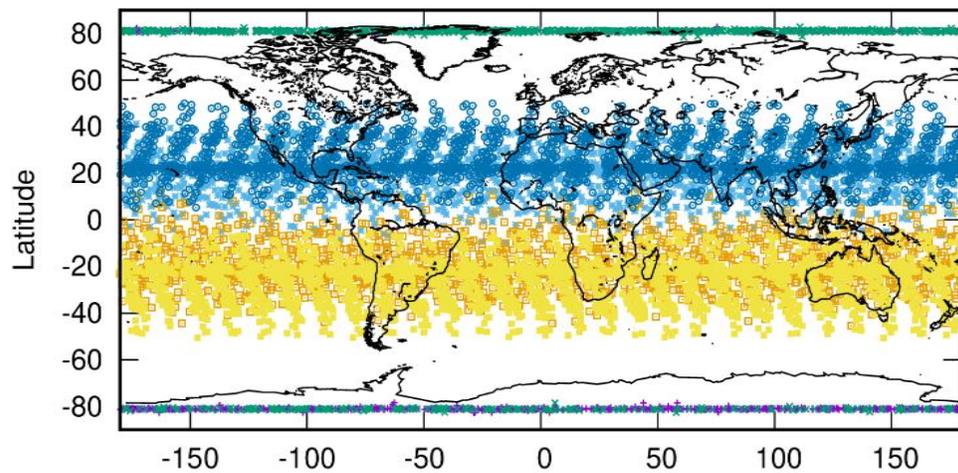
GERB VZA < 3 deg
 Δ dist < 3 km
 Δ time < 5 min

CERES SSF comparison: SW Flux, Daytime



10 August
2024 to
February 2025

CERES VZA < 50°
Δdist < 3 km
Δtime < 5 min



SW flux ratio wrt CERES FF:

Aft : BBR = 1.033 CERES

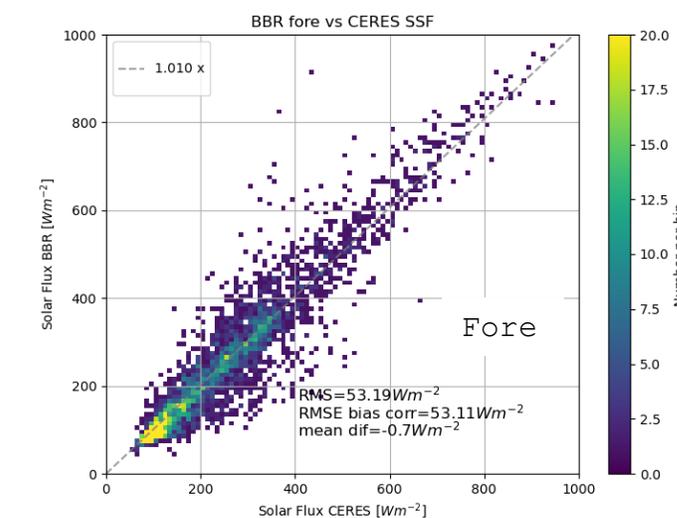
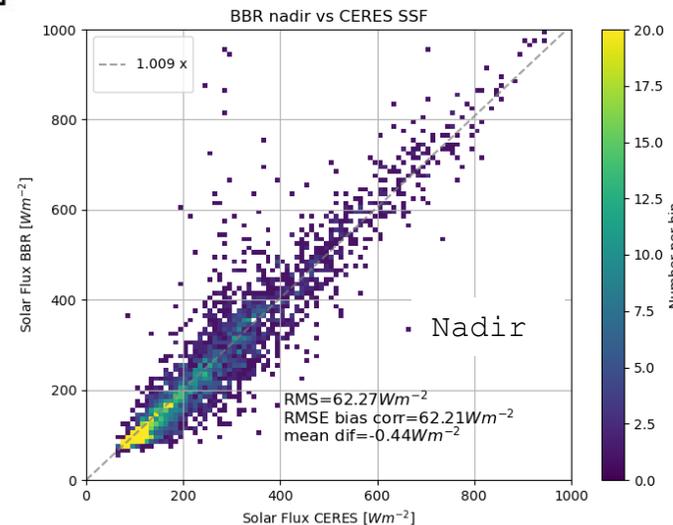
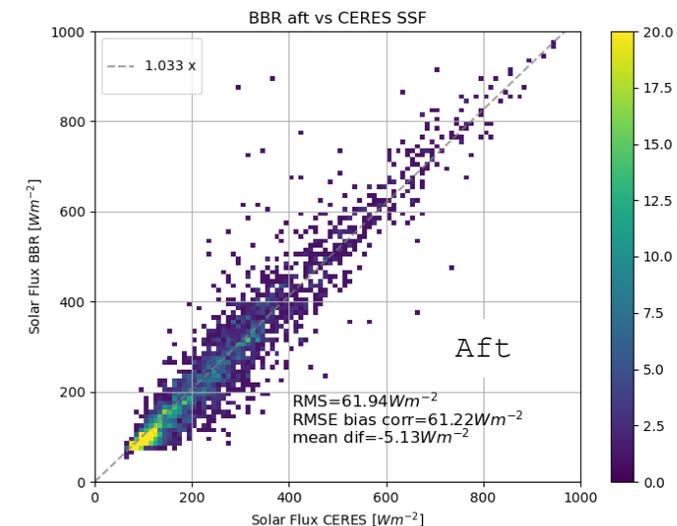
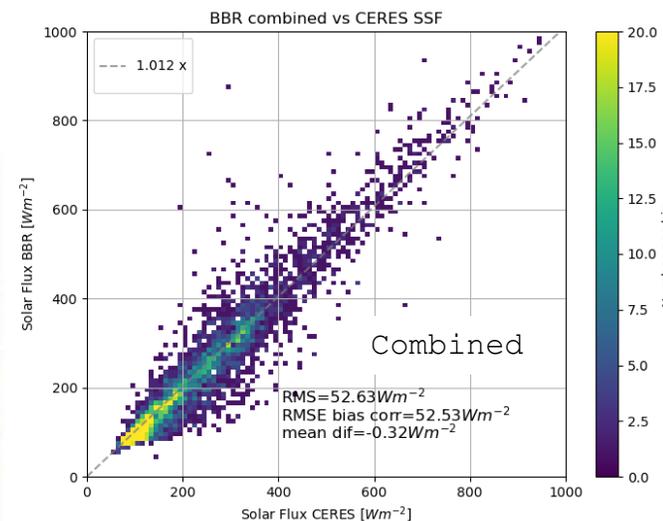
Nadir: BBR = 1.009 CERES

Fore : BBR = 1.010 CERES

Combined: BBR = 1.012 CERES

Terra FM1 - day
Terra FM1 - night
Aqua FM3 - day
Aqua FM3 - night
NOAA20 FM6 - day
NOAA20 FM6 - night

+
x
■
□
●



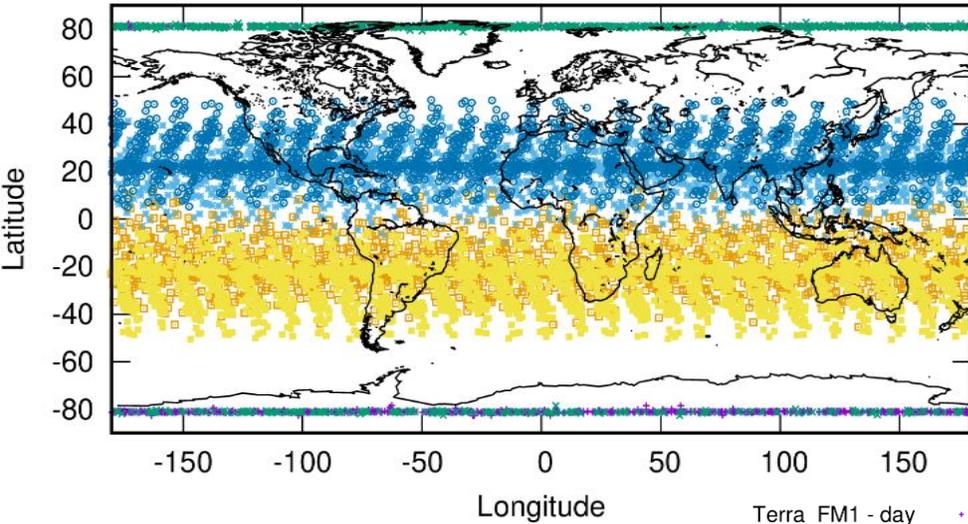
Note : SW gain corrected to mimic future baseline "BA"

CERES SSF comparison: LW Flux



10 August 2024
to February 2025

CERES VZA < 50
 $\Delta\text{dist} < 3 \text{ km}$
 $\Delta\text{time} < 5 \text{ min}$



LW flux ratio wrt CERES FF:

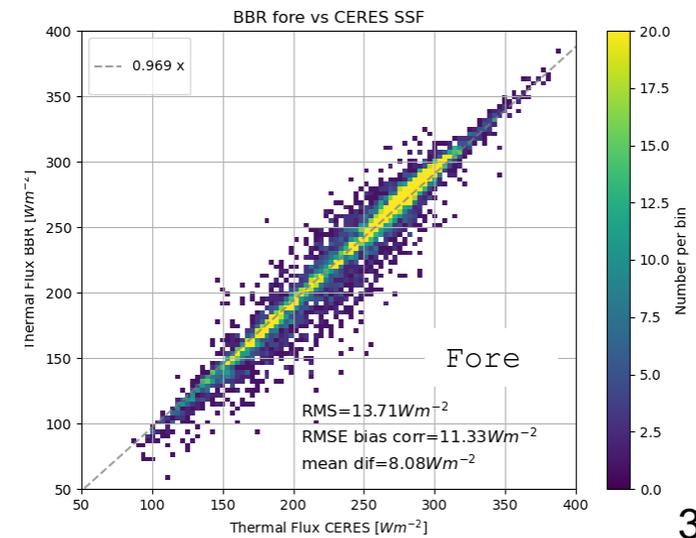
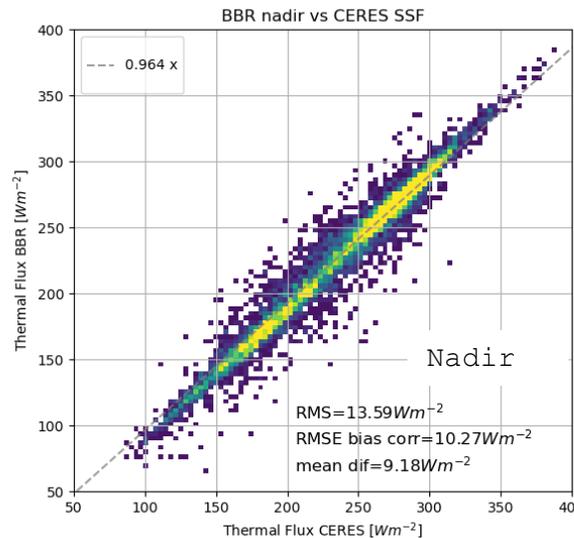
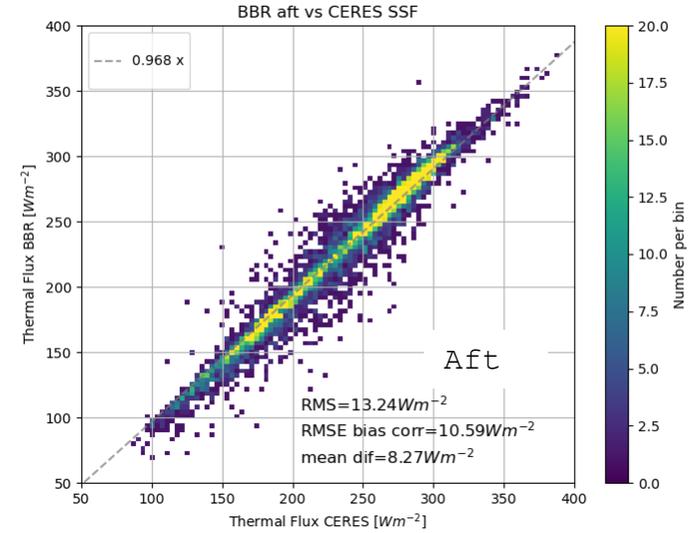
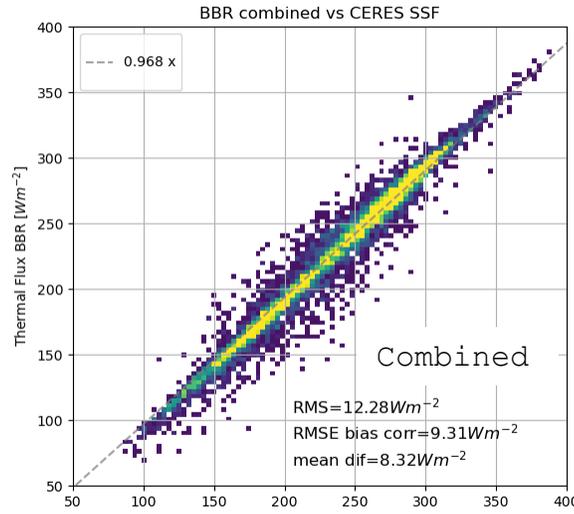
Aft : BBR = 0.968 CERES

Nadir: BBR = 0.964 CERES

Fore : BBR = 0.969 CERES

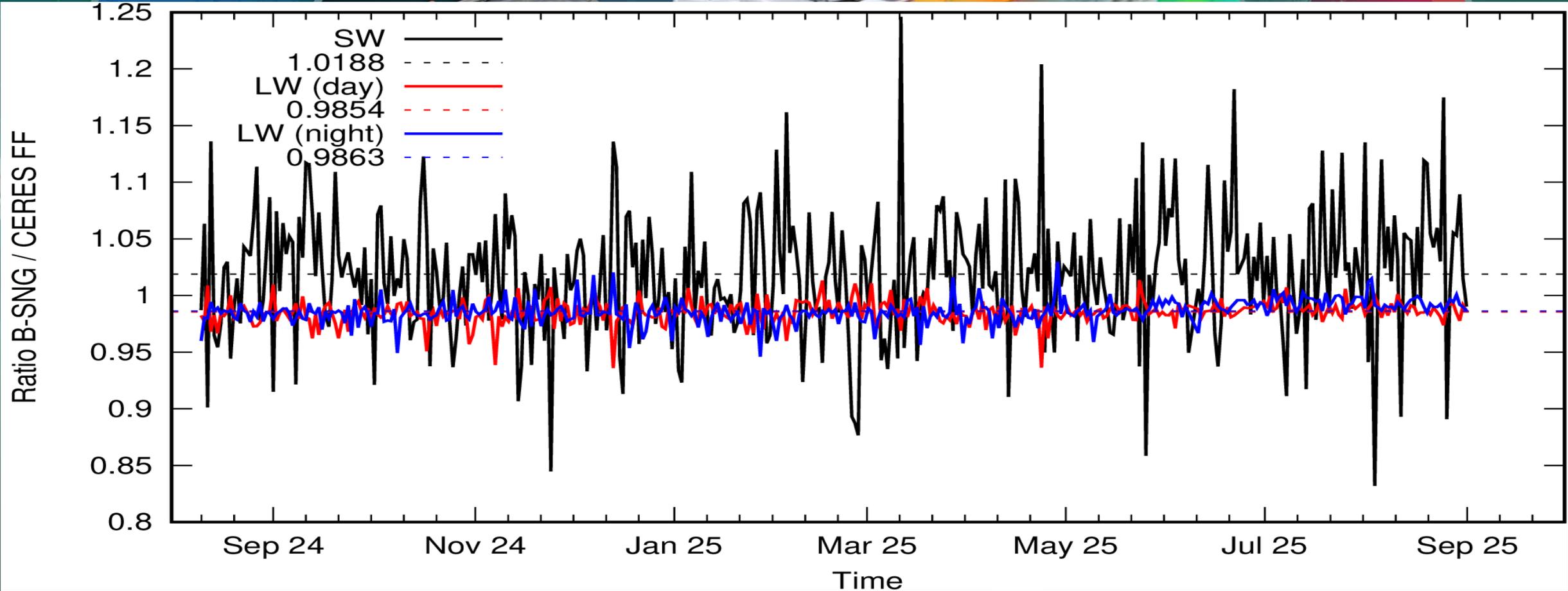
Combined: BBR = 0.968 CERES

Terra FM1 - day *
Terra FM1 - night x
Aqua FM3 - day +
Aqua FM3 - night o
NOAA20 FM6 - day □
NOAA20 FM6 - night ●



Note : factor will increase to ~0.985 in baseline "BA".

Temporal Stability – BBR versus FM6/NOAA20 FLASHFlux– Daily ratio

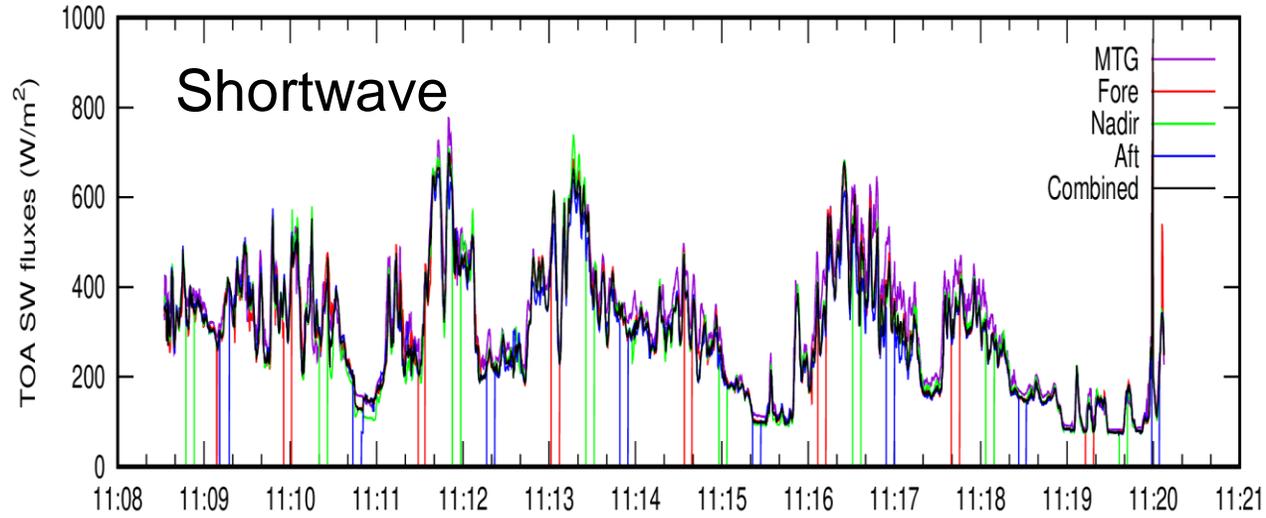


→ No evidence of temporal degradation so far.

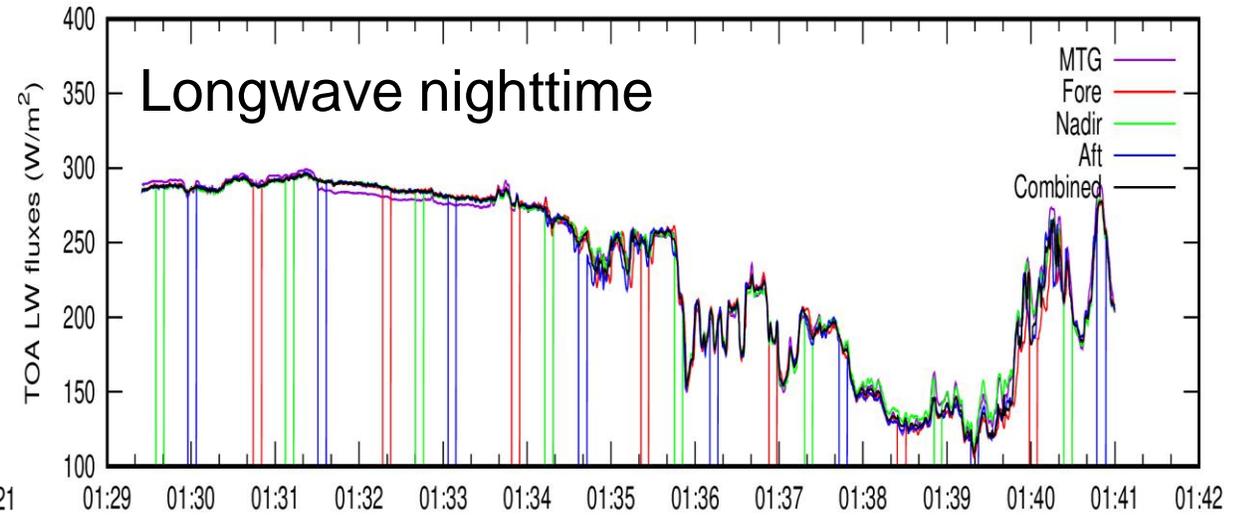
Preliminary MTG Fluxes comparison – Aug 2025



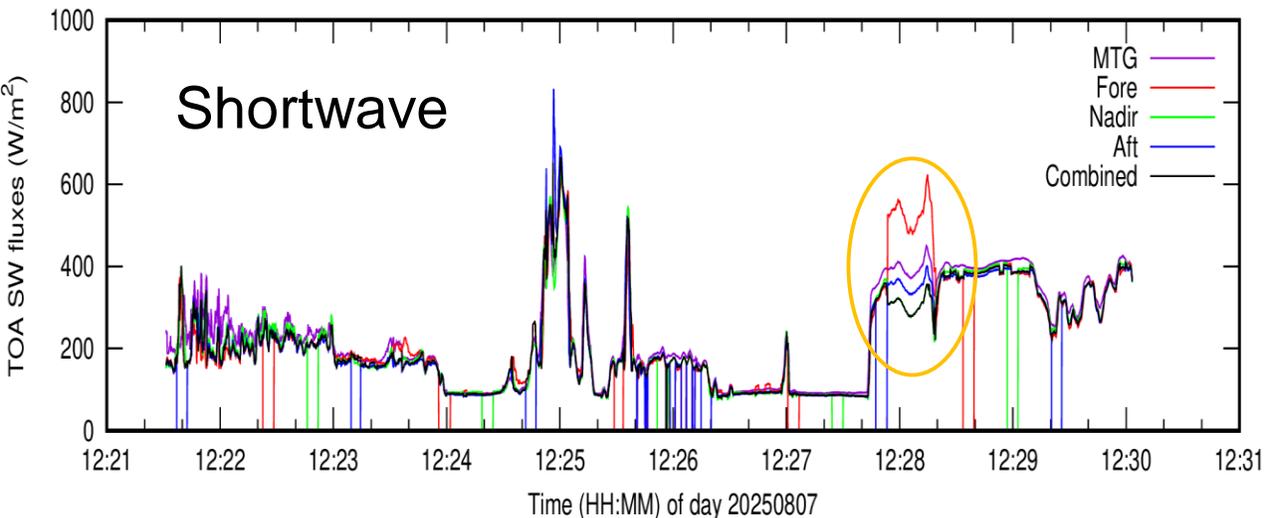
Frame 06745E (day 20250805)



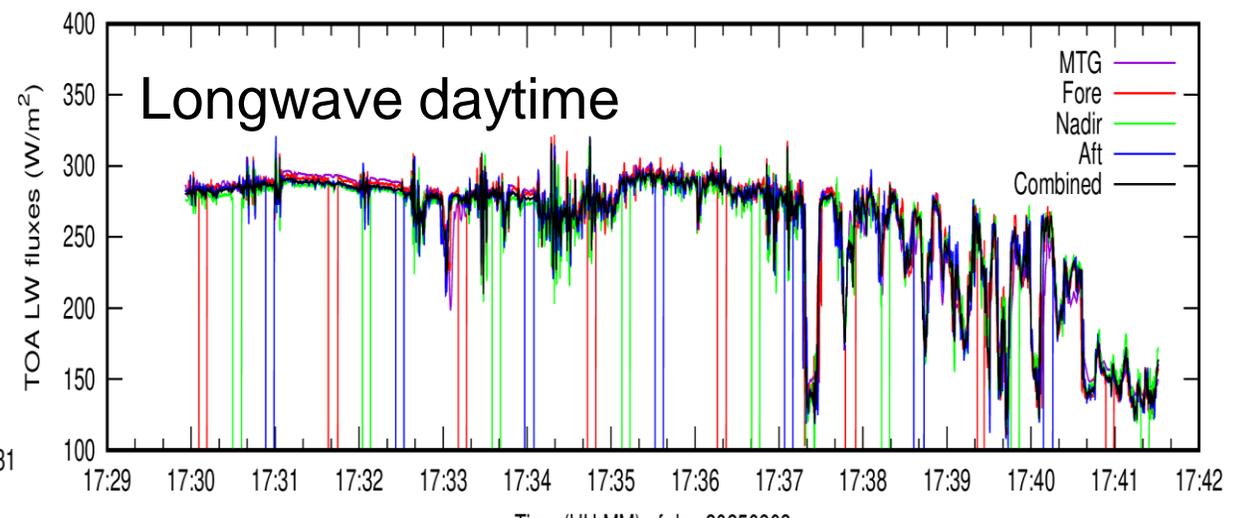
Frame 06677A (day 20250801)



Frame 06777D (day 20250807)



Frame 06718E (day 20250803)



Summary



- New baseline available (BA) for BBR L1 since 27/05/2025:
 1. Pre-launch Ground Calibration corrected
 2. Far IR spectral response used in the Radiance – Temperature LUT
 3. Stripping corrected (SW)
- In general very good agreement between the 3-BBR telescopes.
- In general good agreement with CERES and GERB, being the BBR SW radiances and fluxes slightly higher than those of CERES and the LW ones slightly lower.
- Still some on going work for the SW fluxes → Sensitive to co-registration of the off-nadir views, cloud mask/properties, CTH, MSI radiances, ADMs, etc.
- So far no indication of degradation