

## **RMIB GERB Processing (RGP) status**

## **RMIB On Line Shortterm Service (ROLSS) status**

## **CM SAF TOA radiation dataset status**

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<http://www.cmsaf.eu>

<http://gerb.oma.be>

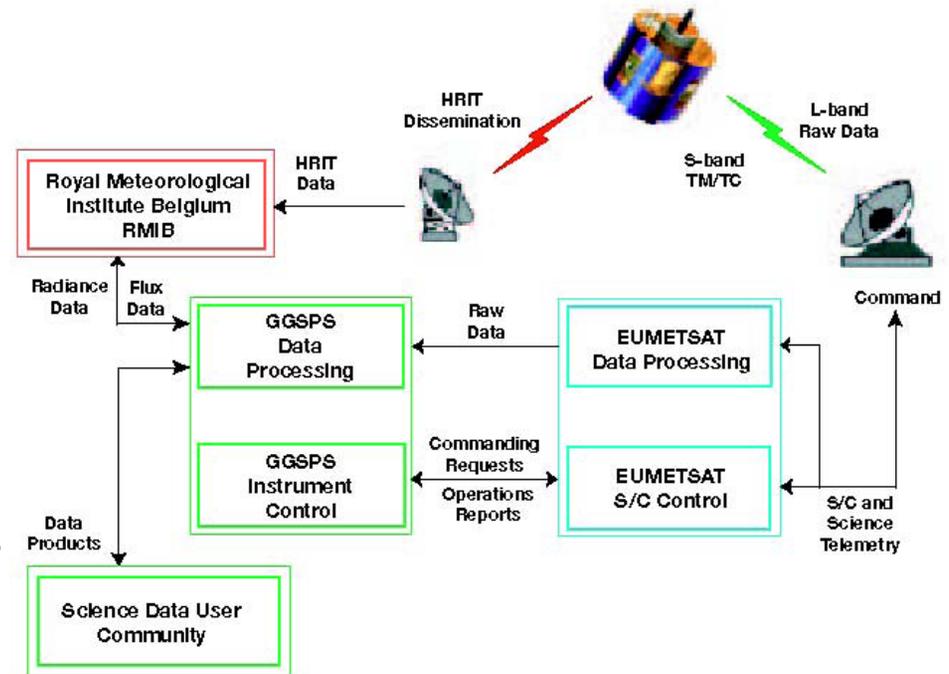
# RMIB GERB Processing (RGP) overview

## Inputs

- GERB level 1.5 from RAL
- SEVIRI level 1.5 from EUM

## Processing:

- LW separation
- Unfiltering
- Scene identification
- ADMs
- Various spatial and temp. processings
  - to combine GERB and SEVIRI
  - tuning of the geolocation
  - resolution enhancement

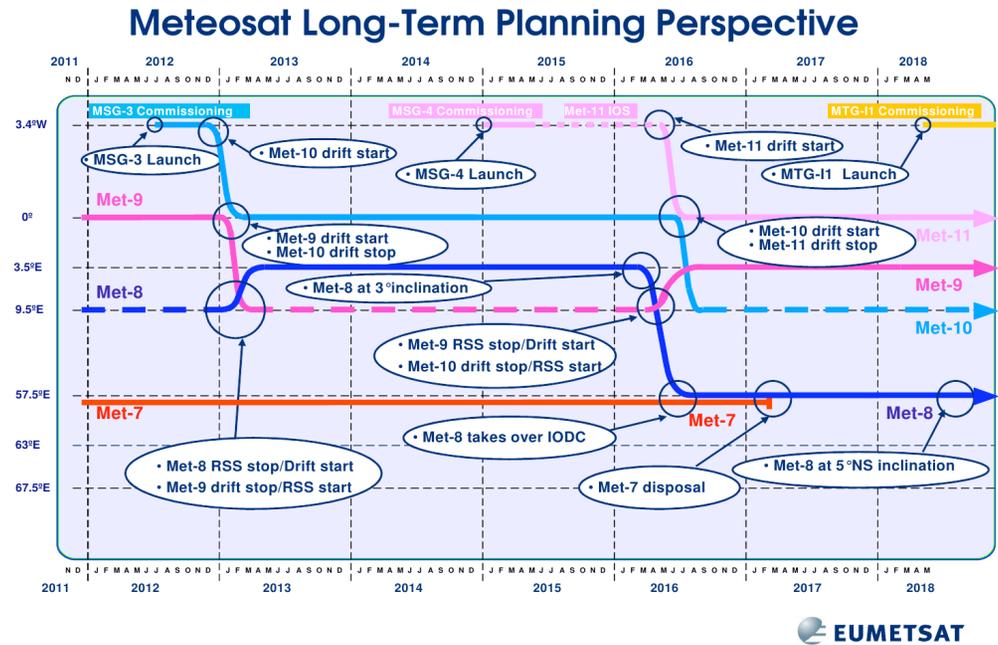


## Outputs

- Level 2 solar and thermal fluxes at TOA
- 3 formats:
  - ARG: Averaged Rectified Geolocated (45km, 17', no correction of PSF)
  - BARG : Binned Averaged Rectified Geol. (45km, 15', PSF corrected)
  - HR : High Resolution (9km, 15', PSF corrected)

# RMIB GERB Processing (RGP) Status

- Ongoing generation of GERB ED01/ V006 TOA fluxes under 3 formats ARG, BARG, HR + GERB-like
- Hardware support extended for 2 years (until 2014)
- Preparation to switch to MSG3/ Meteosat -10 in January
- ED01 for BARG (and HR?) see presentation of Edward. Once ED01: change of the processing system (?).
- ED02 developments: see next 3 slides and presentations of Alessandro, Edward, Almudena, Stijn.



## RGP Edition 2 development (1/3)

Resp.  
&  
Status

Read (wavelets) compressed SEVIRI data. Allows easier/faster reprocessing. Interface routines are written, need to be integrated in the processing.

done  
SN

Read the 3.9  $\mu\text{m}$  SEVIRI channel. Needed for the snow detection.

Done  
PJB

Snow detection algorithm (C. Bertrand). Seems to work but additional validation needed.

Done  
PJB

Snow ADMs : use the ADMs of Seiji Kato for snow covered pixel. Which one must be used?

EB  
NC

Improved NB-to-BB: empirical SEVIRI(NB)-to-GERB(BB) regressions have been derived for GERB-2. Should replace the previous theoretical regressions. Investigations and documentation is done.

EB  
NC

Improved clear land ADMs. Preliminary work done by Cedric Bertrand as Visiting Scientist in NASA Langley. ADM stratified in latitude band of  $1^\circ$ . Expected to solve the morning/afternoon asymmetry in GERB ED01 SW flux. EB

Use actual satellite position and quality flags. Edition-1 assumes no inclination of the MSG satellite orbit. Will give more accurate viewing geometry. SN

Improve the LW ADM. The LW theoretical ADM (regression on the SEVIRI NB radiances) could be improved for a better handling of high/thin clouds. Proposal detail in tech. Note. Could be updated using EarthCARE database of TOA radiance fields. AV  
NC

LW cloud detection. Preliminary version with better detection skill than MPEF CLM during night time (NWCSAF is the reference). No ancillary data from NWP. Paper in preparation. AI

Clear ocean aerosol retrieval improvement. With the Ignatov tables, one sees clearly increased AOD in the near sun-glint region. Method: derive new tables and/or empirical correction. + res enhancement to 3km SN

Take into account the change in LW spectral response due to instrument optical path. NC

Use SEVIRI effective radiance instead of spectral radiances. Since the beginning of GERB we assume effective radiance but EUMETSAT (erroneously) provided spectral radiances for the thermal channels. Since 2008 EUMETSAT switch to the new radiance definition and is planning to reprocess the 2004-2008 data. NC

Implement aerosol SW ADM over clear ocean (developed by Helen Brindley) EB  
SN

Correct the sun glint bug. NC

Improved cloud phase AI

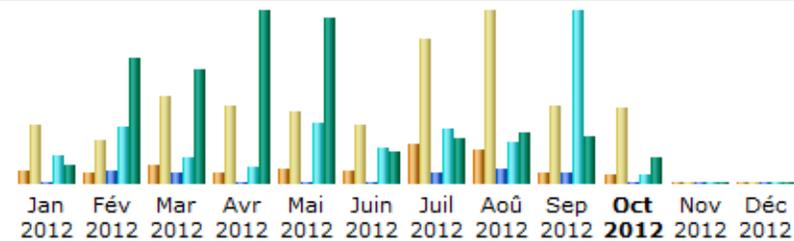
pixel level processing of solar eclipse Done  
ID

reduce gaps in the GERB-like dataset using images from MSG backup satellite NC

# RMIB On-Line Short-time Service (ROLSS) Status

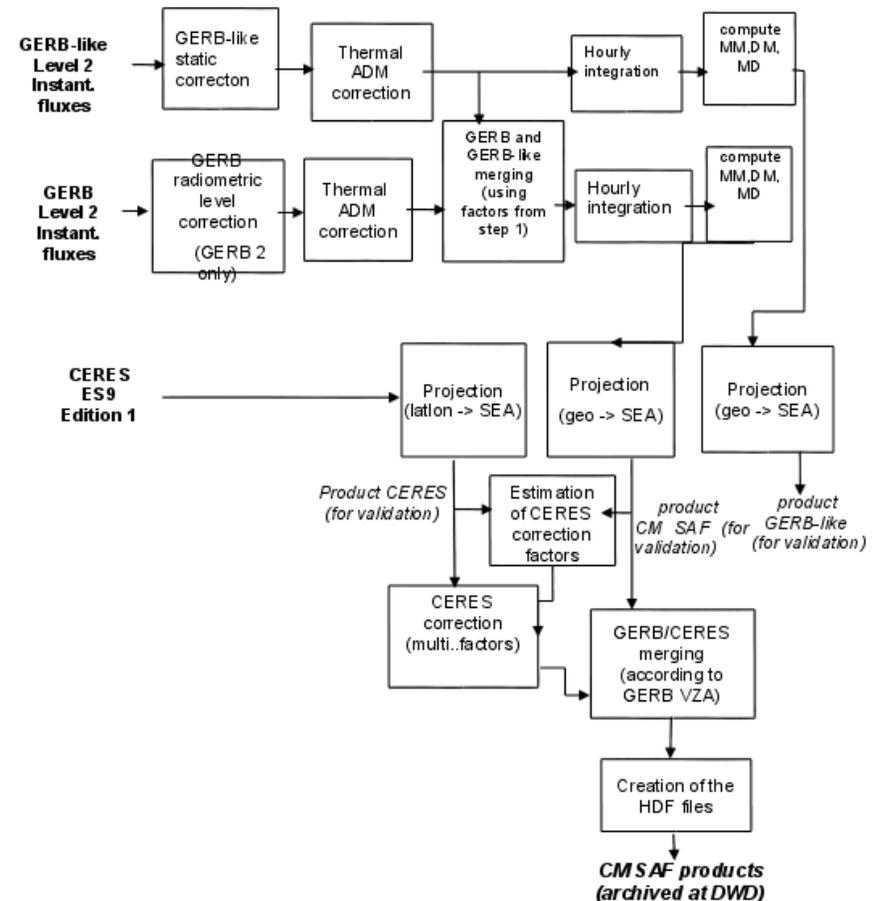
- ROLSS = near real time distribution and BARG and HR formats
- Whole archive (2004 – present) available on the ROLSS FTP server
- Format is HDF5. NetCDF in development (see presentation of Edward)
- About 30 “active” users in 2012
- ~ 1 new user per month
- Possibility: provide CM SAF cloud information (CFC, COD, CPP) “regridded” to the BARG and HR formats. (?)

Historique mensuel



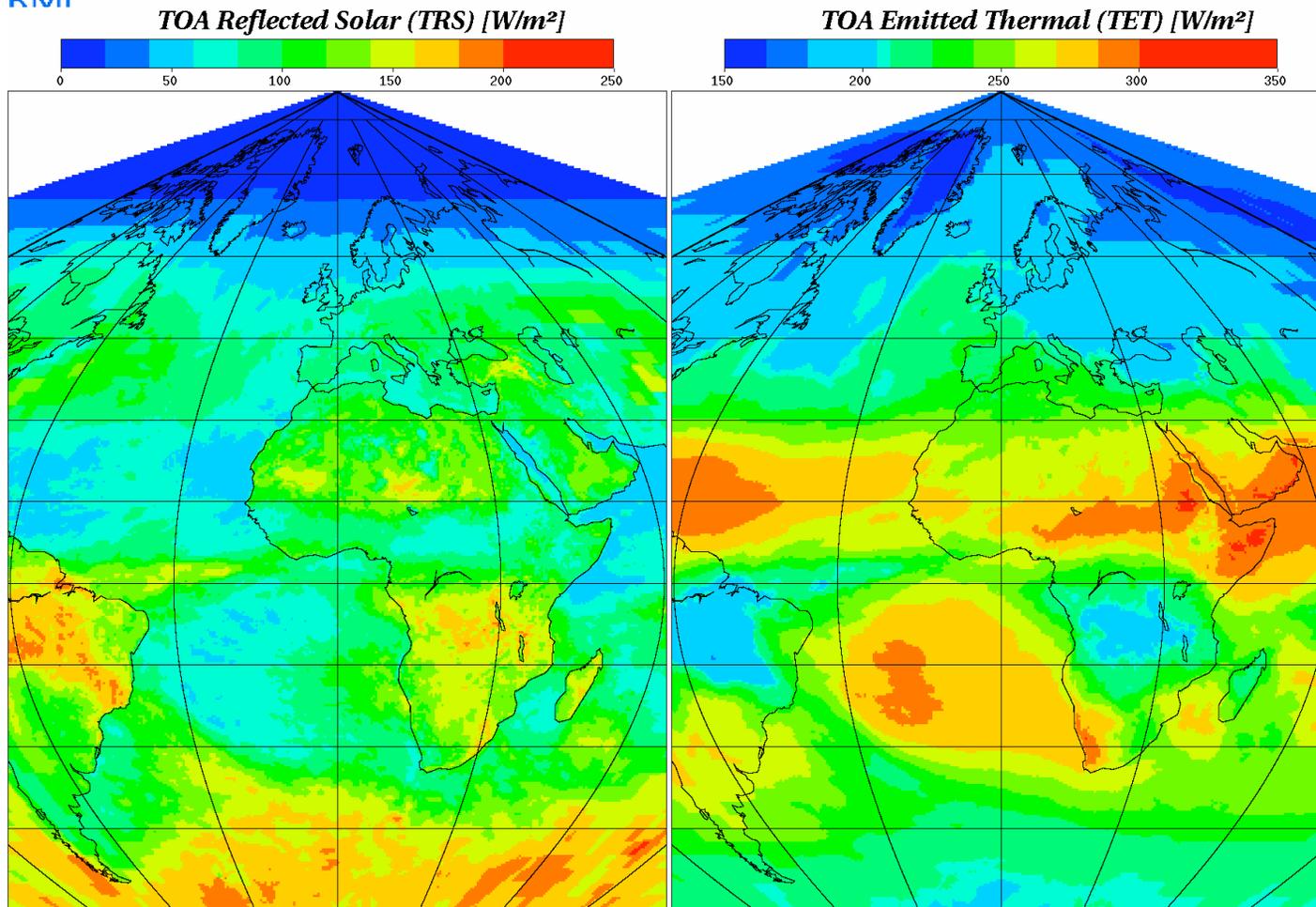
Mois	Visiteurs différents	Visites	Pages	Hits	Bande passante
Jan 2012	17	81	5 237	113 941	167.92 Go
Fév 2012	15	60	49 385	235 495	1183.28 Go
Mar 2012	26	123	45 975	110 591	1064.84 Go
Avr 2012	15	110	6 645	70 828	1620.44 Go
Mai 2012	21	101	5 539	250 779	1550.48 Go
Juin 2012	17	82	7 182	144 844	292.80 Go
Juil 2012	55	205	46 314	231 307	414.43 Go
Aoû 2012	47	243	60 766	173 116	481.96 Go
Sep 2012	14	108	45 931	719 871	437.65 Go
<b>Oct 2012</b>	12	106	4 016	39 021	245.14 Go
Nov 2012	0	0	0	0	0
Déc 2012	0	0	0	0	0
<b>Total</b>	<b>239</b>	<b>1 219</b>	<b>276 990</b>	<b>2 089 793</b>	<b>7458.94 Go</b>

- GERB level-3 available via CM SAF. 3 products: daily and monthly means and monthly mean diurnal cycle
- Gaps in GERB data record → Use a GERB-like products from the SEVIRI imager
- Some gaps in both GERB and SEVIRI record (MSG failure, decontamination) → residual problem.
- Jump when switch from Met-8 to Met-9 (soon to Met-10) → homogenization needed
- Arctic region → use of CERES



# Illustration : Monthly mean

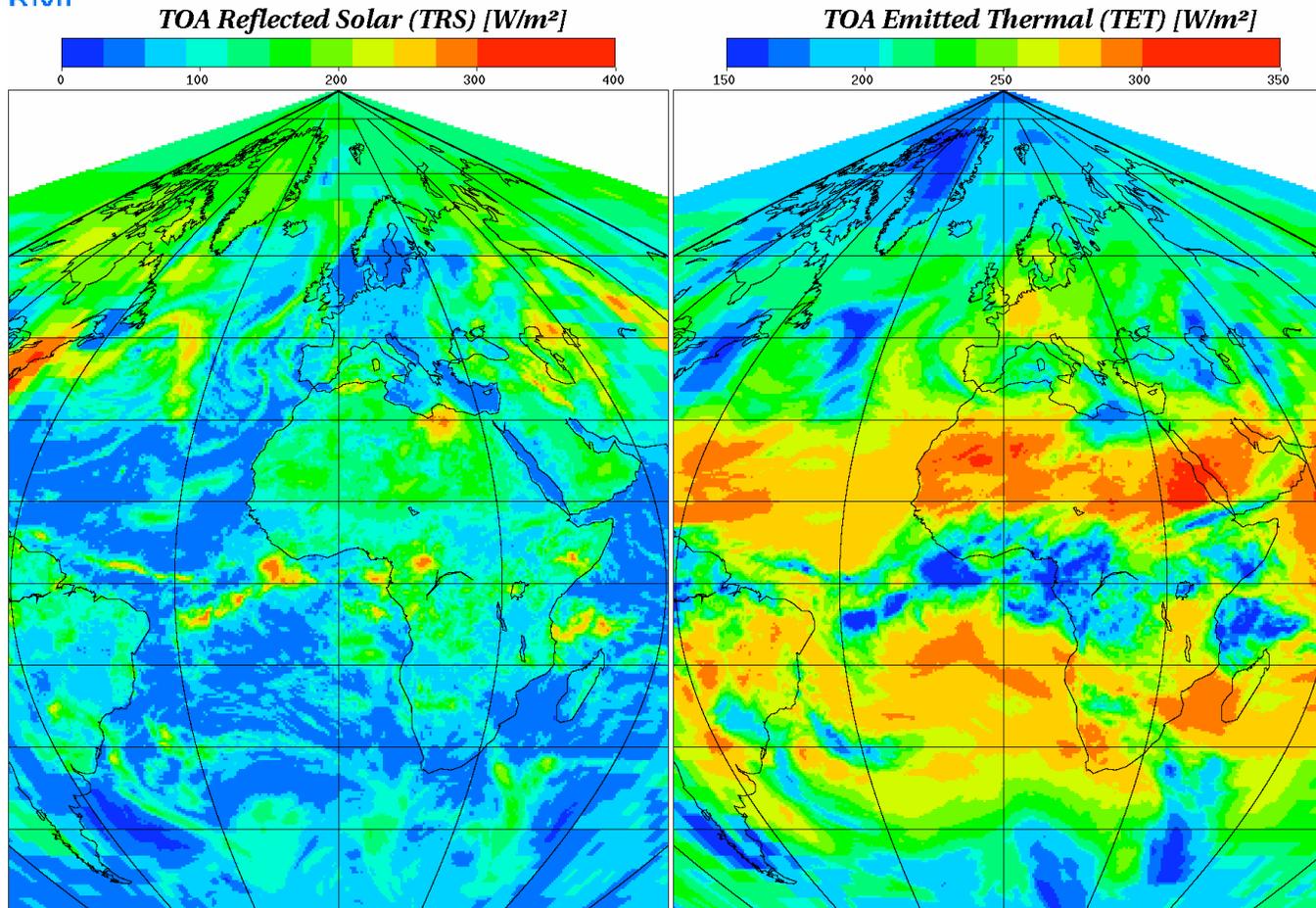
## Climate Monitoring SAF Monthly Mean TOA Fluxes for 200402



Similar to e.g. CERES EBAF all sky TOA fluxes

# Illustration : Daily mean

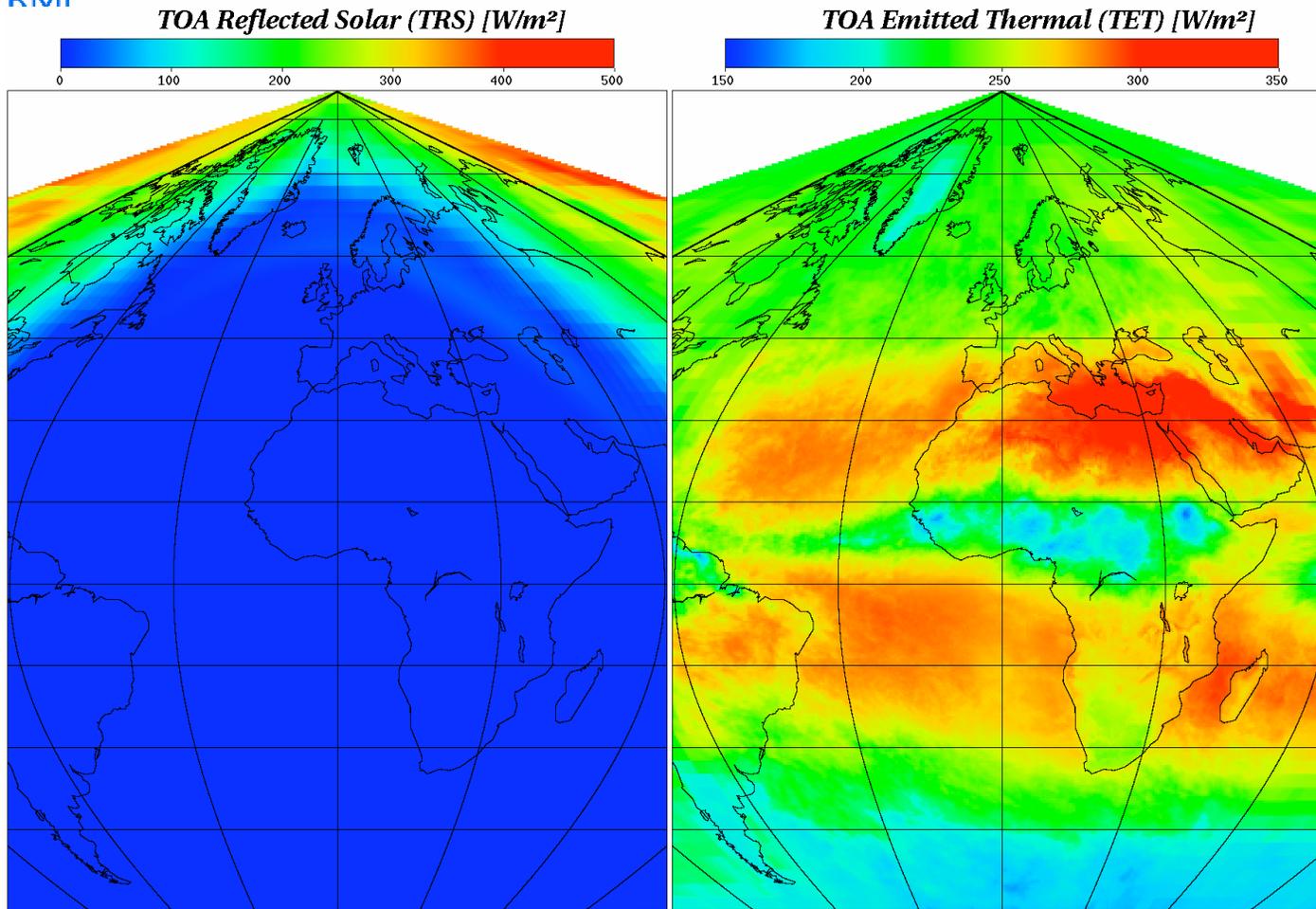
## Climate Monitoring SAF Daily Mean TOA Fluxes for 20070415



Similar to e.g. CERES SYN-1deg all sky TOA fluxes



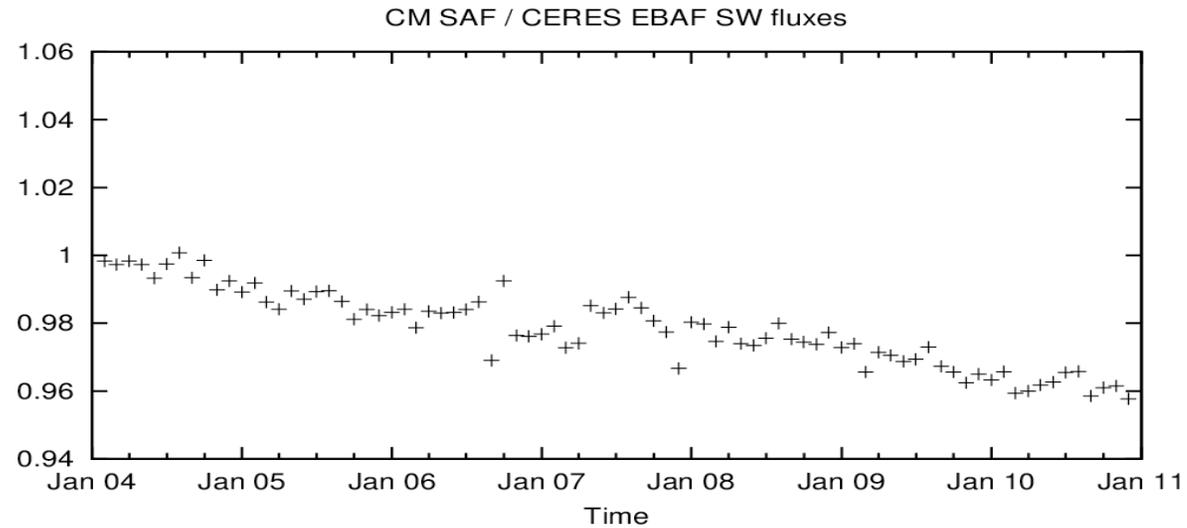
## CM SAF TOA Fluxes Diurnal Cycle [00:01] UTC, Month 200407



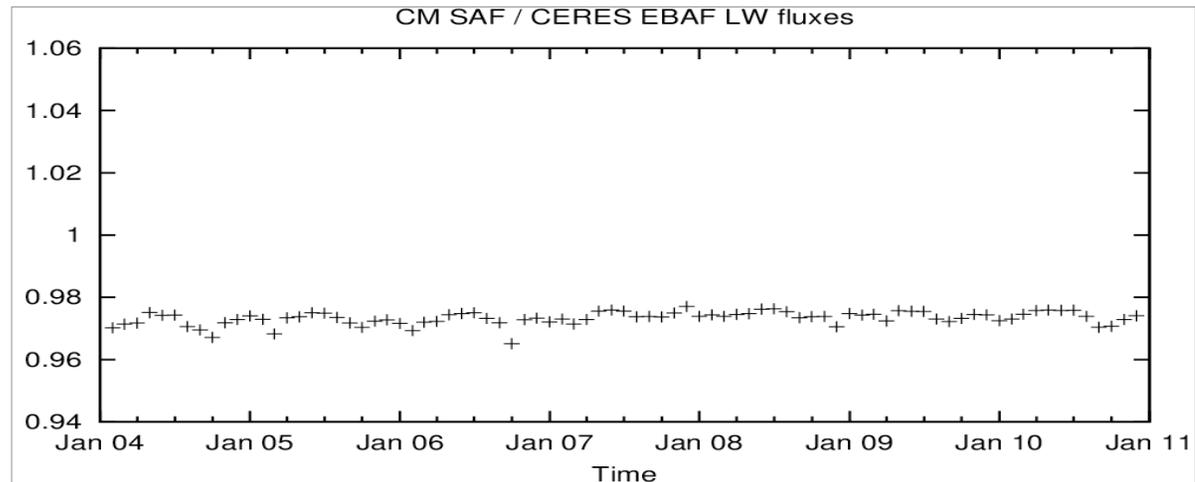
Diurnal cycle = 24 hourly intervals

# Validation: stability of the MM products

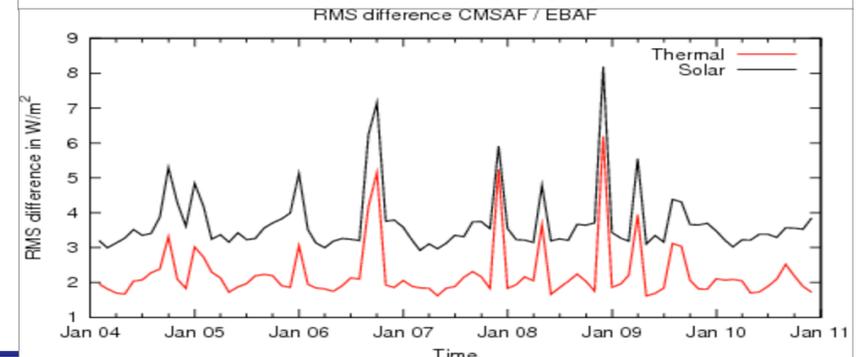
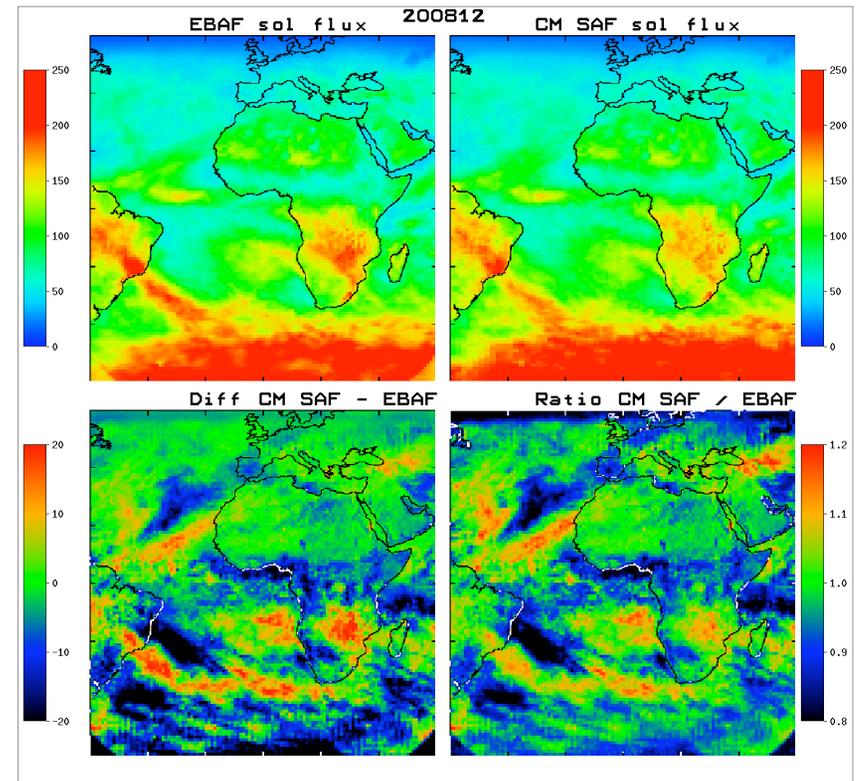
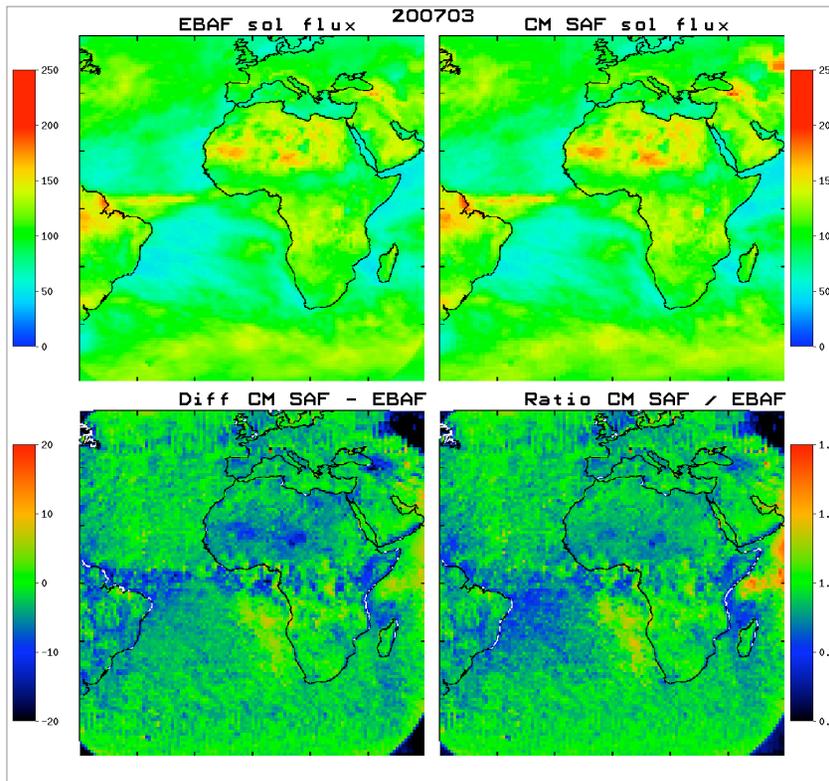
TRS  
stability



TET  
stability

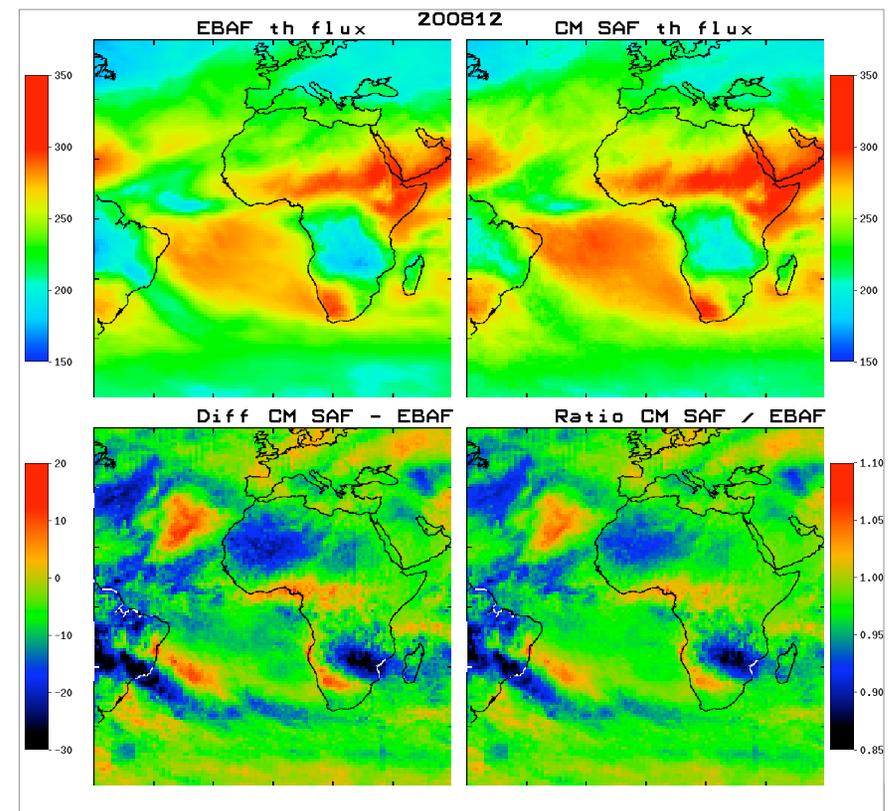
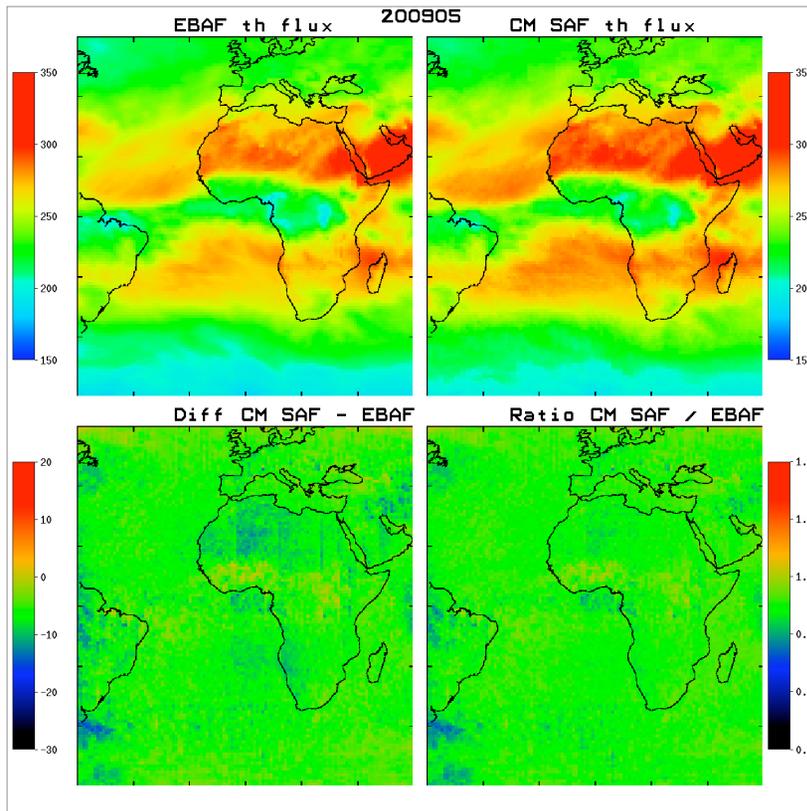


# TRS MM validation : intercomparison with CERES

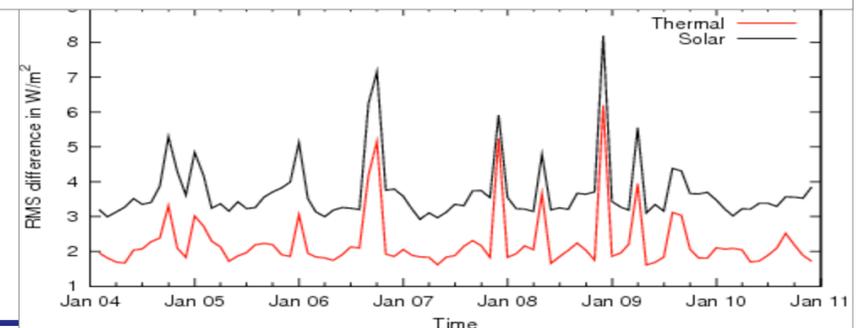


RMS difference  
with CERES EBAF ~  
 $3 W/m^2$

# TET MM validation : intercomparison with CERES

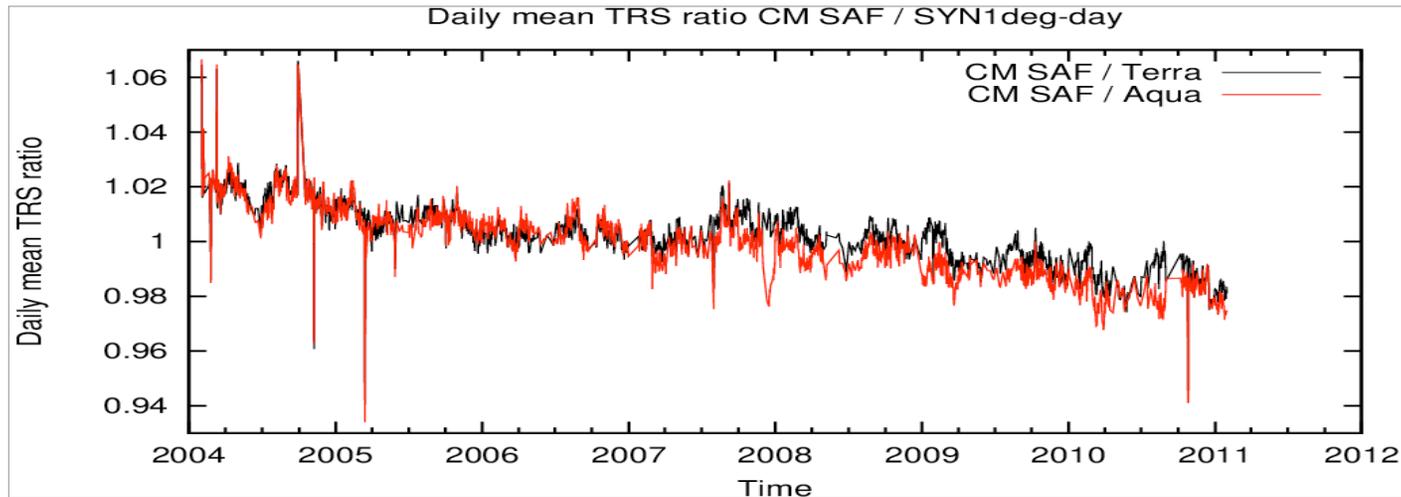


RMS difference  
with CERES EBAF ~  
 $2 \text{ W/m}^2$

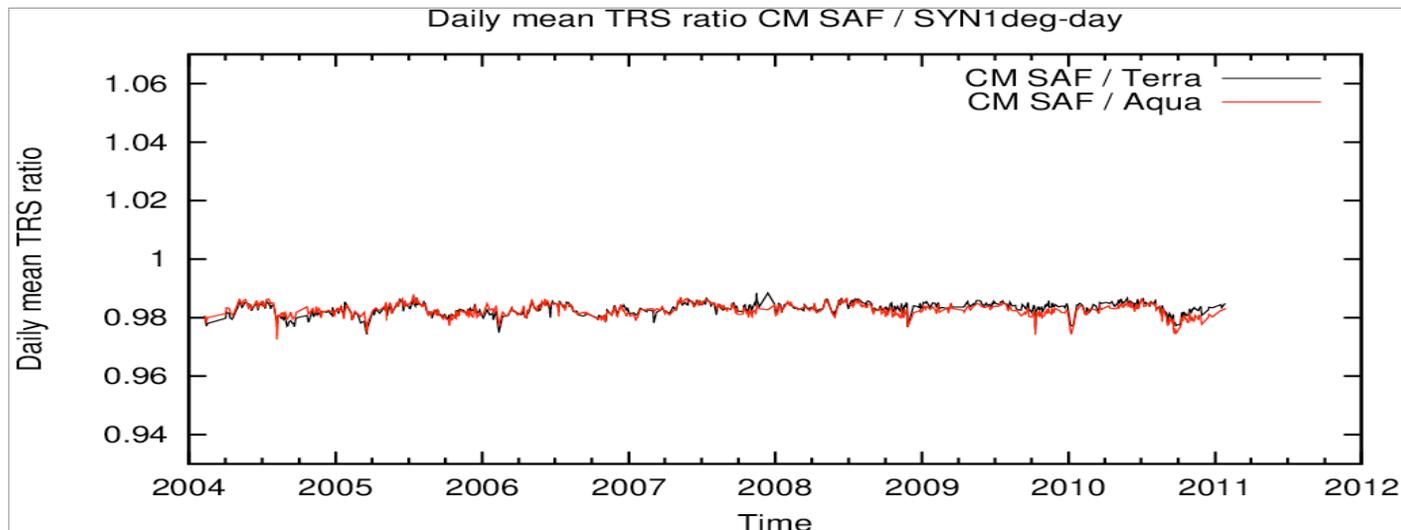


# Validation of the daily mean (DM) products : stability

TRS  
stability

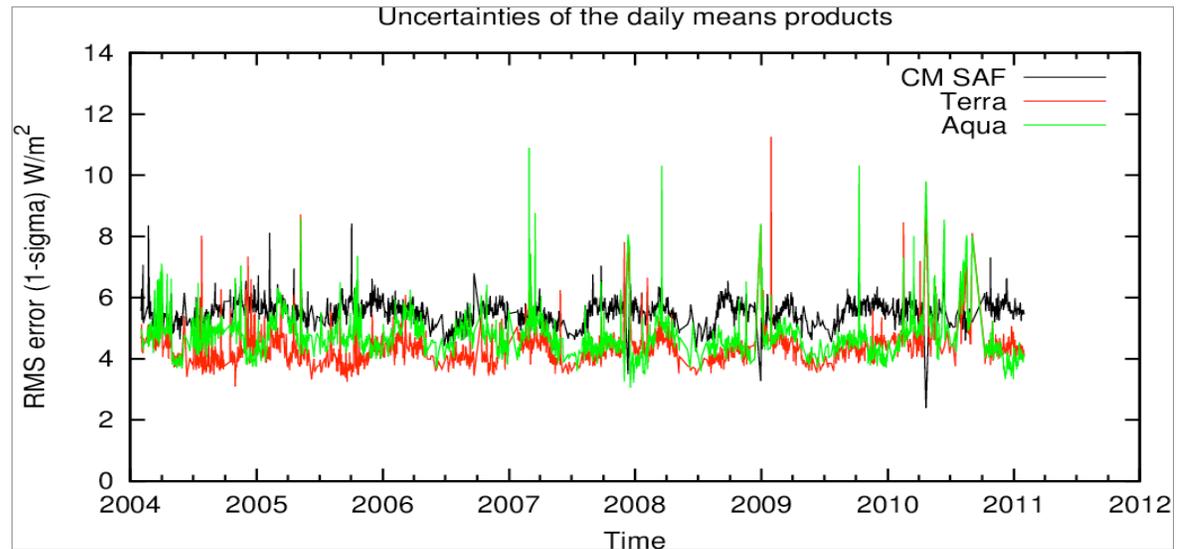


TET  
stability

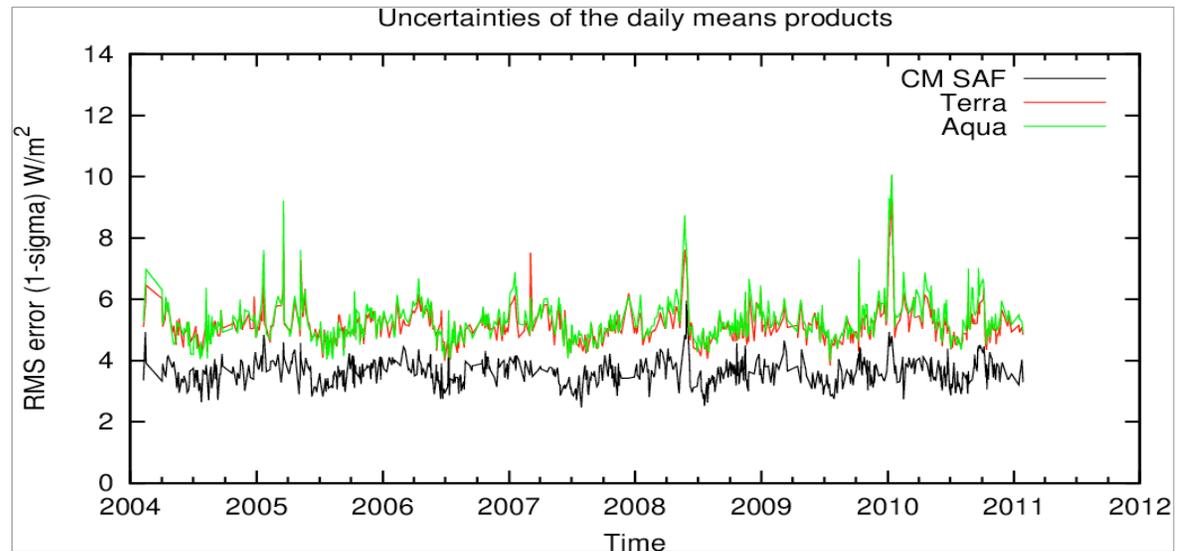


# Validation of the daily mean products : accuracy

TRS daily mean accuracy  $\sim 5 \text{ W/m}^2$  ( $\sim 5\%$ )

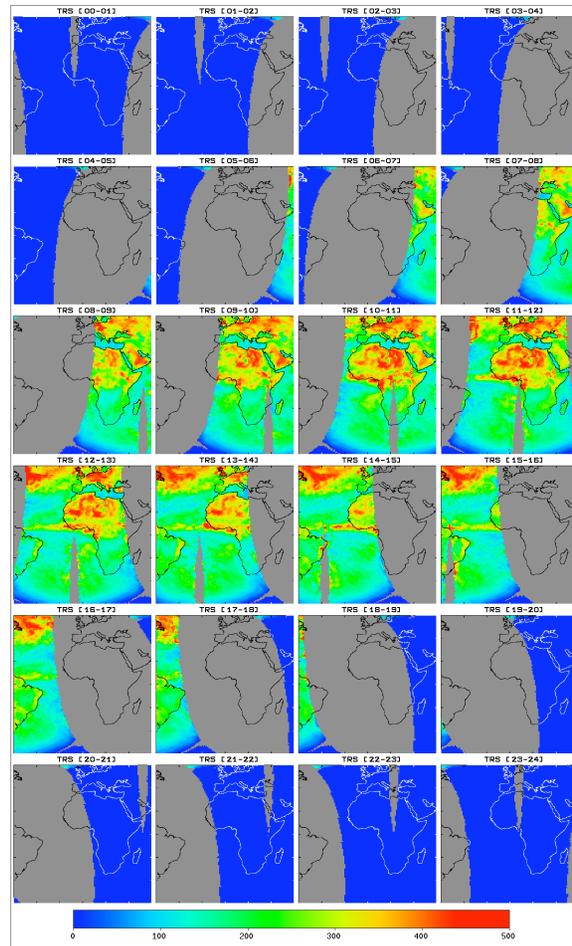


TET daily mean accuracy  $\sim 4 \text{ W/m}^2$  ( $\sim 2\%$ )

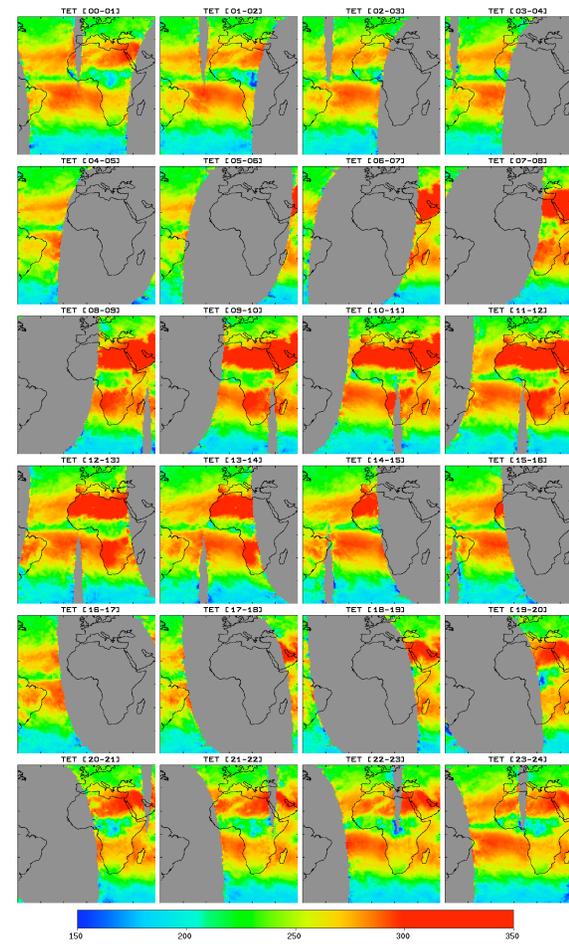


# Validation of the monthly mean diurnal cycle : construction of a "Diurnal cycle" product from CERES SSF data and comparison with CM SAF product

## TRS (left) and TET (right) diurnal cycle from 4 CERES instruments



RMS difference =  $13.5 \text{ W/m}^2$  (daytime)



RMS difference =  $3.3 \text{ W/m}^2$

# Summary of the validation (1 $\sigma$ uncertainty)

	TRS	TET
Monthly mean	4.0 W/m <sup>2</sup>	3.4 W/m <sup>2</sup>
Daily mean	6.2 W/m <sup>2</sup>	4.6 W/m <sup>2</sup>
Monthly mean diurnal cycle	14.5 W/m <sup>2</sup>	4.3 W/m <sup>2</sup>

## Notes

- GERB absolute calibration uncertainty included (2.25% for SW and 0.96% for LW)
- Additional error if not complete MSG coverage (see validation report and PUM)

- RGP
  - Currently nominal
  - Soon:
    - Switch to GERB-3
    - Release of ED01 for BARG and HR
  - Long term : ED02
- ROLSS
  - Currently nominal
  - soon : NetCDF functionality
- CM SAF
  - Soon : release of the TOA GERB dataset and review of the aerosol dataset
  - Next years :
    - Develop dataset of clear sky TOA fluxes from GERB/SEVIRI
    - Dataset of aerosol over land from SEVIRI
    - GERB-like from MFG

Thank you!