

Validation of CM SAF satellite-derived surface radiation data records using BSRN measurements

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The EUMETSAT Satellite Application Facility on Climate Monitoring (CM SAF) generates and distributes satellite-based climate data records. The BSRN measurements form the backbone of the validation activities of the CM SAF Surface Radiation Climate Data Records. **Thanks to all who collect the valuable BSRN data and provide them via the BSRN Archive!**

Properties of climate data records

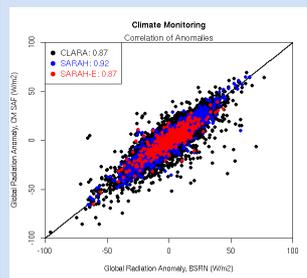
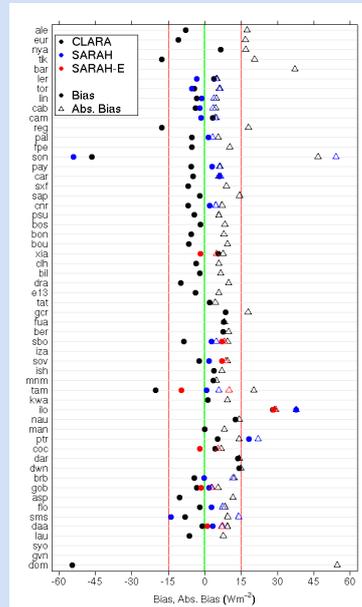
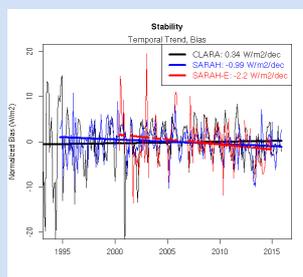
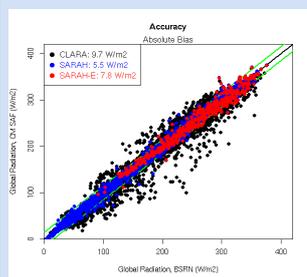
- 1) Accuracy
- 2) Climate Monitoring capability
- 3) Stability / homogeneity

Reasons to use BSRN

- 1) High-quality data
- 2) Global coverage
- 3) Continuously updated
- 4) Joint data format and archive
- 5) Active scientific community

Wishlist from the CM SAF

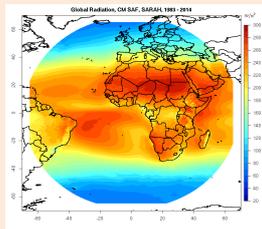
- 1) Continue the excellent work!
- 2) Aim to collect more data in Asia, Africa, South America
- 3) Aim for higher timeliness in data delivery to the archive, but: data quality goes first!



Validation Measures

- Different measures are used to assess the quality of the CM SAF Data Records.
- Differences in the performance of the satellite data at BSRN stations, mainly due to satellite shortcoming, partly due to local effects.
- High documented quality of the CM SAF surface radiation data records

SARAH



Variables

Global Radiation (Irradiance), Direct (Normal) Radiation

Resolution

Spatial: **0.05° x 0.05°**
Temporal: **hourly, daily, monthly** means

Coverage

Meteosat-Prime full disk, 1983 - 2015

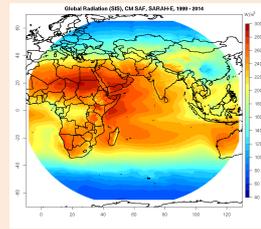
Accuracy

~6 W/m² for monthly means, **~12 W/m²** for daily means

Digital Object Identifier (doi)

10.5676/EUM_SAF_CM/SARAH/V001

SARAH-E



Variables

Global Radiation (Irradiance), Direct (Normal) Radiation

Resolution

Spatial: **0.05° x 0.05°**
Temporal: **hourly, daily, monthly** instantaneous / means

Coverage

Meteosat-IODC full disk, 1999 - 2015

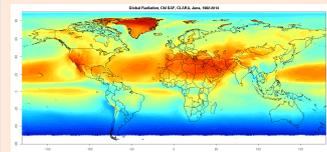
Accuracy

~8 W/m² for monthly means, **~15 W/m²** for daily means

Digital Object Identifier (doi)

10.5676/JECD/SARAH-E/V001

CLARA



Variables

Global Radiation (Irradiance)

Resolution

Spatial: **0.25° x 0.25°**
Temporal: **daily, monthly** means

Coverage

Global, 1982- 2014

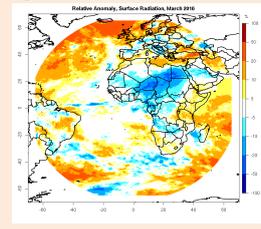
Accuracy

~10 W/m² for monthly means, **~20 W/m²** for daily means

Digital Object Identifier (doi)

10.5676/EUM_SAF_CM/CLARA/V001
2nd release will be available in mid 2016 (or upon request)

Operational Data Records



Variables

Global Radiation (Irradiance), Direct Radiation

Resolution

Spatial: **15 km x 15 km**
Temporal: **daily, monthly** means

Coverage

Meteosat-Prime full disk, 2007 - today

Accuracy

~15 W/m² for monthly means, **~15 W/m²** for daily means

