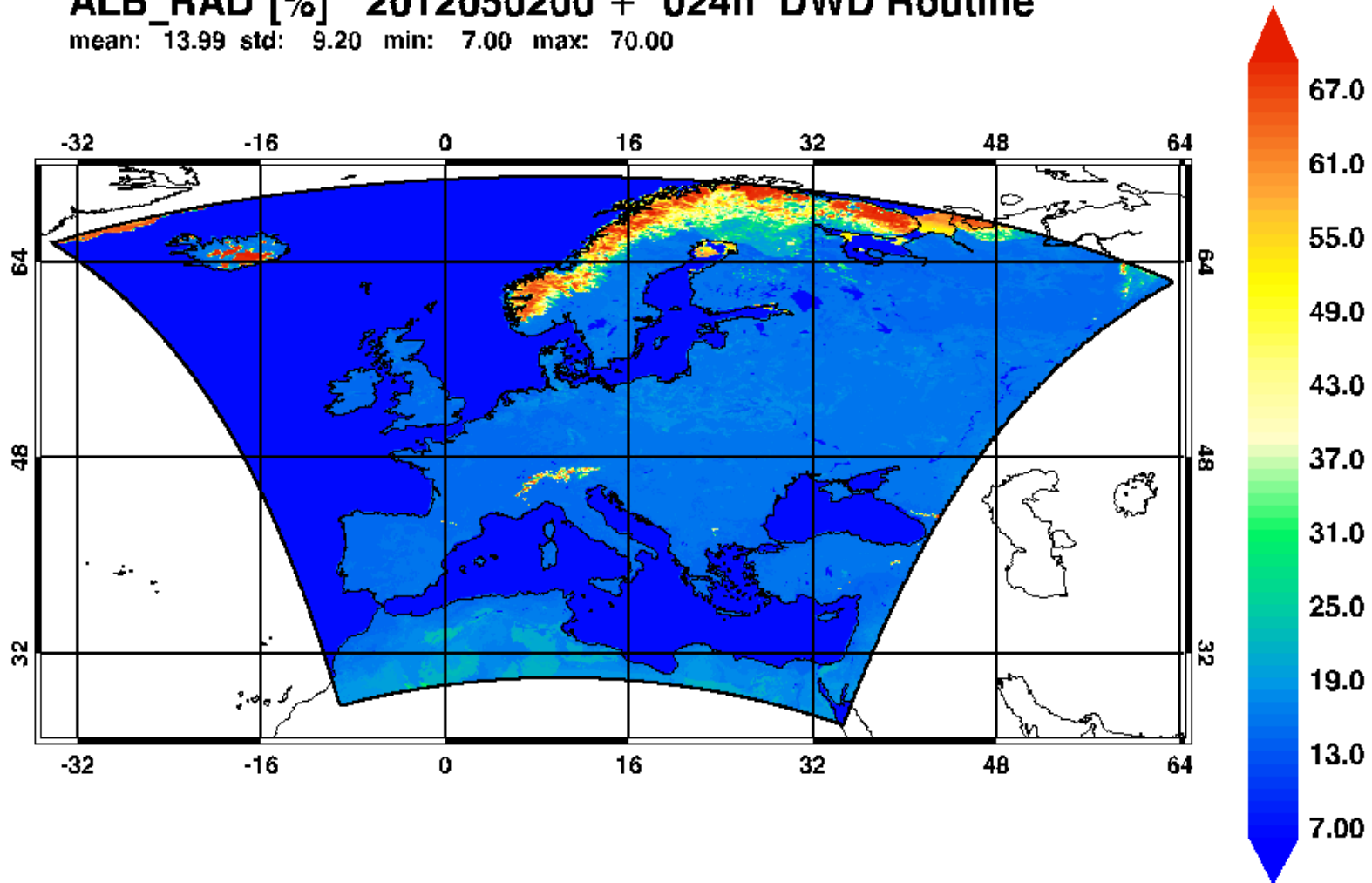

NWP model validation using satellite data

F. Brenner

'Old' Albedo

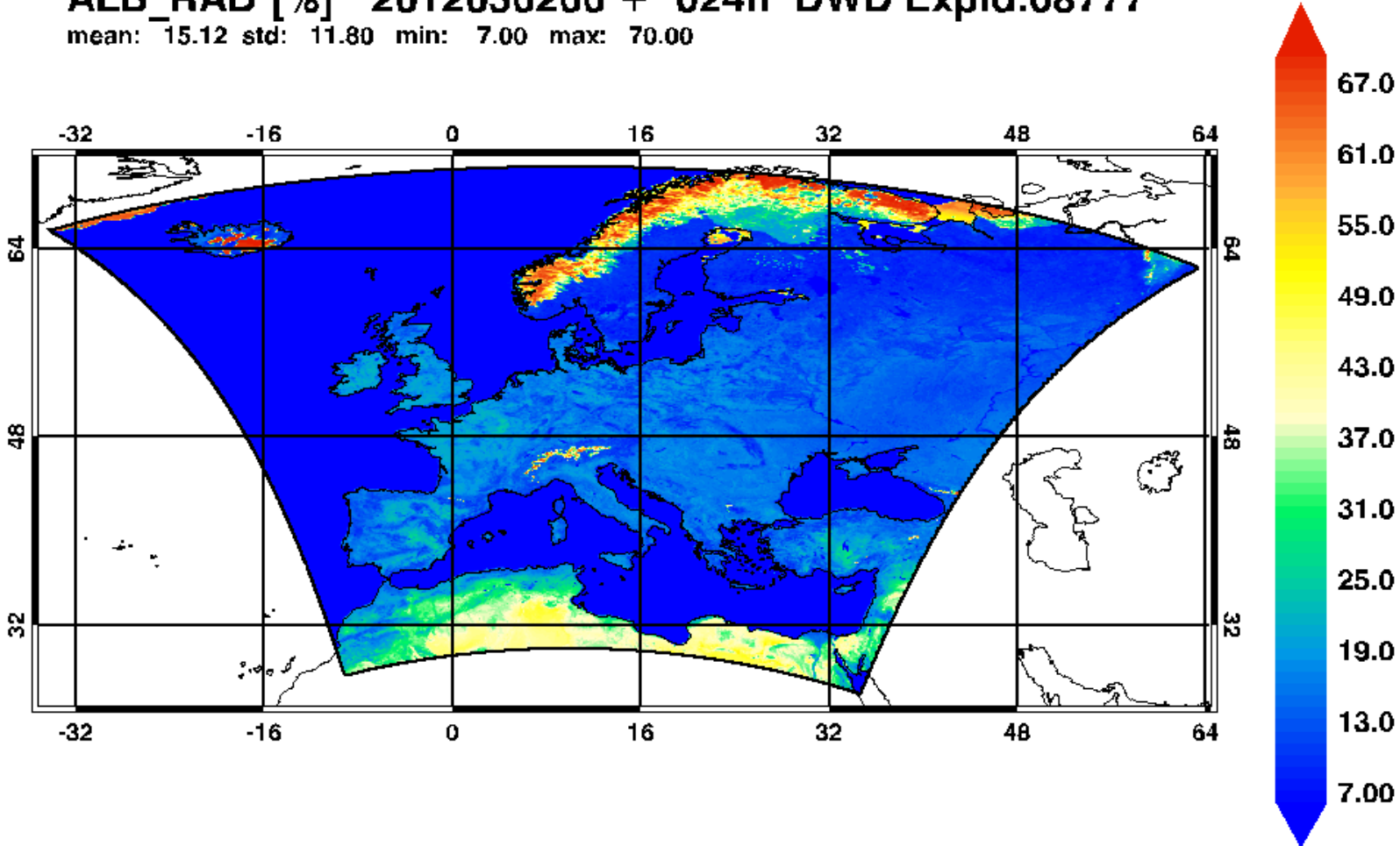
ALB_RAD [%] 2012050200 + 024h DWD Routine
mean: 13.99 std: 9.20 min: 7.00 max: 70.00



MODIS albedo

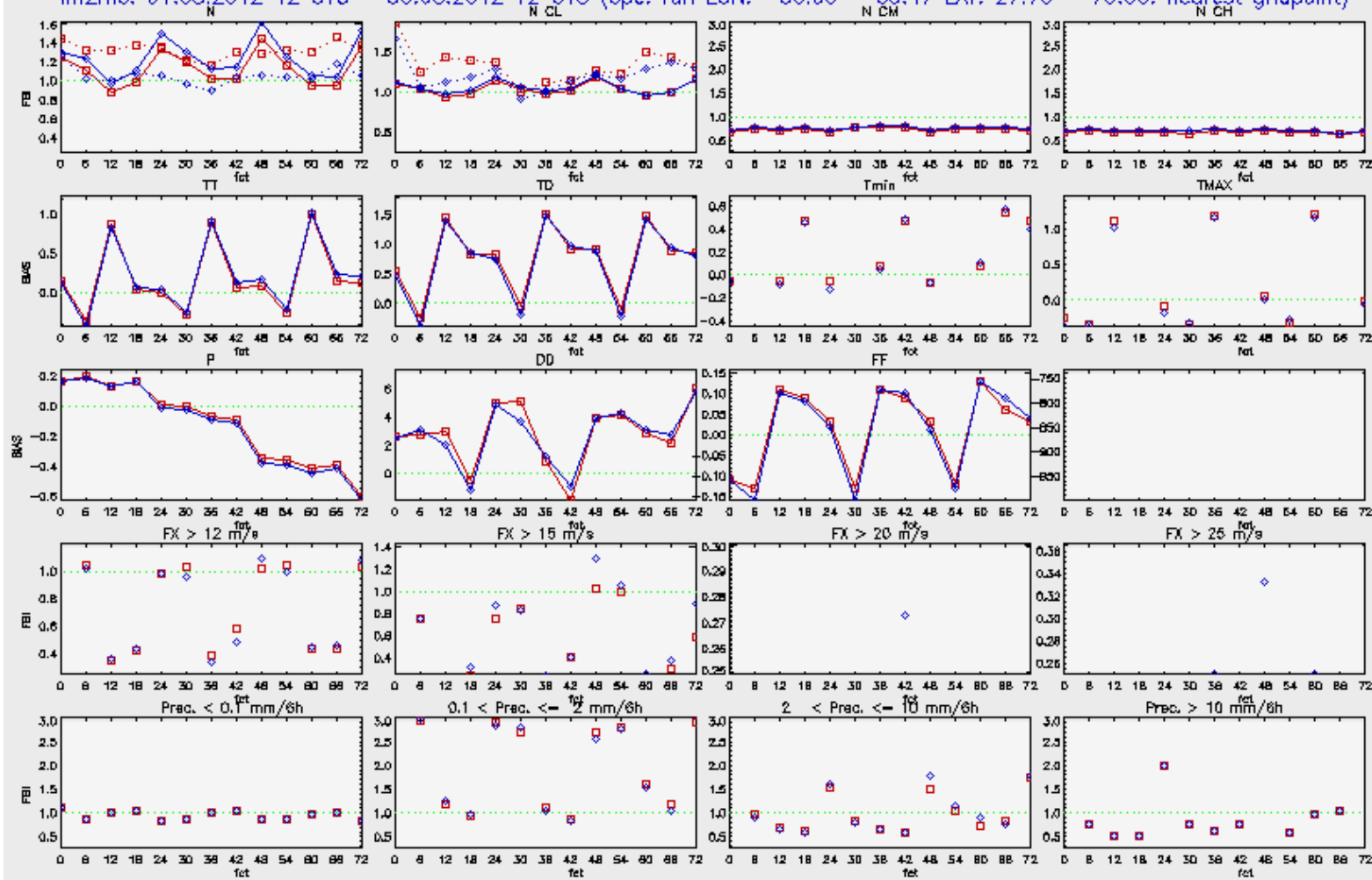


ALB_RAD [%] 2012050200 + 024h DWD Expld:08777
mean: 15.12 std: 11.80 min: 7.00 max: 70.00



EXP8777, BIAS, 2012_08

LM2MO: 01.08.2012 12 UTC – 30.08.2012 12 UTC (exp. run 8777: COSMO-EU Routine + MODIS Albedo)
 lm2mo: 01.08.2012 12 UTC – 30.08.2012 12 UTC (ope. run LON: -30.00 – 63.47 LAT: 27.70 – 70.00; nearest gridpoint)



Results of verification of forecasts for local weather elements at surface stations

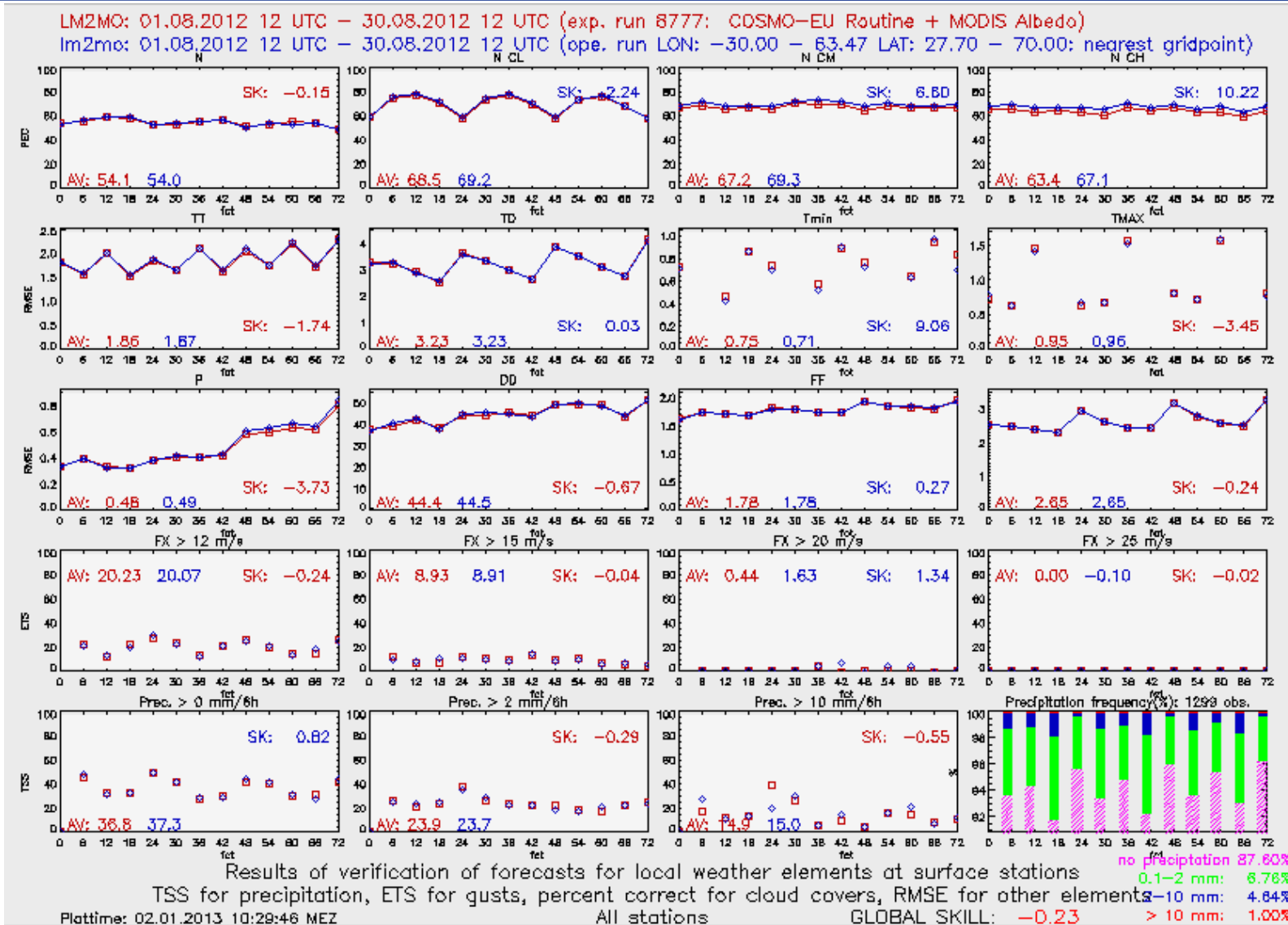
FBI for cloud covers gusts and precipitation (cloud covers dotted: below 3 octa, solid: above 6 octa), BIAS for other elements

All stations

Plottime: 02.01.2013 10:29:46 MEZ



EXP8777, RMSE, 2012_08



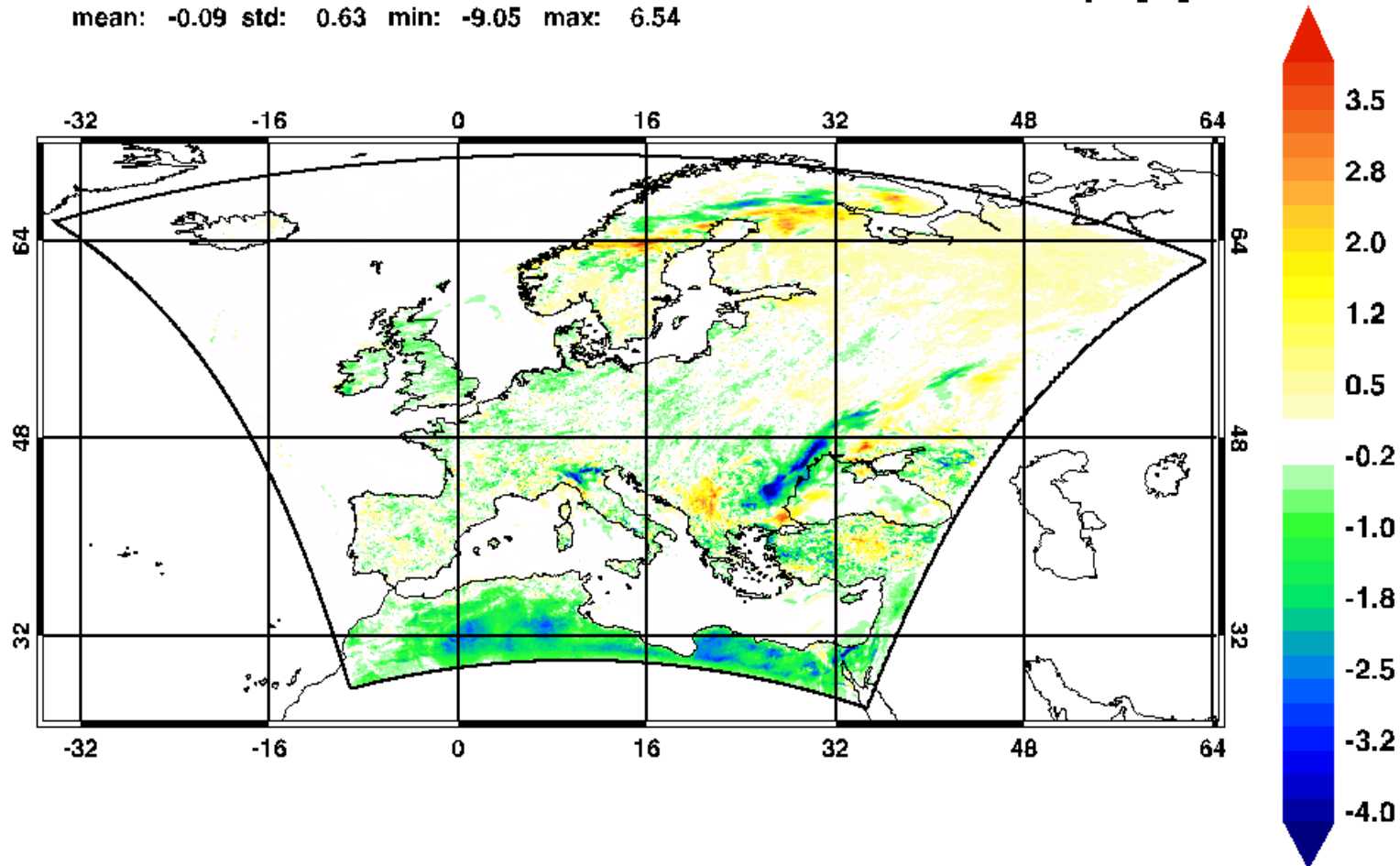
Summary of EXP8777

			8777_04	8777_05	8777_06	8777_07	8777_08
RMSE (all elements)	00 UTC	Deutschland	-0,84	-0,73	-0,81	-0,32	-0,36
Global Skill	00 UTC	Westeuropa	0,14	-0,13	0,24	-2,11	-0,89
	00 UTC	LM2MO	0,18	-0,11	-0,01	0,35	0,39
	12 UTC	Deutschland	-0,81	-0,48	-0,4	-1,45	-1,19
	12 UTC	Westeuropa	-0,34	-0,16	0,34		-0,92
	12 UTC	LM2MO	-0,09	0,15	0,15	-0,25	-0,23
RMSE (all elements)	00 UTC	Deutschland	-1,58	0,19	-1,43	-2,22	-0,67
temperature (2m)	00 UTC	Westeuropa	-0,59	0,56	0,5	0,88	-2,38
	00 UTC	LM2MO	-0,66	-0,33	-0,55	-0,85	-1,14
	12 UTC	Deutschland	-0,96	0,43	-1,15	-1,85	-2,09
	12 UTC	Westeuropa	-0,04	-0,11	0,43	0,77	-0,43
	12 UTC	LM2MO	-0,63	-0,3	-0,88	-1,12	-1,74

COSMO-EU experiment

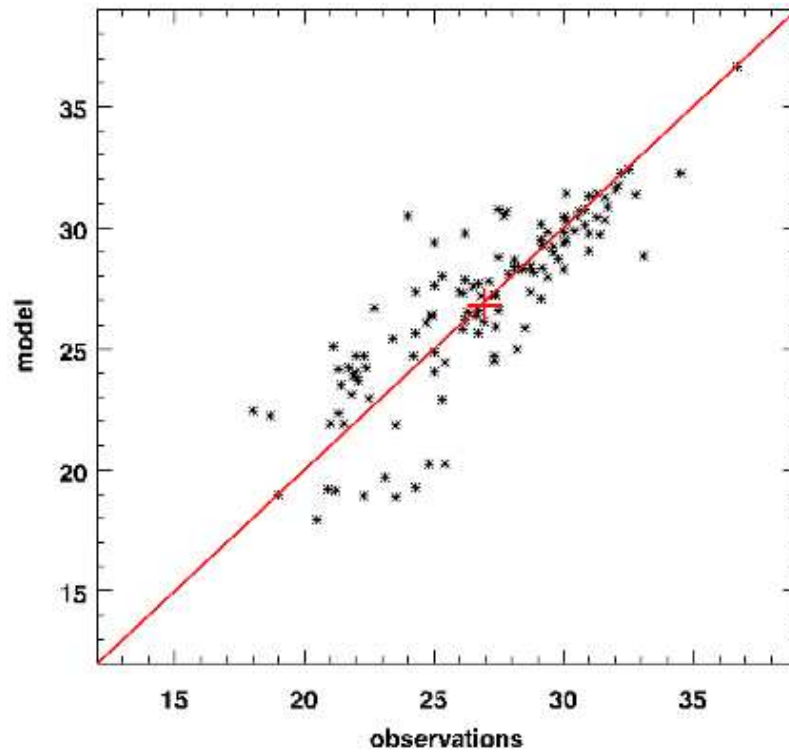
EXP8777-ROU, 2012052400 +36h, difference in temp. [K]

mean: -0.09 std: 0.63 min: -9.05 max: 6.54



case-study NW-Africa

Model field : EXP8777, 2012052400 +36h, Temperatur [°C]
Observations: T2m K 2012052512 n= 124

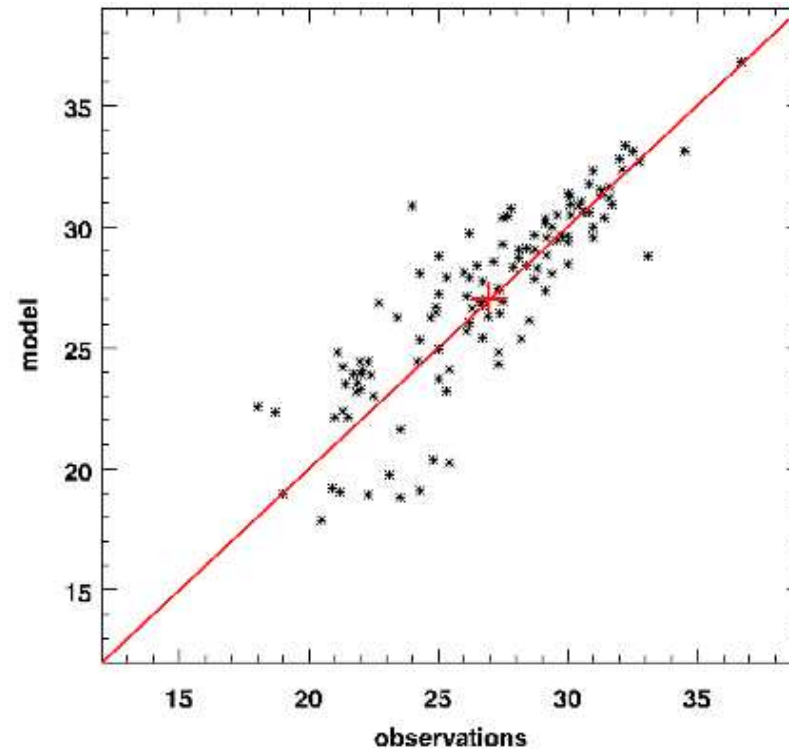


mean values

observations : 26.97
model : 26.79
bias : 0.18



Model field : Routine, 2012052400 +36h, Temperatur [°C]
Observations: T2m K 2012052512 n= 124

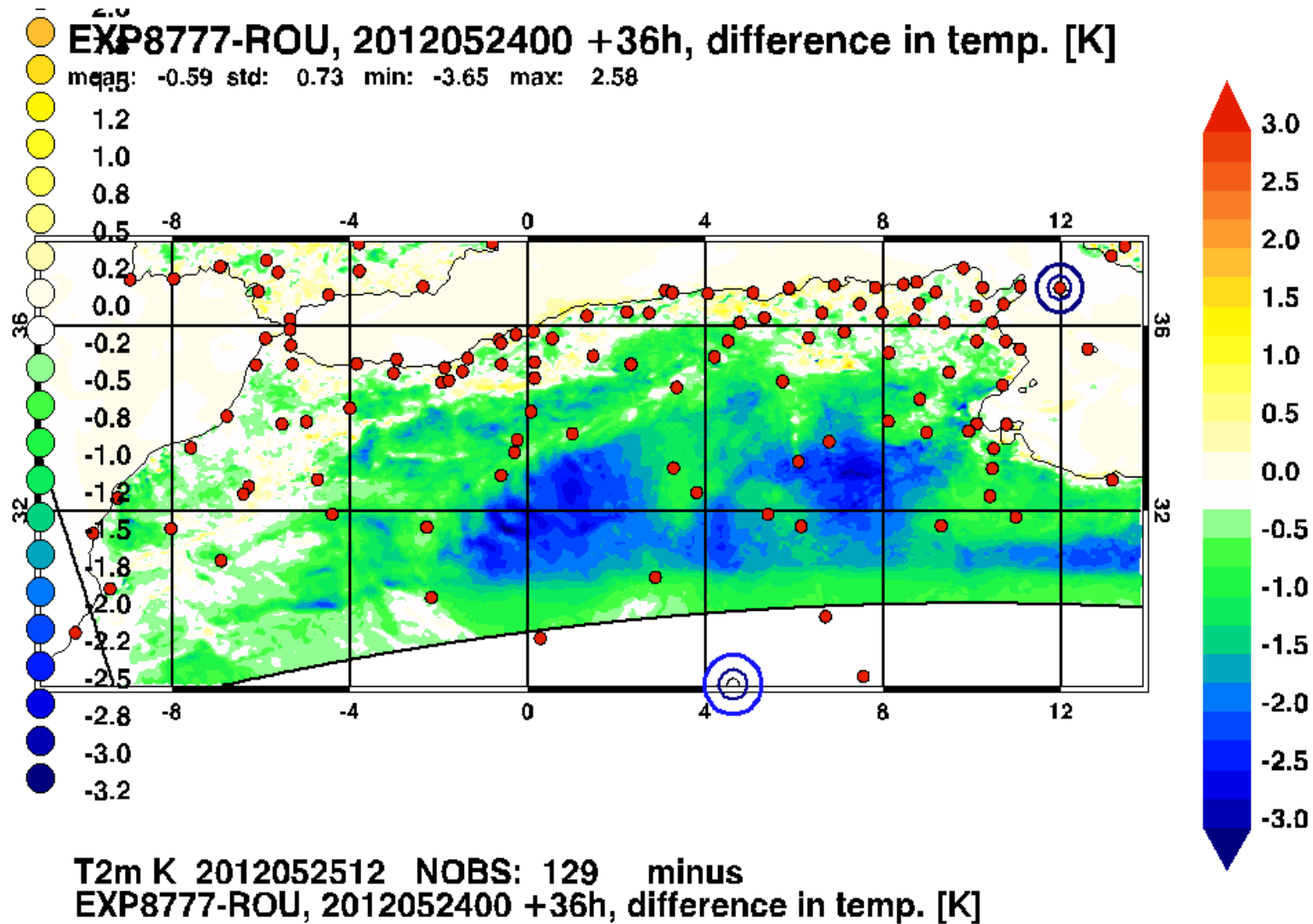


mean values

observations : 26.97
model : 27.03
bias : -0.05



case-study NW-Africa



used satellite data

CMSAF: Satellite Application Facility on Climate Monitoring

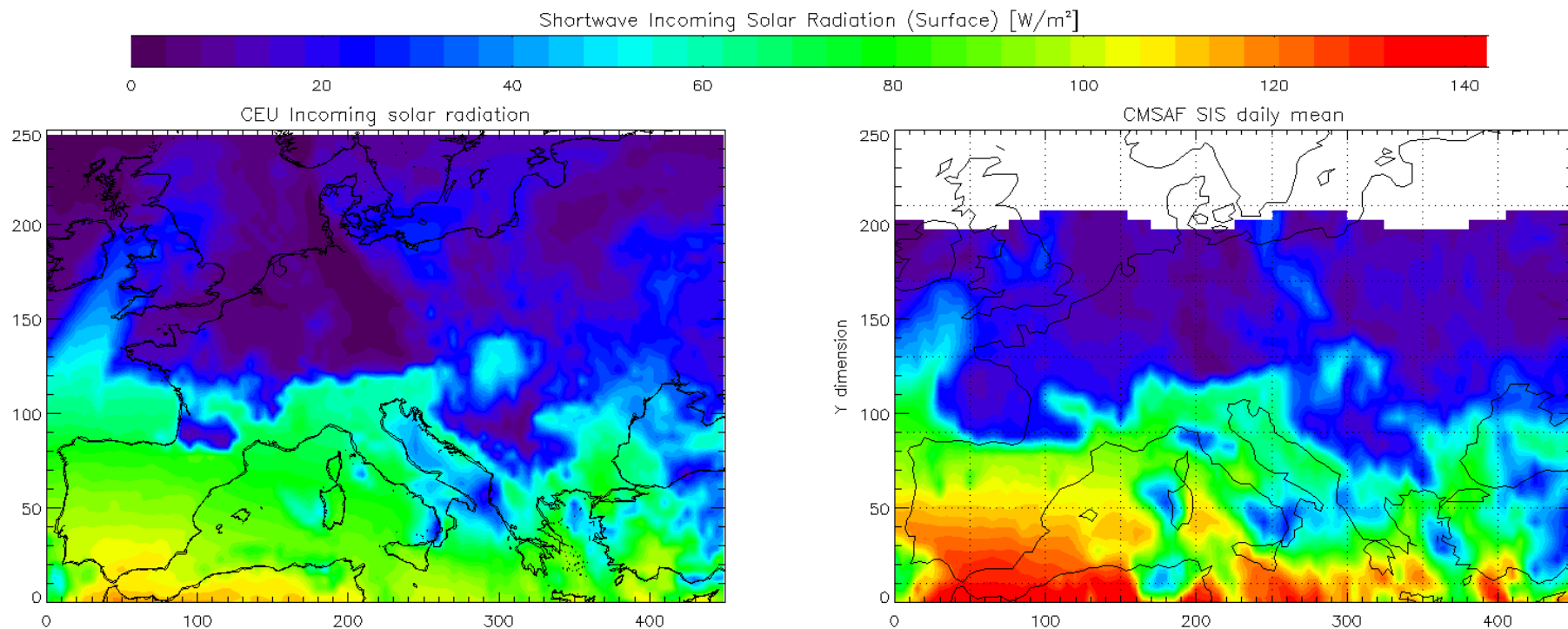
LSA SAF: Satellite Application Facility on Land Surface Analysis

- both use SEVIRI from METEOSAT
- measurements in 0.3 – 4.0 μm wavelength region
- used products: **SIS** (CMSAF) and **DIDSSF** (LSA SAF)

	SIS, daily (monthly) avg	DSSF, daily avg
Target accuracy	25 W/m ² (15 W/m ²)	20 W/m ² (???)
Optimal accuracy	15 W/m ² (8 W/m ²)	5% (???)

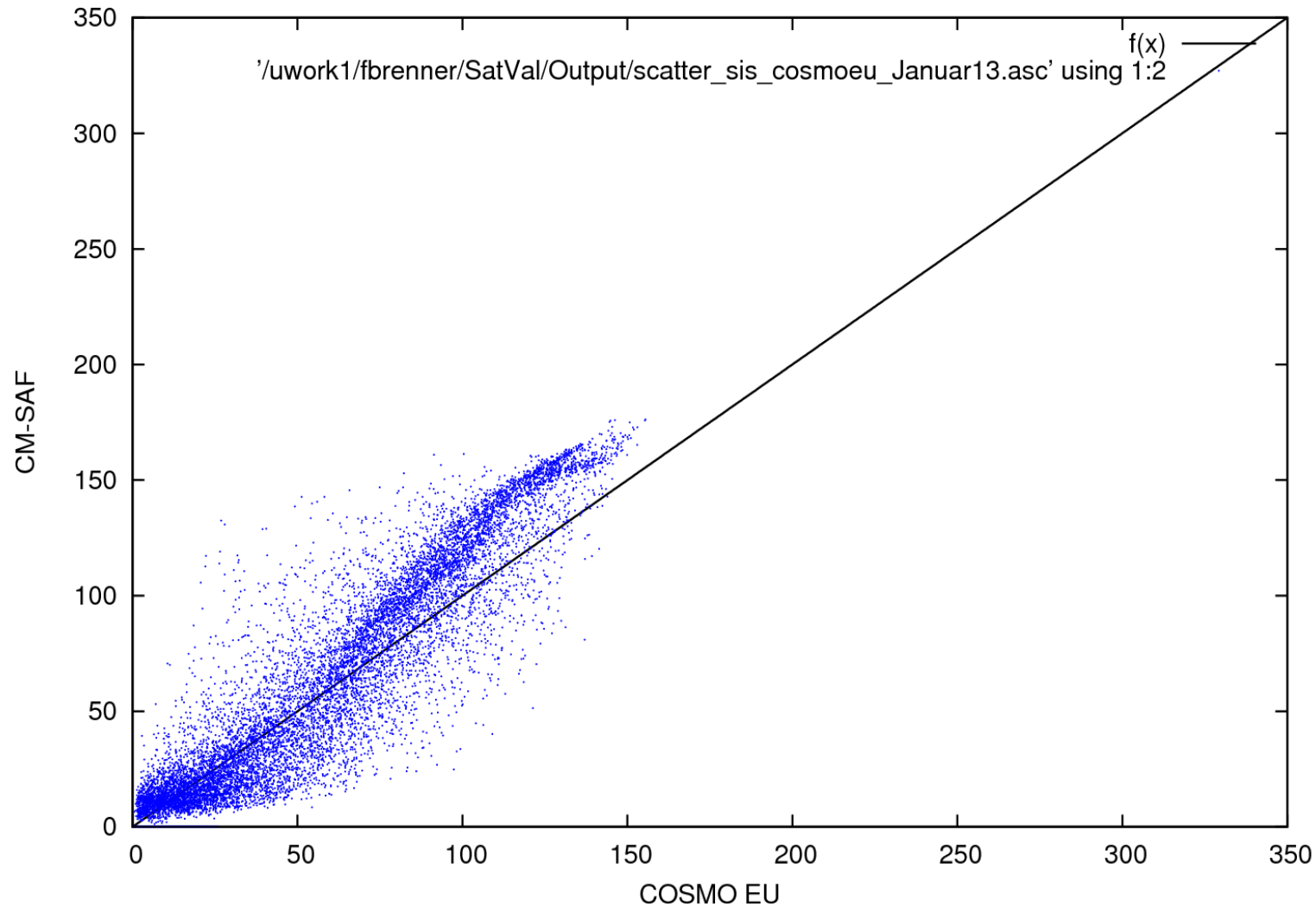
Incoming Shortwave Radiation

- variables in COSMO EU: ASWDIR_S, ASWDIFD_S
- used CMSAF product: diffuse + direct radiation
- daily averages



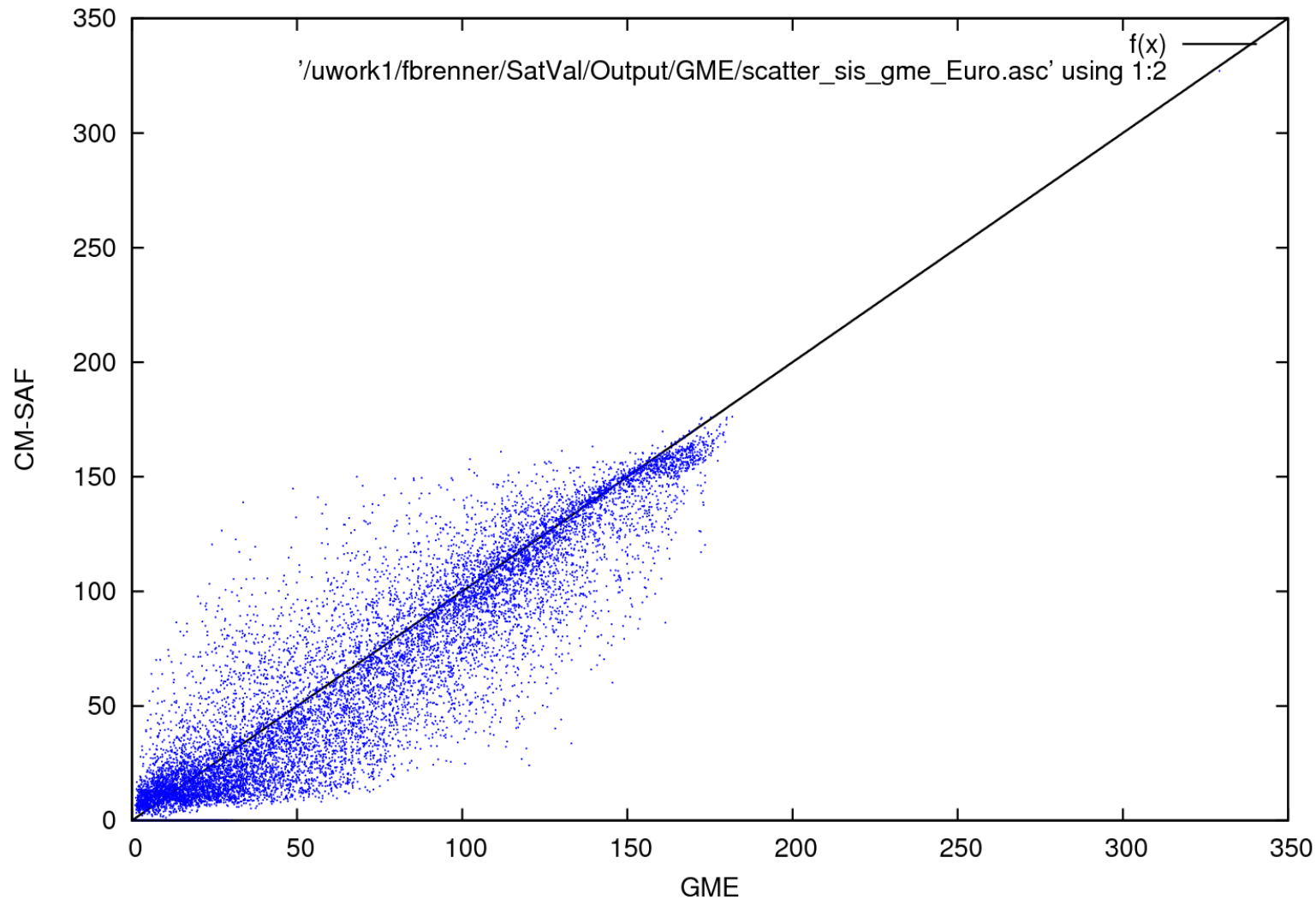
Case 1: January 2013

Incoming solar radiation, direct + diffuse [W/m²], CM-SAF vs. COSMO EU, 1.1.-10.1.2013

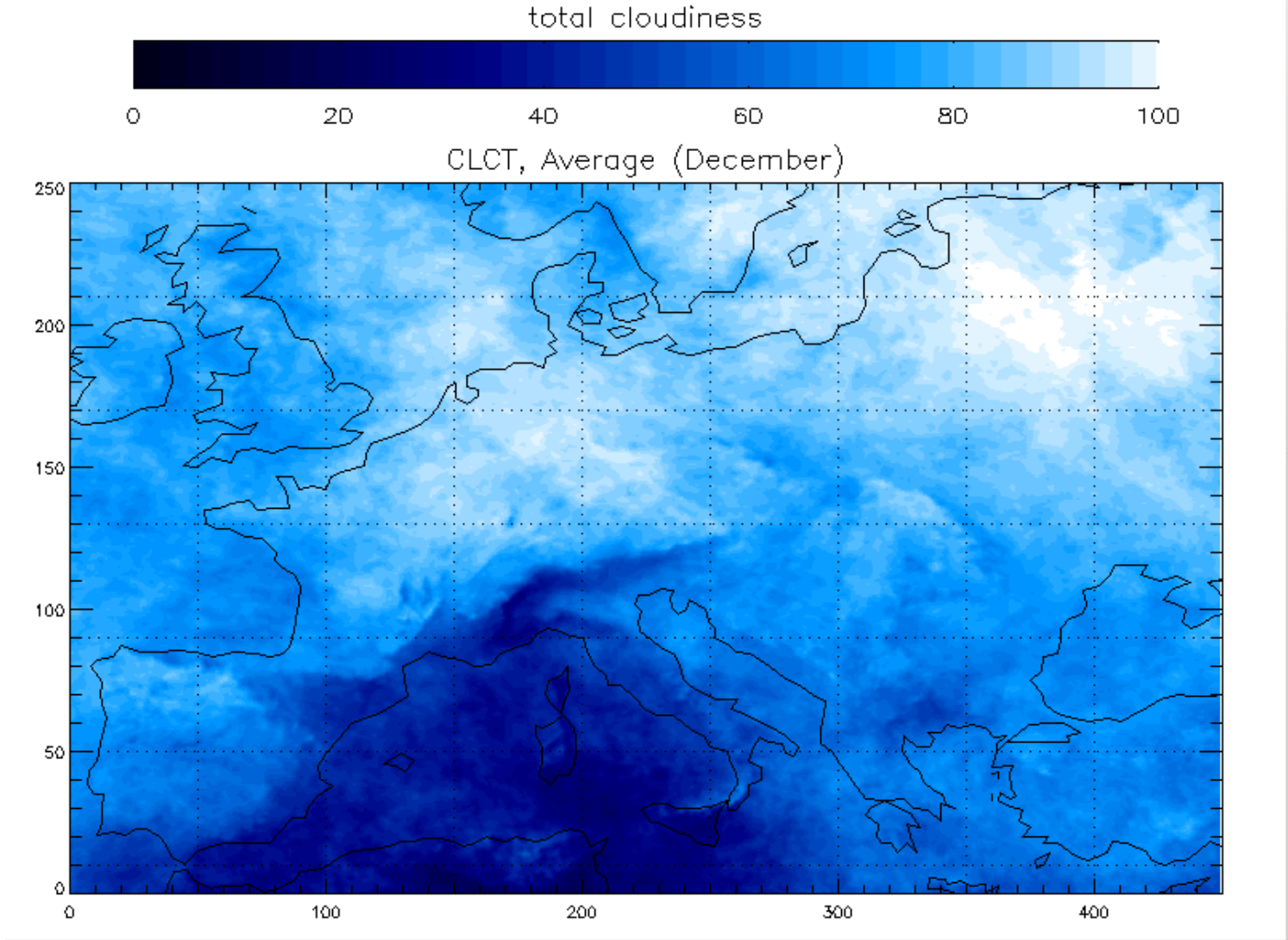


Case 1: January 2013

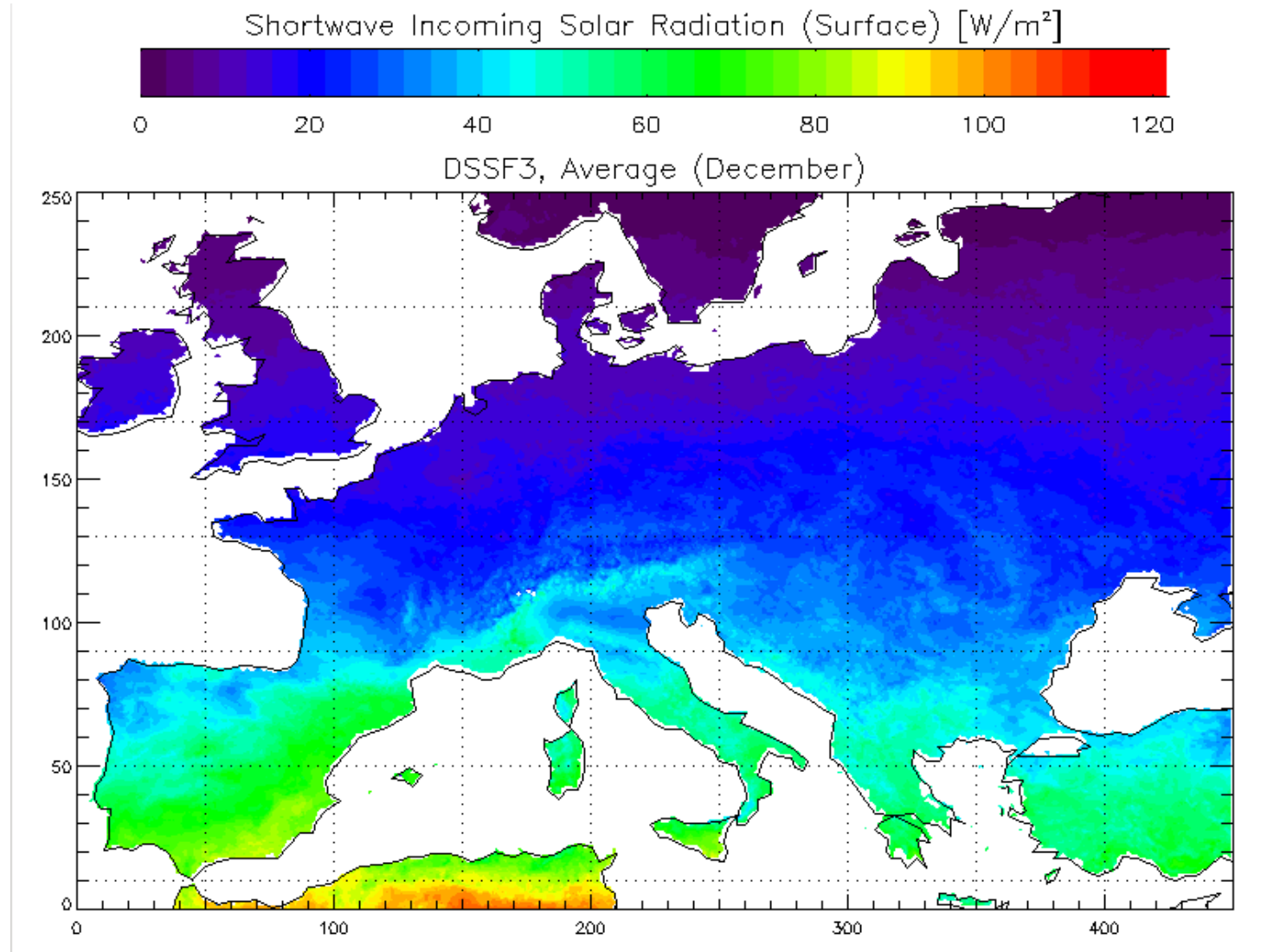
Incoming solar radiation, direct + diffuse [W/m²], CM-SAF vs. GME, 1.1.-10.1.2013,



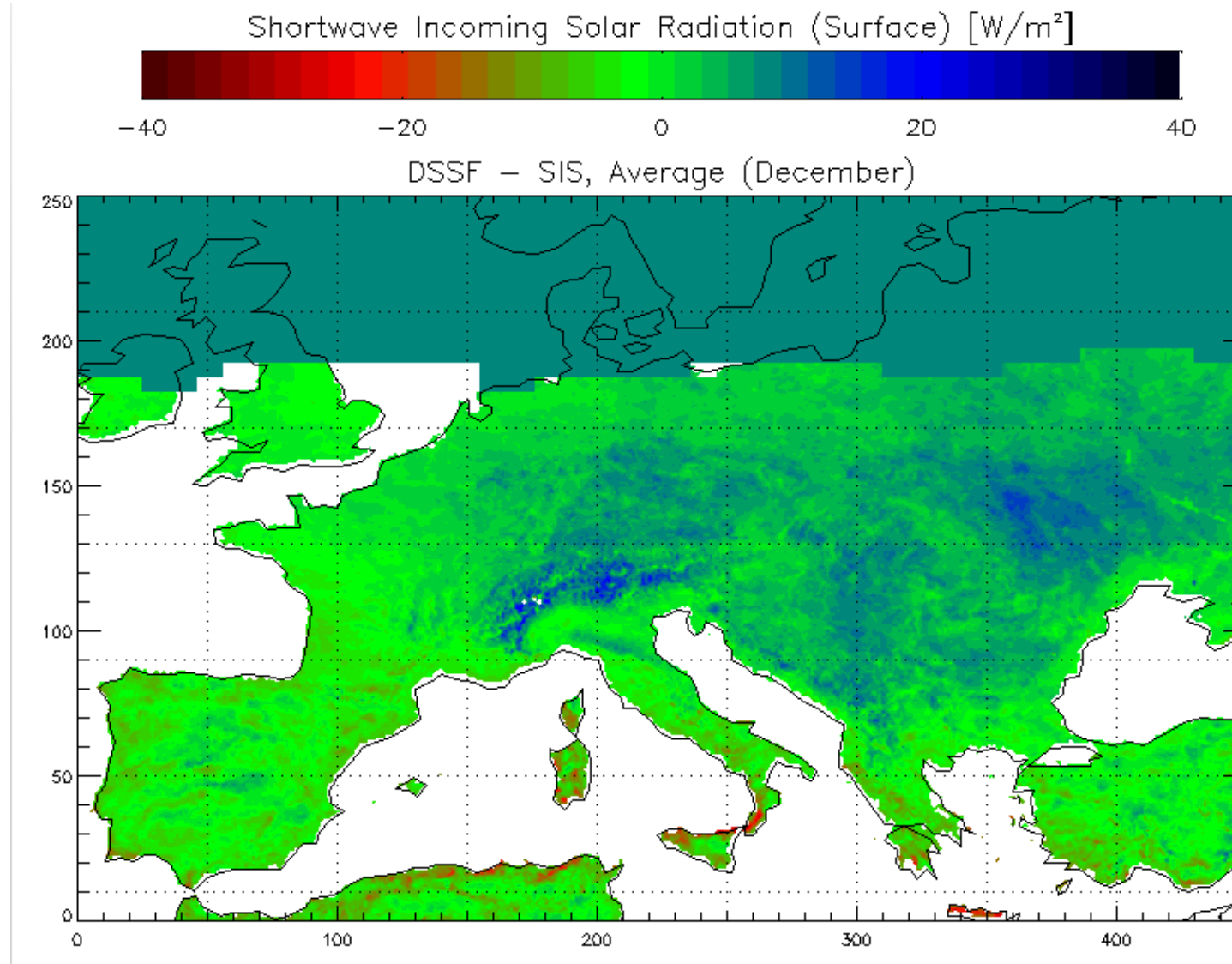
Case 2: December 2012



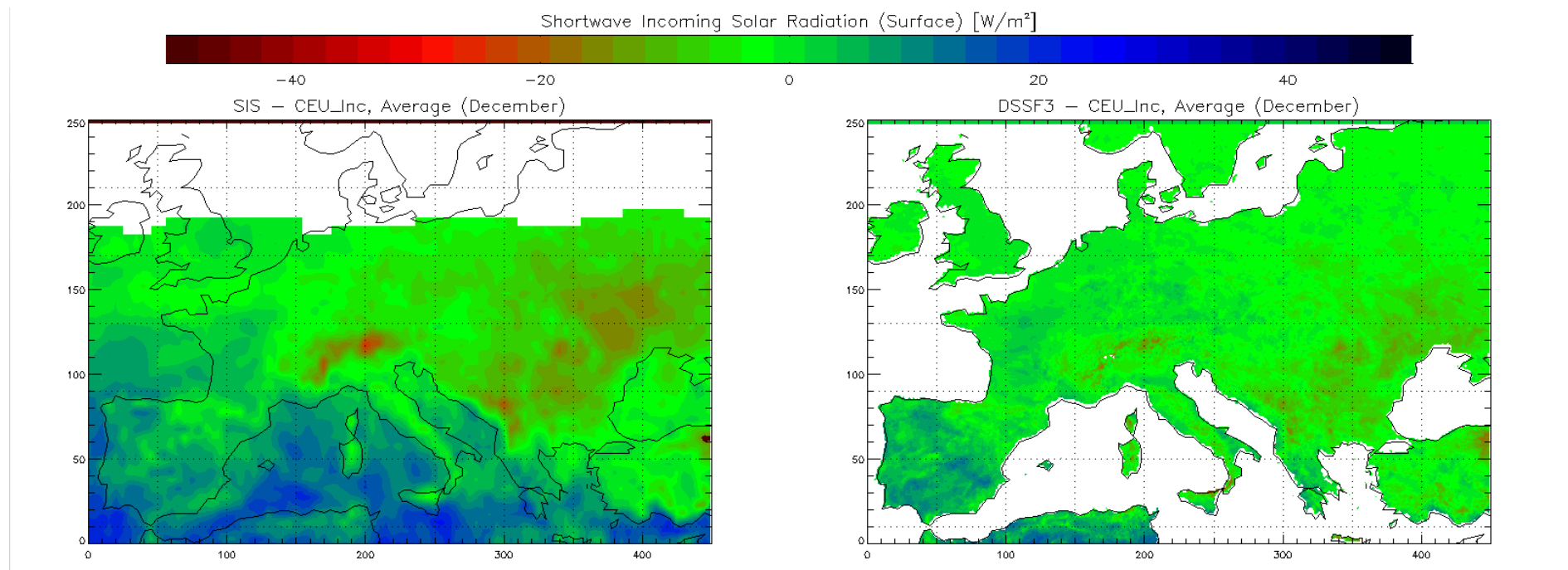
Case 2: December 2012



Case 2: December 2012



Case 2: December 2012



Thank you for your attention



December 2012, CMSAF

